





# 鐵 路 測 量 學

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# 鐵路測量學一冊

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(本書校對者陳忠杰)

## 序 言

歷來國內各鐵路，除與歐陸各國有借款關係者外，向多採用英尺制，故各校之教授鐵路測量學者，亦多不外採用 Allen 及 Nagle 諸氏所著之英文原本。惟近年來鐵道部及各省建設廳，對於鐵路及公路之建築，已規定一律採用公尺制，誠以公尺制已為萬國所通用，應用又極為便利也。著者有鑒於此，並感國內關於此項著作尚無專書，用特編成此籍以問世。

著者本服務鐵路多年之經驗，深知何種學說極為需要，何種則否；何種問題在國外須加以研究者，在國內則可以不必，故本書之內容極合實用，其有不適用之學說與問題，概不列入。至於其中有關於鐵道部之規定者，則概按照部定加以敘明。尤以工程預算一章，內中所列各項工程之建築費用，完全本著者在粵漢鐵路所編製之預算單價為標準，極合內地之實情，讀者手此一篇，用資借鏡，定將獲助不少。

本書不特可供專科學校及大學作為教本之用，並可作為鐵路測量者參考之資；不特可供鐵路測量之參考，並可作為公路測量之借鏡，因公路測量與鐵路測量，其理初無二致也。

本書之參考為 Allen's Railroad Curves & Earthwork; Webb's Railroad Construction; Raymond's Railroad Eng-

ineering, 至於各種曲線表, 多採自木下武之助所編之鐵路道路世界測量表, 惟第十二至第十四表則為著者自編。

呂 謹 二十四年八月二十二日

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# 鐵路測量學

## 第一章 草測

### 1 鐵路測量之分類

鐵路測量，為鐵路建築之最初步，亦即最重要之工作，其目的在選定路線。路線既定，而後方能開始建築。選擇路線，必須具有鐵路各項工程常識，並明白鐵路經濟原理。因路線之適宜與否，與將來鐵路營業之興衰大有關係，故選擇不可以不慎。如路線選擇不適宜，及已成之後，再欲變更，不特營業將受損失，經濟之消耗亦將不貲矣。故每一鐵路路線，常經過多番測量，仔細比較，方能決定採用。

鐵路測量共分三個步驟：即

- 一、草測 (reconnaissance)
- 二、初測 (preliminary survey)
- 三、定測 (location survey)

草測乃以上三段工作中最概略之踏勘，係欲於兩擬定終點之間，踏勘數條路線，以便將來之選擇。踏勘時對於路線所經之地，須注意其山川形勢，農工商業狀況，村市戶口貧富情形，並約略估定

路線之長度及概算，及其他設計上當知之一切重要問題，得一初步計劃，以爲將來實測之根據。

初測乃欲於草測踏勘數條路線之中，選擇一最適宜之路線，在擬定兩終點之間，用若干直線聯結之，測量其方向，距離，及高度，作一初步預算，繪一詳細地形圖，以備定線之用。

定測係就初測之地形圖上，作一最後決定，彎道及坡度之大小，亦於此時規定之。而後將此最適宜之路線，用定線樁，施之於實地，以備將來施工之根據。

今再將此三步工作分述於後。

## 2 草測中之兩個問題

草測中常有兩個問題應加以研究者，其一爲功用問題，其二爲工程問題。功用問題，即欲研究數線中何線功用爲最大；工程問題，即欲研究數線中何線工程爲最易。因在兩終點之間，常有數條路線可通，假使甲線所經之地，多爲人煙稠密，物產富饒，工商業興盛之區，乙線所經之地，則人煙稀少，物產缺乏，工商業不振。於是若就經濟問題而言，則甲線之功用，當較乙線爲大，但甲線之工程，未必是輕而易舉。如所經之區常遇有高山大川，高山須開挖山洞，大川須建築橋梁，則建築費用必多。故功用最大之路線，工程有時非常困難，功用較次之路線，工程則比較容易，其中將有研究之餘地，須權其輕重，計其得失，而後方能決定。

### 3 草測所需之器械

草測乃一種迅速概括之測量，故並無需一般測量所用之器械，所需攜帶者，只有空盒驗壓器，記步器，或轉數器，數件而已。

草測之第一步，宜先求得該區域一帶現成詳細地圖，能有地形線之表示者為最佳。固然，雖有此種地圖，仍不能免一番測量之工作，但所經路線，可於圖上預先計劃，圖上表示不能通過之線，即可棄置不顧。由此種地圖上所表現之山嶺及河流，可以得到該區域以內各點之大概高度。並求得各點間之大概距離。由此等距離及高度，可以規定路線之最大坡度。由圖上選定數條路線，而後再加以實地之踏勘。

路線最要條件為平與直，不過此在事實上乃完全不可能之事。因無論在任何兩地點之間，絕不能盡是平坦之地，欲求其直，定不能得其平，欲求其平，定不能得其直，兩者不可得而兼有。蓋兩點間常遇有高山巨川之阻隔，就工程實施之便利着想，反以向左右繞轉避讓為宜，以求得一最適當經濟之路線。又有時為欲通過某一城市村鎮，路線亦必須繞轉，以求達到最大功用。

### 4 山脊線與山谷線

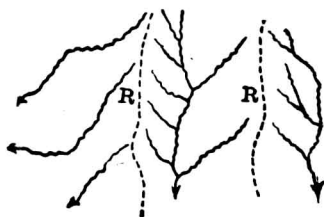
路線如能始終經過廣汎平原，則工程之設施，自毫無問題，但此在天然中，乃絕不易經見之事。天然中之陸地，常有岡巒起伏，河

流穿繞。故在草測中，對於地形，有兩極饒興趣之問題常須研究者，即山脊線與山谷線是。

山脊線為山嶺間最高之線，易言之，即凡山脊線兩旁之地面坡度皆是向下者。

山谷線為山嶺間最低之線，易言之，即凡山谷線兩旁之地面坡度皆是向上者。

如第一圖所示，RR 即為山脊線。在 R 之左邊，山谷線之坡度，較在其右邊者為平坦。此種事實，由圖中所表示之溪流線，左邊者較右邊者疏遠，可以見之。



第一圖

測量中遇有山谷線，則問題較為簡單。若兩城鎮在同一流域之上，可用一坡度平易之路線連結之。於是草測之工作，只須求得兩城鎮間之高度差及其水平距離，俾能規定一最適宜之坡度。若在此流域之間，有大川流過，則路線可常沿河流之一旁，草測時須考察兩岸之地勢，以定取用何岸為宜。若河流易於架橋，則可輪流利用兩岸平坦之地。凡遇有這種情形，應比較因穿越兩岸所縮短之距離，或其他所得之利益，是否與建築橋樑所費相平衡。如遇必須造橋之處，則河牀及兩岸之地質情形應加鑽探，以期求得建築橋墩及橋座最適當之位置。如河岸泥土鬆浮，不適於建築橋基，則路線之選擇，當視橋址而定。大概河流在上游之地勢，常較下游為峻急，故

欲求一均平坡度，在下游處，常就河岸較高之地點。

在山地測量，問題將不如在川河流域之簡單。因山嶺之間，每有數條路線可以通行，究應採取何線，常須加以考慮。

凡山嶺起伏之地，必有數處極高之點，亦必有數處極低之點。此極低之點，與草測最發生關係。我國古時驛道，凡遇山嶺，必經過多次慎重選擇，取其最低最易通行之處翻過。故在草測時，如能留意於此種驛道，將得助不小。

山嶺間之溪流，往往非常峻急。故山嶺間之路線，不便沿溪流而行，須選擇最適宜之地橫跨而過。概言之，路線宜擇最低之山脊線及最高之山谷線而過之，使於此一高一低之間，得一較為平易之坡度。

蓋鐵路路線，定有限制坡度（意即該路線所能採用之最大坡度）。測量時所定最大坡度，不宜超過此限制坡度。如在此一高一低之間，所測距離與兩點之高度差相較，將得一甚大之坡度，不宜於實用，則惟有用一種展線法，特意沿山嶺區域左右繞轉，緩緩由一點達到另 一點，使路線長，取得一較為平易之坡度，有時更用穿鑿山洞之法以助之。

### 5 草測中之高度測量

氣壓觀測為一種極方便迅速之高度測量法，雖不十分準確，但用作草測，費很少時間，得很大效率，固甚適宜。



氣壓觀測所用器械，爲水銀氣壓表及空盒驗壓器。水銀氣壓表宜用於固定站，留置在辦公室內，須有一人專管，每隔很短時間，即行觀測一次，觀讀其時間，氣壓讀數，水銀溫度，及空氣溫度，並將所測結果，繪成一表示當日氣壓變化之曲線表。至觀測之記載法，則有如下式：——

第 一 式

| 時 間    | 氣 壓    | 水銀溫度 | 化爲 32°F. | 空氣溫度 | 更正氣壓   |
|--------|--------|------|----------|------|--------|
| 7:00上午 | 29.872 | 72°  | -.117    | 73°  | 29.755 |
| :15    | .866   | 73.5 | .121     | 75   | .745   |
| :30    | .858   | 75   | .125     | 76   | .733   |
| :45    | .850   | 76   | .127     | 77   | .723   |

式中第四欄所載之數，係由第二第三兩欄，用第一表約化而得。因用水銀氣壓表，在兩測點之水銀溫度多不相同，於是水銀道之漲縮亦不能相同。故即令兩處之氣壓相等，兩水銀道之高度亦不能相等，計算時必須加以水銀溫度之更正。第六欄之更正氣壓，即係由第二第四兩欄相減而得。

空盒驗壓器係帶至沿線觀測之用。在早間出發時，須與水銀氣壓表校對一次。此兩氣壓表讀數之差，稱爲指差，俟後應加入於空盒驗壓器之各讀數中，俾能化爲相當於水銀氣壓表之讀數。於是將空盒驗壓器攜至第一測點，再觀讀氣壓、氣溫及時刻。驗壓器及附屬寒暑表，皆應安置於陰處，免受日光之照射。第一測點觀讀完畢，再攜至第二、第三、……各測點作同樣之觀測。如在某一測點時間過久，應於到達時及離開時各作觀測一次，以便與固定站所繪之氣

壓變化曲線表相校對。

各點測完之後，仍須回至固定站，再將驗壓器之氣壓、氣溫及時刻觀讀一次。因沿線各點之高度，若相差甚大，例如行過高山峻嶺，則氣壓之升降，亦將相差甚大，即最完善之驗壓器，亦將遭受甚大變化，一時不易恢復原狀。不過在鐵路測量中，此種情形並不易經見。

第二步為室內之計算。法先將最初在固定站觀得兩表之讀數加以比較，求得其指差更正數。將此指差更正數加入於沿線所測驗壓器之各讀數中，使化為驗壓器之更正讀數。由氣壓表及驗壓器之更正讀數，並加以相當之氣溫更正數，用第二表，分別求得各點之高度。而後由此種讀數，再求得各點之高度差。試舉一例於下。

第二式

| 時 間     | 地 點 | 驗壓器<br>讀數 | 氣溫  | 驗壓器<br>更正數 | 氣壓表<br>更正數 | 固定<br>站<br>氣溫 | 各測<br>點<br>高度 | 固定<br>站<br>高度 | 高度差  | 氣 溫<br>更 正 數 | 更 正<br>高 度 差 |
|---------|-----|-----------|-----|------------|------------|---------------|---------------|---------------|------|--------------|--------------|
| 1:00 上午 | 辦公室 | 29.728    | 73° | .....      | 29.755     |               |               |               | —    | —            | —            |
| :10     | △0  | 29.663    | 72° | 29.733     | 29.748     | 75°           | 192           | 230           | -38  | -(+2)        | -40          |
| :30     | 小界嶺 | 29.474    | 63° | 29.501     | 29.733     | 76°           | 457           | 244           | +213 | +(+10)       | +223         |
| :50     | 李家棚 | 29.748    | 70° | 29.675     | 29.720     | 77°           | 297           | 256           | +41  | +(+2)        | +43          |

第二式表示某次測量之野簿記載法。式中前四欄為在沿線所測得驗壓器之記載，第五欄則得自第三第六兩欄。至於第六第七兩欄，係由第一式中固定站之記載而得，第八欄係由第四第五兩欄，及第九欄係由第六第七兩欄，用第二表，推算而得。第十一欄氣溫更正數則用第三表求得之，表中之(t+t')為各測點及相當固定站

之氣溫。

讀者對於第二式中第九欄之固定站高度，前後各不相同，或將發生疑問，用特加以說明。蓋第二表所示之高度，係指高出某假定水平基面，其水銀氣壓讀數為 30 英寸者而言。但因大氣情形時有不同，致此種假定水平基面之位置亦時有變遷，故所求之高度皆為相對而非絕對，惟相當兩點之高度差方為絕對也。因此，所有重要之測點，皆宜多測一二次，取其平均氣壓，以為計算。

上述之高度測量法，雖不能求得各點之準確高度，但能使測勘工程司，得知沿線之概略情形，俾選擇路線，規定坡度，有所根據。例如某一山路上 B 點與某過河處 A 點之高度差，用氣壓觀測，約為 120 公尺，兩點之距離約等於 10 公里；又某一山路上 C 點較 A 點高出約 150 公尺，其距離約為 18 公里。此種觀測所得之數字，雖不見如何精準，但測勘工程司可由此兩線加以比較，即知所取捨也。如必用水平儀作一度普通水平測量，則所費之時間，與所欲得之結果相較，將為得不償失。

## 6 草測中之距離測量

草測中如有地圖可資參考，則距離可由圖上直接求得之，不過此種地圖每不可得，則惟有實地施行一種迅速測量。測量所用器械，或為視距儀，或為記步器，或為轉數器，更佐以懷中羅盤儀，以便觀測方向。

視距儀之構造，與普通紅緯儀之望遠鏡相同。鏡中有兩道視距線，用以觀測兩測點間之視距距離。此乃比較最為精準之方法，但只能用於平野之地，如遇山林叢密之區，觀測將受障礙，應用即不方便矣。

轉數器為計算車輪轉動數之器械，若踏勘係乘車而行，可將轉數器裝置於車輪與車軸之間，車輪每轉動一次，轉數器即記下一數。車輪之輪徑為一定之數，由此可以計算車輪所行之距離。轉數器之構造，有種種之不同，最普通之一種，內有一吊錘或擺，當車輪轉動時，常居垂直之位置。此種器械，在車輪轉動緩慢時，雖甚準確，但若速度增進，則施於擺上之重心力，將達到一極點，不能再抵抗離心力，致擺失其垂直之位置，記載亦因之而不能準確，如速度甚高，甚至完全不能記載。車輪行於崎嶇道路之上，顛震過甚，對於擺之作用，亦將發生影響。

如係步行踏勘，可用記步器，放在身邊，記載步數。因當步行時，足跟踏着實地，身體感受震動，影響至記步器，器內機械將隨之而擺動一次，記下一數。故若步伐整齊，則記步器所記之步數，乘每一步之距離，即得所行之總距離，所得結果亦能準確。

## 7 草測之重要

定測根據初測之結果，而初測則根據草測之結果。故草測為全部鐵路測量之基礎。如草測時選擇路線不適當，初測定測時亦未經

發覺，因錯就錯，及路線業已築成，方知其不適宜，雖欲加以改良，以牽動過大，無從着手，則後悔也無及矣。故作草測工作，須有豐富經驗，深遠眼光，以全部精力從事（選擇路線，多由總工程司或測量隊長任之）。如路線選擇適宜，則初測定測既易着手，將來工程設施亦較輕而易舉，鐵路營業且可得到極大利益焉。

### 8 草測應注意之事項

今且將草測應注意之事項總述於下：

- (1) 草測目的在選擇適宜路線，及調查該線有無建築之價值。
- (2) 草測時須詳記逐日起止地點，經過村鎮名稱及里程。
- (3) 凡經過路線，應註明其方向、地勢，及左右狀況。
- (4) 凡經過山嶺，應約計其高度、形勢及上下嶺之里數，併詳記將來築路時，有無特殊困難情形，及能否避讓，繞經別道。
- (5) 凡經過江河溪溝，應詳記其狀況，及水流緩急，併查明大水時之沖激情形及時期久暫。
- (6) 凡所經之道路、江河、山嶺，應考察其地質。
- (7) 凡路線經過地方應調查村鎮之戶口，工商業狀況，及農產品種類數量，併運銷之地點。
- (8) 凡路線經過地方，應查記原來水陸交通聯絡情形，及與各河道船埠之距離。
- (9) 路線以短而直為原則，但遇有繁盛村鎮，或別種農工商業

區域，須藉交通之力以便發達者，得將路線繞經其地，併詳述其理由。

(10) 草測時遇有數線均有經過價值者，應一併查記以資比較。

(11) 沿線應查記可以取用之建築材料，併調查其價值產量。

茲再將測勘時應調查之事項立一調查表於下：

路 線 調 查 表

|   |        |   |  |
|---|--------|---|--|
| 1 | 概<br>況 | 起點  |  |
|   |        | 終點  |  |
|   |        | 經過重要城市                                      |  |
|   |        | 里程  |  |
| 2 | 地<br>理 | 沿路地勢  |  |
|   |        | 有無山嶺 <small>高度</small>                      |  |
|   |        | 有無大河 <small>深度</small><br><small>寬度</small> |  |
|   |        | 泥土性質  |  |
|   |        | 預測工程之難易                                     |  |
| 3 | 氣<br>候 | 雨量 <small>每年公分數</small>                     |  |
|   |        | 路線所經入水是否淹沒                                  |  |
|   |        | 最高最低溫度                                      |  |
| 4 | 物<br>產 | 農產品數量                                       |  |
|   |        | 礦產品   |  |
|   |        | 工藝品   |  |
|   |        | 林產品   |  |

|   |           |          |  |
|---|-----------|----------|--|
| 5 | 交通        | 鐵路       |  |
|   |           | 公路       |  |
|   |           | 其他道路     |  |
|   |           | 水道航線     |  |
|   |           | 郵政及航空    |  |
|   |           | 電政       |  |
| 6 | 運輸方式及每公里價 | 汽車       |  |
|   |           | 轎        |  |
|   |           | 牲口車      |  |
|   |           | 人力車      |  |
|   |           | 牲口       |  |
|   |           | 擔夫       |  |
|   |           | 船舶       |  |
| 7 | 經濟        | 經過城鎮人口約數 |  |
|   |           | 市面繁盛否    |  |
|   |           | 人民生計如何   |  |
|   |           | 每畝田價值    |  |
|   |           | 米價每石若干   |  |
| 8 | 築路        | 石料       |  |
|   |           | 沙        |  |
|   |           | 水泥       |  |
|   |           | 石灰       |  |
|   |           | 木料       |  |
|   |           | 材料運輸方法   |  |
|   |           | 木匠       |  |

|        |           |  |
|--------|-----------|--|
| 工<br>料 | 鐵匠        |  |
|        | 泥水匠       |  |
|        | 小工        |  |
|        | 有無築路承包公司  |  |
|        | 招雇築路工人方便否 |  |



## 第二章 初測

### 9 初測之目的

初測係根據草測之結果，作一次較為精密之地形測量，所測範圍，係就草測所選定之某一地帶，並非限制某一路線。此地帶之寬度，依地勢情形而定，或只須一二十公尺之寬，或竟寬至數百公尺。

初測之目的，若概括言之，將為

- (1) 就草測所選擇數條路線之中，求一最適宜之線。
- (2) 就此選定路線，繪一詳細地形圖，表示該地帶以內之山川形勢，以為定測之根據。
- (3) 大略計算該線所需工程之費用。
- (4) 決定該線最大坡度，以為定測之用。

初測固常隨草測所選某一路線而行，但有時草測所選數條路線之中，有二三線，驟視之皆甚適用，不易抉擇，則初測時仍須將此二三線並加測量，以資比較。例如在溪河流域，兩岸皆有一段甚為平坦之路，則路線究應沿左岸而行，抑沿右岸而行，抑跨河而過互用兩岸，在草測中不易詳細比較，須待初測時決定之。

今且將坡度之意義解釋於下。

一條理想鐵路，路線宜平而直，但因路線兩終點相距常在數十里，在此長距離之間，兩終點之高度絕不能相等，高度不同，而欲求一平直之路線，豈非理想之事。將高度不同之兩點以直線連結之，此直線之傾斜度即稱為「坡度」。但在此兩點之間，欲求一均一坡度，則屬不可能。

坡度普通多以百分率表示之。即每百尺之水平距離，垂直變化共有幾尺，並加以正負號之註明。例如有一上坡道，每百尺高起二尺，則此坡度即稱為百分之二上坡道，以  $+2.0\%$  表示之。又如有一下坡道，每百尺降低一尺五寸，則此坡度即稱為百分之一·五下坡道，以  $-1.5\%$  表示之。此處所謂上坡下坡，乃指由路線之起點向終點之方向而言。

鐵路路線普通常分為數小段，每段約自一百五十公里至二百公里。在此一二百公里路線之間，地勢當不免有起伏之處。如此，自不能求一均一坡度，且事實上亦以不用均一坡度為宜。設計時正可利用此起伏之地勢，規定忽上忽下之坡度，使機車行駛上坡道時，雖用盡全力，但行駛下坡道時，可有休息之餘地。有時在此小段之間，路線自始至終，常成一上坡道，但非均一，於是機車行駛（上行），始終用最大力量，其牽引力便將因之而減小。此不均一之上坡道中，必有若干部分比較其他部分為陡，而此最陡之部分稱為「最大坡度」，乃與鐵路營業最有關係。因最大坡度能限制機車之牽

引力。最大坡度愈能減小，則機車牽引車輛之數量愈能增加，故就鐵路營業而言，最大坡度愈小愈佳。

但就鐵路工程而言 其所生影響適得其反。例如路線經過山嶺，若所規定之最大坡度甚大，則路線可直穿山嶺而過；若最大坡度規定甚小，則必用(1)展線法，在山嶺左右設法繞轉，將路線展長；或(2)極度填挖法，一面將山嶺極力挖深，一面將山谷極力填高。如此，將增加土方之數量；或(3)直接開挖山洞法。

### 11 樁號之表示

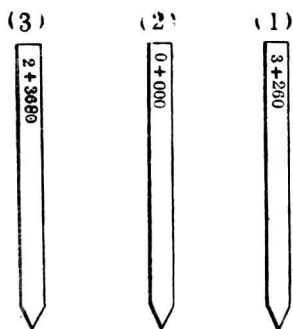
鐵路路線之距離，多用樁號表示之，每距二十公尺（按照鐵道部之規定）或一百英尺之點，即打

入一樁，樁上書明與起點之距離。其書寫法係自左至右，橫行，如第二圖之(1)。(+)號以前之數字表示公里數，以後之數字表示公尺數。

例如圖(1)之樁號表示該點距起點 3260 公尺。路線起點稱為 0 點，樁號之書寫，有如圖之(2)。如係

安置經緯儀之點，則於樁號後面特加一⊙以為標記，如圖之(3)。

經緯點須用二英寸見方，十五英寸長之(一號)木樁，打入地中，樁頭露出地面約一英寸，並於樁頂表示經緯點之處，釘以小釘。



第 二 圖

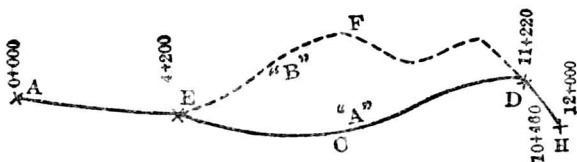
在此一號樁之左面，相距約半英尺之遠，另打一寬二英寸，厚半英寸，長一英尺之(二號)樁，稱爲「護樁」，成向內傾斜之勢，在此二號樁上，即書明經緯點之樁號。其餘各中間點皆用二號樁一個，打入地中約半英尺，樁號務要露在外面，以便觀讀。惟每至一公里之整樁號，則用一號樁及護樁，一如經緯點。各樁樁號皆應面向起點，並須立直。

## 12 比較線

路線經過山嶺或山谷時，必有一最高或最低之點，因其與規定最大坡度極有關係，故特稱之爲「管馭點」。選擇路線，務須注意此種管馭點，使所測路線，能在最大坡度之限制以內。定線工程司負選擇路線之責任，常先一日將路線選擇妥當，而後由測量人員隨後實測。惟所擇路線是否適合所定之坡度，則非定線工程司徒憑肉眼所能判定，必經水平儀組將縱斷面測定，繪之於圖，方能明曉，故水平儀組每日歸來，應即將所測各點之高度，繪成縱斷面圖，以備定線工程司之審查。如坡度不合宜，路線有變更之必要，即可依定線工程司之命令，於第二日立即更改。

有時經三四日之測量，忽覺所定路線不能適用，則須當機立斷，將此三四日之工作毅然廢棄，自某一已測之點起，另擇一比較線，加以重測。至於圖上已繪之線，及野簿上已有之記載，並不必塗去，可分別描繪記載，以爲參考。

如第三圖，AECDH 表示原測之線，稱為“A”線，虛線 EFD



第 三 圖

表示改測之比較線，稱為“B”線。原線之樁號係由 0 至 12+000。E, D 兩點各為 4+200 及 10+460, 距離為 6260 公尺。比較線由 E 點起至 D 點止，其新樁號各為 4+200 及 11+220, 距離為 7020 公尺；自 A 至 E 及自 D 至 H 兩段仍用原線。

依一般之習慣，由 D 至 H 之樁號並不必要更改，惟於圖上及野簿上分別註明。

$$\text{“A” 線 } 10+460 = \text{“B” 線 } 11+220$$

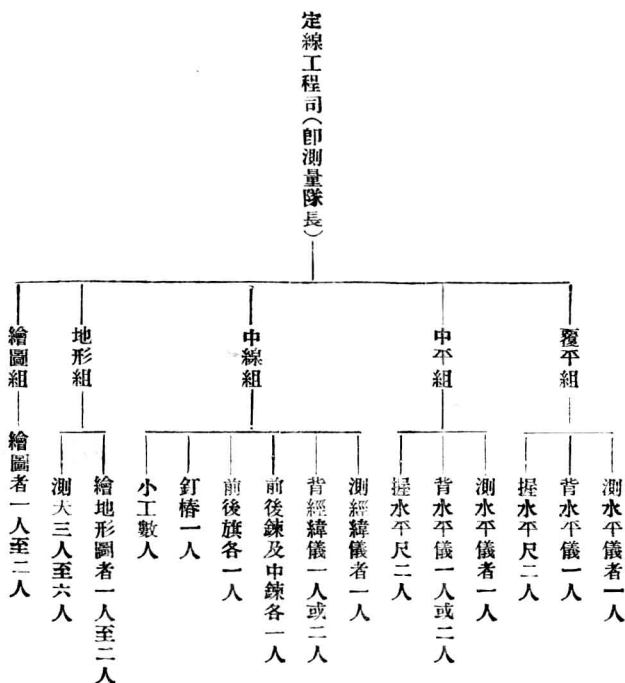
A, B 兩線相差之數，760 公尺，則稱為「中斷數」。

比較線另有一種記法，係認 E 點為新線之起點，其樁號作為 0+000，其餘依次類推，至 D 點之樁號則作為 7+020。有時或於各樁號之前更加以該新線之縮字，如 B0+000 及 B7+020。此種記法亦甚便利。

如沿線共有數條比較線，可用“A”線“B”線，“C”線，“D”線，分別表示之。

## 13 測量隊之組織及各人之任務

初測測量隊之組織有如下表



定線工程司為一隊之首領，負全隊之責任，選擇測量之路線，支配全隊人員之工作。每日先中線組而行，預將各經緯點選妥，打以木樁，插以紅白旗（紅白旗係半面紅，半面白，為測量通用之旗號）。如在樹林叢密之區，應帶小工一二人，砍通一條視線。應隨帶日記簿一本，將沿線經過區域之山川形勢，應需建築之橋樑溝渠，

出產之木石材料，及其他一切事項，而非中線組，水平組，或地形組所能記載者，詳細記下。

(1) 中線組又稱經緯儀組，擔任測量中線之責，所用主要器具有經緯儀。測經緯儀者司經緯儀之觀測，測量中線之距離及角度其職位次於定線工程司。全隊工作之速率皆依彼一人而定，故其工作不可有絲毫延誤。測量時應帶經緯儀簿一本，將所測各點詳細記入簿中。晚間並須幫同繪圖者，將當日所測之線，仔細繪於平面圖上。

拉前鍊者為測夫中最重要，最有經驗之工人，其工資亦最大。因富有經驗之測夫拉前鍊，每至一點，雖不能適在視線之上，亦非相去不遠，不用測經緯儀者多事指揮。而且動作靈敏，拉鍊鬆緊適宜，如此，工作速率可以增進不少。應帶鋼尺一付，鐵杆數根，花杆一根，垂錘一個。

拉後鍊者應隨前鍊者進行，並注意樁號有無錯誤。應帶垂錘一個，以為對準後測點之用。

拉中鍊者手握鍊尺之中央，幫同將鍊尺拉平。並設置 20 公尺及 40 公尺之中間樁（因鍊尺多為 50 公尺長，拉前後鍊者不能常置鍊尺之中間也）。應帶垂錘一個，有時並須帶一小水平，以便校準鍊尺之平水。

釘樁者手握斧錘及木樁數根，緊隨拉鍊者之後，將各樁號預先依次寫妥，而後就所測之位置，將樁牢釘地中。每日應攜帶足敷

用之樁數，不可臨時張羅。

執前後旗者應各握花桿一根，立在前後兩視點，聽測經緯儀者之指揮。

背負經緯儀者一人或二人，行動時則一人背儀器箱，一人荷三腳架；觀測時則一人打旗號，一人握傘。按各國鐵路測量編制不同，有若干國度，儀器係由工程司本人負責肩荷。我國習慣多用工人。

小工攜帶鐮刀斧頭，遇有叢莽荆棘之地，須將刺激妨礙之物，用刀斧砍去之，砍通一條路線，俾拉鍊者可以通過。

(2)中平組擔任測量中線縱斷面之工作，所用主要器械為水平儀。

測水平儀者沿中線觀測各樁之高度，並於相當地點設置水平基點。應攜帶水平儀簿一本，記載各點之前後視，並應就地將各點之高度立即算出。晚間並須將所測各點繪製縱斷面圖，由覆平組之測水平儀者誦讀各點之高度。

握水平尺者或用一人，或用二人。如用二人，則一人擔任後視點，一人擔任前視點，至於中間各點之觀測，則由二人分任之。每人應攜帶水平尺一根，塔尺墊一個。如擔任設置水平基點者，並應帶皮尺一盒，斧頭一把，鐵帽釘數個，紅鉛油一小筒，筆一支，沿路須注意中線樁號有無錯誤之處。



(3) 覆平組擔任覆對中平組所設置之水平基點之工作。

測水平儀者追隨中平組之後，將各水平基點之高度覆測一次，觀其有無誤差。按理，前後二人所測各點之高度應相符合，但此在實際上，雖非完全不可能，亦極其不易。因無論儀器如何精準，二人觀測如何慎重，常因種種天然、機械、或人為原因，致發生些微誤差，亦在所不免。不過此種誤差，如在容許限制以內，即無關緊要。（此限制在鐵路測量中，約為每公里五公厘）。如已超過此限制，應再覆測一次，甚至二三次。每日歸來應將所測之結果與中平組核對，並須幫助中平組繪製縱斷面圖。

握水平尺者之工作與中平組相同，但覆平組只覆對各水平基點，不問各中間點。

(4) 地形組係沿中線測量兩旁之地形，測量範圍，依兩旁之地勢而定。

繪地形圖者帶輕便地形板一塊，並地形紙數張。地形紙上預先按照中線組所繪平面圖，將中線用墨水繪出，並將各點依次分明。沿中線各點之橫斷面，指揮測夫用手攜水平儀、水平尺、及皮尺，求得各等高線之距離，立即將其繪在地形紙上，而後參酌實地情形，將各點聯成等高線。所有溪流、溝渠、房屋、墳墓等等，應一併注明於紙上。

測夫三四人分握手攜水平儀及水平尺，皮尺則由二人分握兩頭，一如握前後鍊者。其餘一二人則攜帶方線架及花桿，以為方線

之用，鑷刀斧頭以便砍通視線。

繪圖者專留在辦公室內描繪中線組之平面圖，水平組之縱斷面圖，並將地形組所測之地形描繪在平面圖上。

#### 14 應用主要器械

鐵路測量所用器械名目繁多，現在且擇其中最主要者分述於

1. 經緯儀 一副
2. 水平儀 二副
3. 手攜小水平三個或四個，預備損壞
4. 鋼尺一盤或二盤，預備損壞
5. 皮尺三盒至五盒
6. 鐵杆 數根
7. 水平尺(水平組用) 四根 帶尺墊四個
8. 水平尺(地形組用) 二根(兩種不甚相同)
9. 花桿 上有紅白旗者，四根
10. 花桿 十根至十五根
11. 地形板兩塊
12. 垂錘 三四個
13. 斧頭 五六把
14. 鑷刀 五六把
15. 方線架 二個
16. 五尺桿 二個
17. 大錘 兩把
18. 鐵帽釘 若干個
19. 雨傘 五六把
20. 木椿(一號)若干個  $2'' \times 2'' \times 15''$
21. 木椿(二號)若干個  $\frac{1}{2}'' \times 2'' \times 12''$

- |               |                |
|---------------|----------------|
| 22. 繪圖板 兩塊    | 23. 繪圖紙        |
| 24. 地形紙(即玻璃紙) | 25. 縱斷面紙(即方格紙) |
| 26. 經緯儀簿      | 27. 水平儀簿       |

### 15 中線測量

中線測量分距離測量——即鍊尺測量——及角度測量——即經緯儀測量——兩項。距離測量所用器械，普通多為鋼尺，長五十公尺。在我國及日本產竹甚多之地，有用竹尺者。角度測量即用普通工程經緯儀，讀至 30" 或 20" 者。

角度測量——如新線係就某已成路線展長，可於老線之尾端，兩軌之中心，擇一起點，釘以大樁。另於老線之延長線上，約一百公尺之遠，亦擇一點，釘以大樁。此延長線即作為新線測量之基線。並假設其方位角為零。惟通常新線之方位角多以磁子午線或真子午線為標準。如用磁子午線，則第一線之方位角，並不於起點即行觀測，因防鐵軌對磁針之影響，須俟儀器移置第二點之後，已出鐵軌之勢力圈以外，方行測定。如用真子午線，須用天文觀測法，或於日間觀測太陽，或於晚間觀測北極星，將真子午線測定。

如新線係由任一地點起始，即於該地點左近，擇一比較最高之點，釘以大樁，作為起點。並就四圍固定之物，例如大樹，房屋，或別項建築，測量其距離，作為繫線，以便將來易於尋覓。

定線工程司預在前面將各經緯點選妥，打以木樁，插以小旗。

測經緯儀者先將儀器安置在起點，將平板遊標對準在零點，鬆下止動螺絲，轉動望遠鏡，使對準磁子午線或真子午線之方向。鬆上止動螺絲，轉動望鏡遠，使對準前面選定之前視點。倒轉望遠鏡，再鬆下止動螺絲，仍將望遠鏡對準子午線。鬆上止動螺絲，再對準前視點。而後觀讀兩次之角度，取其平均值。同時觀讀儀器上附設磁針之方位角。將各讀數分別記入於野簿之中。於是開始距離測量。距離測量業已完畢，再將儀器移置於前一經緯點，仍將遊標放在零點，按照上法觀讀第二線之方位角。此種觀測角度之方法，稱為「偏角法」，為鐵路測量所通用。另有全圓方位法亦常被採用。用偏角法時，對於角度係向左抑向右偏，須特別記明，此為極關重要之事。所有角度只須讀至最近之1'。每次並應將偏角與觀測之磁方位相校對，求得更正磁方位，另列一欄。所有野簿之記載，皆是自下而上，以便向前觀看時，野簿上之畫線適與路線之方向相符也。

第四圖表示一種最通用之野簿記載之方式。第一欄表示安置經緯儀之點。第二欄表示所測各點，內中各前視點皆須特別記明，前面附以⊙記號。其餘各中間點，如20, 40, 60, ……等樁號，因皆係固定之數，故不必記入，以省手續。惟遇有特別情形，如路線經過道路、橋樑、房屋等處時，須各加測一樁，即將此樁號記入，並於附記欄內註明。

第三欄表示複測兩次之偏角，須以2除之。四五兩欄各為觀測及更正之磁方位。野簿之右頁作為草描之用，所有沿途之溪流、

| 經緯點   | 前視               | 偏角           | 方位角       |           | 附記         |
|-------|------------------|--------------|-----------|-----------|------------|
|       |                  |              | 觀測        | 更正        |            |
| 4+072 | ⑤ 4+521<br>4+645 | 2 / 66°04' 右 | N 5°30'E  | N 3°38'E  | 石 橋<br>小 路 |
| 2+265 | ⑥ 4+072<br>2+368 | 2 / 24°18' 左 | N 29°30'W | N 29°24'W |            |
| 0+000 | ⑦ 2+265          | 2 / 34°30' 左 | N 17°15'W | N 17°15'W |            |

圖 四 第 四

溝渠、橋樑、道路、房屋等等皆應繪入，以資參考。野簿中間之一道紅線，即作為路線之中線，其方向則另用指針表明，指針表示子午線之方向。所有計算亦皆於右頁上為之。

距離測量——測經緯儀者既將角度觀測之後，於是指揮拉鍊者開始距離測量。拉前鍊者一手執花桿，一手握鋼尺之一端，沿路線向前進行。拉後鍊者握鋼尺之另一端，相候於路線之起點，並須注意鋼尺勿令起有捲摺扭結。前鍊者行至一整鍊之遠，轉身用兩手緊握花桿，直立於地上，由測經緯儀者經望遠鏡中將花桿對準在視線之上。欲左則用左手向左擺動。前欲右則用右手向右擺動。前

鍊者既將花桿對準在視線之上，於是後鍊者同時蹲下，將鍊尺拉緊。後鍊者將鍊尺之始端，對準在路線之起點。中鍊者則於鍊尺之20及40公尺處分別打以二號木樁，上面書明  $0+020$  及  $0+040$ 。中鍊者應攜帶充分木樁，並將樁號預先書明，以免延誤工作。至於鍊尺之終端，即50公尺之處，則暫插以鐵杆為記。於是繼續向前進行，依法作第二鍊之測量，惟此次則於鍊尺之10,30,及50公尺處，分別打以木樁，樁號為  $0+060$ ,  $0+080$ , 及  $0+100$ 。

在初測中，距離測量手續比較稍為簡單，每測一鍊，測經緯儀者只須將前鍊者之花桿對準一次即可。惟拉鍊者須動作靈敏，測量準確，不可使樁號及尺寸發生錯誤。如遇老練測夫，則測經緯儀者只須在路線中間，設置一二臨時點，插以花桿，拉鍊者即可依其肉眼之經驗，對此花桿描準，無須測經緯儀者多所指揮。蓋中間樁即令向左右發生數公分之偏差，並無若何關係。

在岡巒起伏之區域，向下坡測量時，望遠鏡視線若為山頭所障礙，無從瞄準，應於此山頭另行設置一臨時經緯點，將經緯儀移置此點，再繼續向前觀測。

握後旗者立在後視點，應聽測經緯儀者之指揮（用紅白兩旗為號），欲作後視，則將花桿對準在大樁之小釘上，否則應將花桿斜插地上，以免誤會。觀測未完畢，不可任意離開，須聽測經緯儀者之命令而行，而後者亦須有十分把握，覺後視點已無再用之必要，方可令前者離開，不可令其往返奔波。

再者，在山林叢密之區域，砍通線路亦係一種經驗之工作，而非一般工人所能盡曉。工人之有經驗者，能知何樹應砍，何樹無須。砍伐樹木，只須砍通一條線路，儘容拉鍊者之通過，並與視線毫無障礙爲度，此外雖一枝一葉亦無須動手。如是無目的之亂砍，將徒耗時間，無補於事。

### 16 縱斷面測量

中線組出發已有相當距離，中平組乃開始其縱斷面測量之工作。縱斷面測量一面須觀測各中線樁之高度，一面須設置水平點，以爲日後之用。所有各水平點及轉鏡點，皆應讀至最近一公厘，其餘各中線樁皆讀至最近一公分。

水平儀用普通短肥式或Y式皆可，其感應力亦不必過分敏銳，水平管每道刻度之曲度約爲 $20''$ 即能適用。如用此種器械觀測時，氣泡苟發生半道刻度之誤差，則在一百公尺之遠，讀數將發生四五公厘之誤差。水平尺多用自讀式，長四公尺。

縱斷面測量中最關重要之點，爲起首之水平點。該點乃一已知高度或假定高度之永久水平點，所有路線中各點之高度皆依之爲根據。如路線係就某已成路線展長，則老線左近必立有永久水平點，可供利用。如新線係由任一地點起始，則可用左近已知高度之固定點，或海關所立之水平點，或直接根據海平面。若皆不可能，可擇一固定之物，設置一點，假設其高度爲一百公尺，或其他便利之

數。

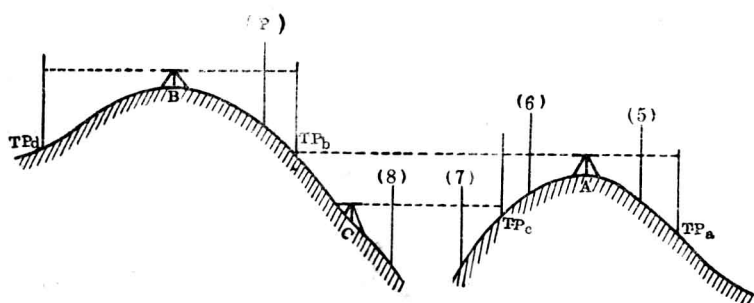
既求得起首之水平點，縱斷面測量於此可以開始。法將水平儀安置於路線起點之左近任何適宜之地，握尺者將水平尺立在起首之水平點，由測水平儀者求得一後視，（觀測時應將尺向前後緩緩擺動）。測水平儀者將所讀之數記入野簿中，仍複測一次，而後令握尺者向路線進行，依次觀讀沿線各樁之高度。約行至相當距離（普通在二三百公尺之間），選擇一適當之點作為轉鏡點，測水平儀者再仔細加以觀測。於是搬動儀器，繼續向前進行。觀測沿線各中間樁，應將水平尺放在樁旁地面之上，不可放在樁頂之上（每有測夫將尺放在樁頂上，乃是錯誤）。又地勢遇有突變之處，亦應加測一點以為參考。

在儀器每次安置中，視線最遠之距離不得過三百公尺。過此距離，應即設置一轉鏡點，將儀器向前移置。如在此距離以內，各點之高低相差甚大，此過高或過低之點，已非望遠鏡之視力所及，則須經過數次之移置，方能將各點測齊。凡遇有過低之點，如為數無多，可用一種「接尺法」，另用水平尺一根，接在原尺某點之上。因水平尺為四公尺，每次可接高一公尺五至一公尺八，於是尺長即可增至五公尺五至五公尺八。遇有狹而深之山谷，則谷底一二點可另用手攜水平儀按照普通方法，加以觀測，不必搬動水平儀。或逕由測夫將水平尺落至谷底，探其深度。

在岡巒起伏之區域作水平測量，測水平儀者應知臨機應變之



道，採一捷徑，不可拘泥成法，必將各樁依次觀測。如第五圖，路線



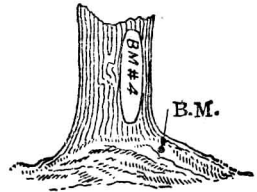
第 五 圖

經過兩個山嶺，測水平儀者既設置轉鏡點  $T.P_a$  之後，可將儀器移置於第一山頂 A 點，後視  $T.P_a$ 。於是前視第一山嶺之 (5)，(6) 兩樁，及其他視線所及之樁，如第二山嶺上有可及之樁，亦一併加以觀測。設置轉鏡點  $T.P_c$  並於第二山嶺上設置一轉鏡點  $T.P_b$ ，以為將來之用。移置儀器於 C 點，後視  $T.P_c$ ，前視 (7)，(8) 兩點。如山下尚有若干待測之點，可再設置一轉鏡點，繼續向下觀測，直待山下各點測完為度。於是將儀器移置第二山嶺之 B 點，後視  $T.P_b$ ，前視 (p) 樁及其他可及之樁。再設置一轉鏡點  $T.P_a$ ，而後繼續向前進行。如此，儀器移動之次數可減去一半。

測夫設置轉鏡點，宜用 (1) 隨帶之塔尺墊堅插在地上，(2) 堅固大石塊之尖點，上塗以紅綠粉為記，或 (3) 經緯點大樁之上。不可 (1) 任意將尺立在地上，(2) 擇一小石子，或 (3) 將尺立在中間點木樁之上。測夫設置轉鏡點，對測水平儀者所作之表勢，係將尺

頂向左右擺搖。測水平儀者欲測夫設置轉鏡點，則將 F 一手舉起，向左右擺搖。如轉鏡點係在下坡，務使望遠鏡盡力看至尺頂；如在上坡，務使之盡力看至尺底。但若視線已出乎水平尺之範圍以外，惟有另擇一新點。

每距約五百公尺之遠，應設置一永久水平點，與中線之距離，最少須在二十公尺以外，惟不得過一百公尺。此種水平點宜擇大塊山石，基碑，界石，以及任何永久建築物，用斧鑿成一尖點，塗以紅油。如無此種現成物料，但有大樹可以利用，可用斧將樹根砍平，釘以鐵帽釘，塗以紅油，另於樹幹上將樹皮括去，用紅油書明 B. M. (水平點之縮寫) 第幾號，如第六圖。若左近並無樹木亦無可利用，則惟有用



第六圖

用三英寸見方，三十英寸長之大木樁，深深打入地中，露出地面約二英寸，上釘以鐵帽釘。旁釘以護樁，書明 B. M. 之號數。所有水平點，設置之地點，與路線之方向，及與某樁號之距離，皆應分別記明於野簿上，例如“B. M. 第 11 號，高度 = 128.264 公尺，在山坡大石上，距樁號  $52 + 460 = 52$  公尺，左”。

凡路線經過溪河流域，應問明鄰近之老人歷年大水情形，或考查洪水之遺跡，記入野簿，以便將來設計橋樑，填高路基之參考。

水平儀簿之記載，雖有數種方式，但以第七圖所示為最適用。此式之優點在中間點與前視分列兩欄，易醒眉目。每頁之末，應求

| 測點    | 後視    | 器高      | 中間點  | 前視    | 高度      |
|-------|-------|---------|------|-------|---------|
| B.M.O | 2.675 | 129.125 |      |       | 126.450 |
| 0+000 |       |         | 0.46 |       | 128.665 |
| 0+020 |       |         | 0.72 |       | 128.405 |
| 0+040 |       |         | 1.36 |       | 127.765 |
| 0+060 |       |         | 1.12 |       | 128.005 |
| 0+080 |       |         | 0.87 |       | 128.255 |
| T.P.1 | 0.246 | 128.029 |      | 1.342 | 127.783 |
| 0+100 |       |         | 3.64 |       | 124.389 |
| 0+120 |       |         | 2.75 |       | 125.279 |
| 0+140 |       |         | 0.28 |       | 127.749 |
| T.P.2 |       |         |      | 2.763 | 125.266 |
| ~~~~~ |       |         |      |       |         |
| T.P.5 | 1.678 | 131.915 |      |       | 130.237 |
| 5+040 |       |         | 2.64 |       | 129.275 |
| B.M.1 |       |         |      | 3.789 | 128.126 |

第七圖

得所有後視之和與所有前視之和，將此兩和數之差，與高度欄之首尾兩數之差相較，觀其是否相符。如兩差數不符，則中間計算必有錯誤（每頁之末一測點，無論其是否為轉鏡點，其讀數皆應列入前視欄內。並須移至第二頁，作為後視之點，如下所示之例）。

## 第一頁

| 測點    | 後視    | 器高      | 中間點  | 前視                        | 高度      |
|-------|-------|---------|------|---------------------------|---------|
| B.M.8 | 3.124 | 145.840 |      |                           | 142.716 |
| 6+220 |       |         | 2.31 |                           | 143.530 |
| ~~~~~ |       |         |      |                           |         |
| 7+410 |       |         | 1.02 |                           | 132.372 |
| 7+400 |       |         |      | 2.410                     | 130.982 |
|       | 4.823 |         |      | 16.557<br>4.823<br>11.734 | 11.734  |

## 第二頁

| 測 點   | 後 視   | 器 高     | 中 間 點 | 前 視 | 高 度     |
|-------|-------|---------|-------|-----|---------|
| 7+460 | 2.410 | 138.392 |       |     | 130.982 |
| 7+480 |       |         | 1.47  |     | 131.922 |

各點高度之計算宜就地爲之，不可延至晚間歸來之後。每日收工時，並應設置一水平點，以爲翌日之用。

| 測 點   | 後 視           | 前 視          | 高 度            |
|-------|---------------|--------------|----------------|
| B.M.O | 2.358         |              | 126.450        |
| T.P.1 | 2.467         | 1.467        |                |
| T.P.2 | 3.508         | 2.765        |                |
| T.P.3 | 2.344         | 3.002        |                |
| B.M.2 |               | 1.765        | 128.128        |
|       | <u>10.677</u> | <u>8.999</u> | <u>126.450</u> |
|       | 1.678         |              | 1.678          |

## 第 八 圖

第八圖表示覆平用野簿記載之方式。因覆平只覆測中平組所設置各水平點之高度，而求其差數，無須顧問其他各中間點，故野簿上不列中間點一欄，且亦不必列器高一欄。法先求兩水平點間所有前視之和及所有後視之和，再求兩和數之差，將此差數與前一水平點之高度相加或相減（如後視之和太過前視之和，則相加；如前視之和太過後視之和，則相減），即得後一水平點之高度。

## 17 地形測量

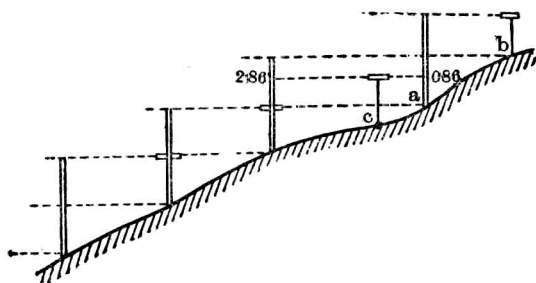
地形測量通常所用方法共有兩種：即手攜水平儀觀測法及視距法。前法以用於岡巒起伏之區域，地勢變化多端，高低相差甚大

者爲最宜。後法則以用於平野區域，地勢高低無甚變化，經緯儀經一次之安置，可將週圍一二百公尺以內地形變化之點，統行觀測者爲最宜。

(一)手攜水平儀觀測法——用方線架一，(係一木製十字架，四角各釘小釘一枚，對角互成正交)，插於擬測之中線樁上。另用花桿兩根，插在中線之兩端，相距約數樁之遠處。將方線架對準在所插花桿(用對角釘瞄準)。再用花桿兩根，藉方線架上其他兩對角釘之瞄準，插在中線橫面之兩端。於是沿此橫斷面開始地形測量。測夫二人，一持五尺桿一根(在英制中，桿長五英尺，故有此稱。在公制中，桿長一公尺五公寸)。將手攜水平儀嵌入桿頂圓孔之中。一握水平尺一根，長三公尺五公寸(在英制中，尺長十英尺，因等高線之間距多爲五英尺，再加桿長五英尺，適得十英尺。在公制中，等高線之間距爲二公尺，再加桿長一公尺五，故得如上數)。二人並各握皮尺之一端，先由中線樁向路線之一面進行，測至相當之距離，(依地勢情形而定，如地面平坦，則等高線相距必甚遠，宜少測數線。如地面陡斜，則宜多測數線，測地形者須用其判斷力決定之，不可拘泥於一定之格式)，而後再回轉至路線之另一面進行。

鐵路測量中所定等高線之間距多爲二公尺。欲測等高線，須先知各中線樁之高度，此可由中平組所測縱斷面中求得之。既知中線樁之高度，即可按下法進行，

命第九圖表示某中線樁(c)之橫斷面，(c)點之高度已測得



第九圖

爲 129.36 (只須讀至最近一公分)。若將五尺桿放在 (c) 點之上，則手攜水平儀之器高，將爲  $129.36 + 1.50 = 130.86$ 。故若將水平尺放在某點 (圖中之 a)，使讀數適爲 0.86，該點之高度將等於 130 公尺。握尺者即沿此垂直線進行，直待尺上之讀數等於 0.86。於是二人拉緊皮尺，測量該點與中線樁之距離。按此距離，在地形圖上求得一點，該點將在 130 公尺等高線上。握尺者仍留在該點，由握桿者再向坡上進行，直待手攜水平儀之視線適對準水平尺之頂，於是五尺桿所立之點，即在 132 尺等高線上 (如圖中之 b)。測量 a, b 兩點之水平距離。於是握尺者來至 b 點，握桿者再繼續向前進行。同樣，求得下坡之 128, 126, 124, …… 各等高線，其第一次水平尺之讀數應爲  $130.86 - 128.00 = 2.86$ 。

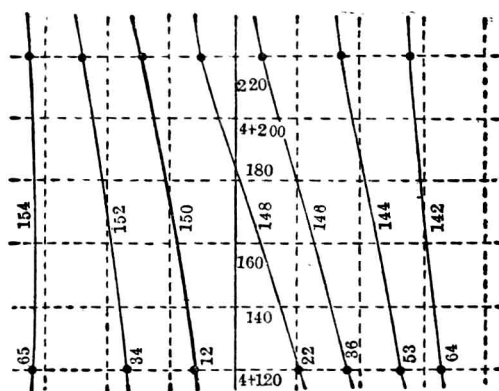
假若地面坡度甚是均一，則只用測量二三條等高線，其餘可用比例法類推。

地形測量由繪地形圖者負其責，應隨帶輕便地形板一塊，地形紙若干張，預就平面圖上將中線用墨水繪妥。地形紙釘在地形板

上，下面襯以方格紙（普通平面圖所用比例尺多為二千分之一，即一公分等於二十公尺，故方格紙上每一小格等於二公尺），作為比例尺之用。地形板可用繩帶繫之，懸在胸前。另備帆布袋一，將不用之地形紙藏起。彼應將所測各點隨時繪於地形圖上，而後參考實地情形，將高度相等之點連成等高線，遇有溪流、溝渠、房屋、等等，應即測其與中樁之距離，或於必要時，用懷中羅盤儀測其方位，而後將其分別繪於地形圖上。

描繪等高線應注意以下各項：

- (1) 等高線愈密近，表示地勢愈陡，愈疏遠，表示地勢愈平。
  - (2) 等高線無論在線上之任何點，常與該點最陡坡度成垂直，因之，所有山脊線及山谷線皆與等高線成正交。
  - (3) 等高線跨過山谷時，必先沿山谷之一邊向內進行，而後繞過谷道（與之成正交），達到另一邊，又轉而向外。
  - (4) 等高線不能直接橫跨一道水流，必須向上流繞轉至對岸。
  - (5) 兩條高度不相等之等高線絕不能互相交跨，否則該交點將有兩不同之高度，乃極不合理之事。
  - (6) 各線粗細務須勻稱，不可一段忽粗，一段忽細。
  - (7) 各線之高度宜分別註明（指對水平基面而言）。普通習慣並不必每線皆註以高度，可每隔十公尺加以註明。
  - (8) 每隔五線（即每十公尺之線）須特別繪以粗線以資醒目。
- 第十圖表示一種地形圖，中間一道黑線為中線，其他各黑線



第十圖

爲所求之等高線，方格虛線等於方格紙中之公分線，虛線旁數目字表示各點與中線之距離。

(二)視距法——此爲比較簡單迅速之方法（惟室內工作則無前法之易，因須用補插法，將所測各點間之各等高線一一補插進去也），但只宜於地勢平坦之地。法將經緯儀安置在中線樁上，而後就擬測之範圍以內，選定所有地勢發生變化之點，令測夫數人各握一水平尺，分別立在各點，觀測各點之視距距離，方位角，及垂直角。用視距距離改算表求得各點之高度。將各測點分別繪於圖上，再用補插法求得各等高線。用此種方法，亦能得到一準確之地形圖，足供初測之用。

作視距測量，並不需何種特別器械，在普通經緯儀望遠鏡中，皆附有一對視距線，與十字線同在一十字環中，分爲上下兩道，與橫十字線成平行，並在相等之距離。觀測時先將望遠鏡中之縱十



字線對準在水平尺上，將上止動螺絲扭緊。將下視距線對準在尺上之整尺數，再讀上視距線所指之尺數。兩數相減，即得尺上之間距（惟須注意中間一道橫十字線不可誤為視距線）。最後將橫十字線對準在尺上等於器高（即儀器之中心距地面之高度）之處，於是觀讀該點之方位角（多用全圓方位法），及縱分度圈上之垂直角。

| 測點     | 全圓方位    | 垂直角      | 距離         | 高度差   | 高度     |
|--------|---------|----------|------------|-------|--------|
| 不口+2.0 |         | H.I.=4.6 |            |       | 126.45 |
| a      | 32°40'  | +4°34'   | 55<br>54   | +4.37 | 130.82 |
| b      | 126°32' | -1°20'   | 37<br>36   | -0.86 | 125.59 |
| c      | 175°16' | +3°15'   | 119<br>128 | + .24 | 133.69 |

第 十 一 圖

視距測量簿之記載有如第十一圖。第一欄表示各測點，惟每一經緯點，皆另註於上面一列，特標以□記號，表示為視距測量點。該點之器高 H.I. 並須註明。第二、第三、第四三欄皆為觀測之數。惟第四欄中每點皆有兩數，下一數為觀測之數，上一數乃是糾正的水平距離，係用第四表將下一數加以糾正而得者。第五欄高度差係由第三第四兩欄用第四表計算而得。此高度差即為該點與經緯點之高度差，故若將此數與經緯點之高度相加或相減，（依其前面所表示之正（+）負（-）記號而定），即得第六欄之高度。例如 a 點之高度等於  $126.45 + 4.37 = 130.82$ 。

今且將第四表之應用法解釋於下：

| 測點 | 觀測尺數 | 觀測垂直角   | 計算之高度差 | 糾正的水平距離 |
|----|------|---------|--------|---------|
| 1  | .91  | -25°28' | -35.71 | 75      |
| 2  | 2.40 | +0°39'  | +2.74  | 241     |

上式中第二第三兩欄係觀測之數，第四第五兩欄係計算之數，例如欲得第一測點之高度差，由第四表，在標明 25° 之一欄內，對 28' 之一數為 38.82，此即等於尺上之讀數為一尺，或距離為 100 尺時應得之高度差。於是用觀測尺數 .91 加 .01 等於 92，乘此高度差，得

$$.92 \times 38.82 = 35.71$$

此即等於儀器之中心與第一測點所立水平尺之視距中心之高度差。又由第四表水平距離更正數中，在標明 000 與 100 兩列之間，及標明 25° 與 26° 兩欄之間推算得 91 尺及 25°28' 之水平距離更正數應為 17 尺。故糾正的水平距離應為

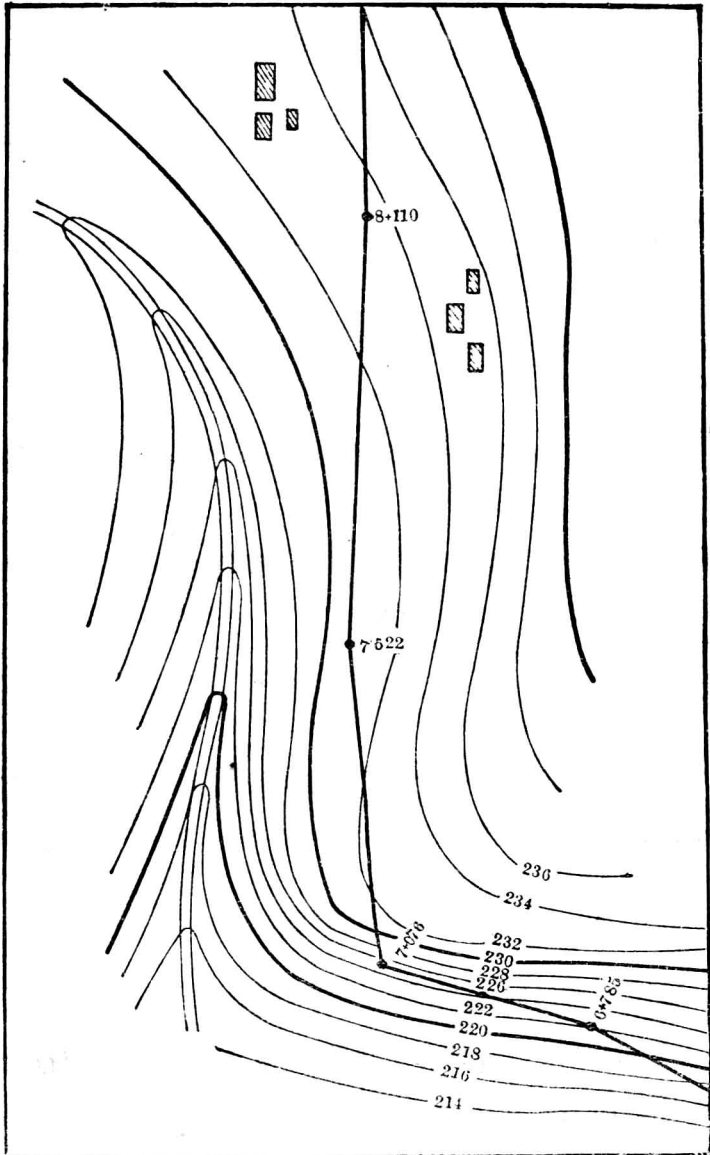
$$91 + 1 - 17 = 75 \text{ 尺。}$$

又第二測點之高度差 =  $2.41 \times 1.14 = 2.74$ 。

水平距離更正數，在 200 與 300 兩列之間，及 0° 與 1° 兩欄之間，只等於 0.1，可免算入，故糾正的水平距離 =  $240 + 1 = 241$  尺，

### 18 平面圖之描繪

平面圖之描繪，固為繪圖者之任務，但中線須由測經緯儀者繪之。因在鐵路測量中，中線為主要幹線，關係於全部圖形者至鉅，故描繪不可以不慎。



描繪中線多用經距及緯距法(詳見下),間有用正切法者,惟不能如前法之準確。測經緯儀者每晚歸來之後,應將所測中線用經緯距法加以計算,求得各測點之經距及緯距,而後繪之於圖。再將所繪各點用直線聯結之,註明各點之樁號,並將各中間樁用繪圖尺分割明白。繪圖者於是用玻璃紙將此中線加以透描。測地形者則攜之至野地作地形測量,繪成地形底圖。繪圖者復將此地形圖底蒙罩於平面圖紙上,下襯以複寫紙,將所測各地形線複描於圖紙上,而成一完全平面圖,如第十二圖所示。

經緯距乃兩個表示坐標距離之名詞。若有一對縱橫軸,凡與縱軸成平行之線,其距離即橫坐標,概稱為經距;凡與橫軸成平行之線,其距離,即縱坐標,概稱為緯距。按解析幾何學之原則

$$\text{某線之經距} = \text{線長} \times \text{該線方位角之正弦} \dots\dots\dots (1)$$

$$\text{某線之緯距} = \text{線長} \times \text{該線方位角之餘弦} \dots\dots\dots (2)$$

故如已知某線之長度及方位角,即可求得該線之經距及緯距。

因此,如有一羣經緯線,欲求其中任何兩點之相對位置,可按此原則,先求得各點之經緯距,於是所有在此兩點間諸經距之和,將表示甲點在乙點之東或西之距離;所有諸緯距之和,將表示甲點在乙點之南或北之距離。

描繪中線,先於圖紙上,以路線之起點為原點,繪一子午線及一東西向之線,在此兩線上,各按 400 英尺(400 公尺乃一便利之數,並非必用不可)之距離,分成若干點,就此等分點各繪一與其

他一線平行之線。於是平面圖紙上乃分成若干小方格，每一方格之縱橫距離各為 40 公尺。各方格線之稱謂，則按其與主軸之距離，經距或緯距，而定。例如向東之第一方格線，其經距為 400 公尺，第二線則為 800 公尺，第三線為 1200 公尺；向西之第一方格線其經距亦為 400 公尺，第二線亦為 800 公尺，不過所有向東之經距，其記號均為正(+)，所有向西之經距，其記號均為負(-)。同樣向南之第一方格線，其緯距為 400 公尺，第二線則為 800 公尺；向北之第一方格線，其緯距亦為 400 公尺，第二線亦為 800 公尺，不過所有向北之緯距，其記號均為正(+)，所有向南之緯距，其記號均為負(-)。各測點之位置，即按求得之總經距及總緯距，在此等小方格中求定之。茲且舉一例於下。

如第十三圖，ABCDE 為所測之中線，其測得之距離及方位角，有如附表中第二第三兩欄所示。今先按上述之(1)，(2)兩式，求得各測點之經緯距（方位是東，則經距為正，列在 E 字欄內，是西則為負，列在 W 字欄內；方位是南，則緯距為負，列在 S 字欄

| 測段 | 長度    | 方位角      | 經 距   |       | 緯 距   |       | 總 經 距        |       | 總 緯 距 |            |
|----|-------|----------|-------|-------|-------|-------|--------------|-------|-------|------------|
|    |       |          | E (+) | W (-) | N (+) | S (-) | E (+)        | W (-) | N (+) | S (-)      |
| AB | 15.6  | S51°14'E | 1213  | —     | —     | 974   | 4936<br>6149 | —     | —     | 704<br>270 |
| BC | 9.36  | S73°58'E | 899   | —     | —     | 258   | 7048         | —     | —     | 528        |
| CD | 14.72 | N78°59'E | 1445  | —     | 281   | —     | 8493         | —     | —     | 247        |
| DE | 15.4  | S40°45'E | 1010  | —     | —     | 1173  | 9503         | —     | —     | 1420       |

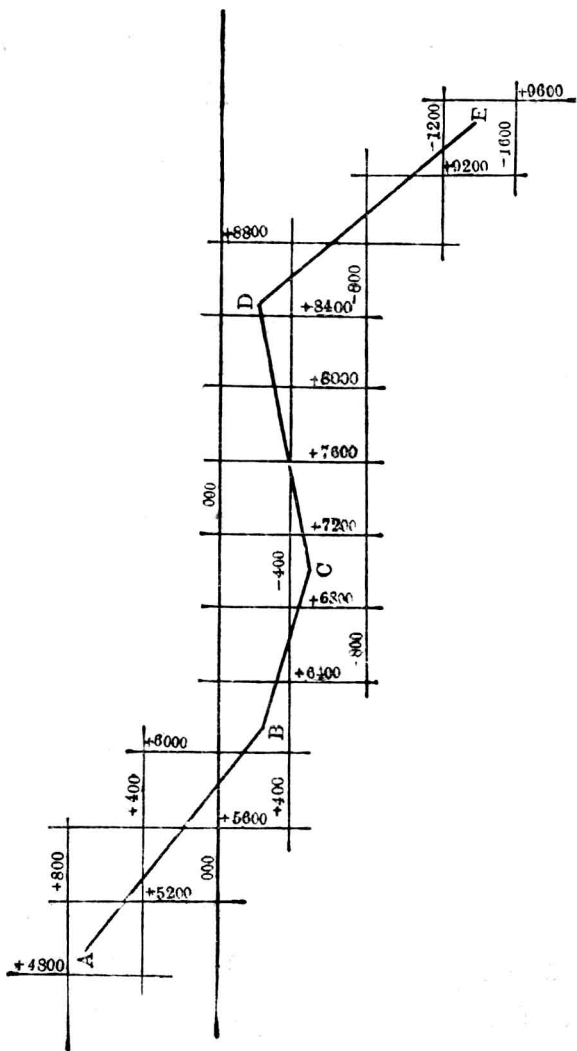


圖 三 十 第

內，是北則爲正，列在 N 字欄內。總之，方位之第一字(N 或 S)，定緯距之正負，方位之末一字(E 或 W)，定經距之正負)。將各數分別列在四五兩欄之內。而後依次求得各點之總經距及總緯距，(即

|            | 經 緯 距 之 計 算 |         |         |         |
|------------|-------------|---------|---------|---------|
| 緯距         | 974         | 258     | 281     | 1173    |
| log 緯距     | 2.98869     | 2.41250 | 2.44916 | 3.06919 |
| log cos 方位 | 9.79668     | 9.44122 | 9.28125 | 9.87912 |
| log 距離     | 3.19201     | 2.97128 | 3.16791 | 3.18977 |
| log sin 方位 | 9.89193     | 9.98277 | 9.99192 | 9.81475 |
| log 經距     | 3.08394     | 2.95405 | 3.15983 | 3.00452 |
| 經距         | 1213        | 899     | 1445    | 1010    |

|   | 總 經 緯 距 之 計 算 |       |
|---|---------------|-------|
| A | +4936         | +704  |
| B | +1213         | -974  |
|   | +6149         | -270  |
| C | +899          | -258  |
|   | +7048         | -528  |
| D | +1445         | +281  |
|   | +893          | -247  |
| E | +1010         | -1173 |
|   | +9503         | -1429 |

各經距之代數和及各緯距之代數和)列爲六七兩欄。因圖中之 A 點並非路線之起點，其總經距業已求得爲 +704，其總緯距爲 +4936，故計算其他各點之總經距及總緯距，即依以上兩數爲根據。

用經緯距描繪路線，有一最大優點：如其中有一線，偶因描繪

之不慎，發生誤差，則亦只對於該線單獨發生不準確之情形，與其他各線毫無關係。不似其他諸法，一有錯誤，將牽動全部圖形也。

平面圖上所用比例尺，普通多為二千分之一。因中線每樁之距離等於 20 公尺，如用二千分之一之比例尺，則繪圖尺上之一公分適等於一樁號。

平面圖上除中線及等高線以外，所有房屋、道路、溝渠、川河、等等皆應分別繪明。

圖紙宜用高貴材料，無伸縮情形，並能久經使用者。圖紙多成卷，用時不必裁開，不特描繪方便，且易於展閱保存。惟一卷完成後，應將最後一段之圖形複繪在第二卷之始端，俾能聯貫。

### 19 縱斷面圖之描繪

縱斷面圖係繪於一種特製方格紙上，紙之縱長為五公尺，按公厘畫分，每一小方格等於一公厘。圖上所用比例尺，其橫距離多為二千分之一，或四千分之一；縱距離普通多為二百分之一，即每公分等於二公尺。橫距離每至百尺之樁號均加註明，縱距離則註明其每十公尺之數。

描繪縱斷面圖為測水平儀者之任務。測覆平者先報野簿上各測點之樁號，而後讀其高度，對於各加樁尤須注意，因地勢之變化，多發生在此等地點。測中平者則就圖上表示各該樁號之一道縱線上，求得各該點之高度，繪以細點，而後用直線聯結之。圖之方向多



自左至右，爲便於展閱也。所有沿路各河流之最高最低水位，皆應用虛線表明，以便定線工程司規定坡度線，不致落在最高水位之下。

每隔三五日，定線工程司應將所繪之圖加以審查，觀其描繪有無錯誤，及所測路線是否適宜。定線工程司規定坡度，係就縱斷面圖上爲之。取黑線一條，假設爲坡度線，就圖上上下下移動，求得一最適宜之坡度，務使挖土之部分能與填土之部分互相調和，而後沿此黑線繪一直線。如覺所擇路線，不能得一適宜之坡度，應立即重測一比較線以資比較，不可遲疑莫決。

## 20 初測應注意之事項

(1) 初測目的在測量所擬路線或比較線之水平、地形、及里程，以資選定中線。

(2) 測量隊之任務包含測量方向、水平、地形及繪圖。方向之選定由隊長擔任之。

(3) 測量長度用公尺計算，以至公分爲限。

(4) 路線坡度以百分之幾表示之，最大坡度以百分之一爲限（間有規定爲1.5%者，此係必不得已之舉不可引爲常例）。

(5) 中線每二十公尺（間有採用三十公尺者，英制爲一百英尺），置二號樁一個，遇方向轉變之處，置一號樁一個。

(6) 水平基點約半公里至一公里間設置一個，須取天然物或建築物之固定無變動者利用之。如不得其選，可用臨時木樁，或洋

灰樁，並須記明 B.M. 第幾號及高度。

(7) 縱斷面水平測量依中線樁測之。

(8) 覆平與中平測量之誤差，對於一公里之往復，不得過五公厘。

(9) 地形測量之範圍，自中線向左右至少須一百公尺以外，於左右二三十公尺以內尤須詳細。

(10) 地形測量應記明範圍內之山嶺、河流及其流向、池沼、道路、溝渠、菜園、田地、房屋、橋樑、墓地、森林等項。

(11) 等高線之間距定為二公尺。

(12) 凡路線兩旁如有障礙物，古蹟，以及經過山嶺過峻，河面過闊，必須繞避者，應測其他可以繞讓之路線。

(13) 測量中如查得有二線以上，均有經過之價值者，應一併測量，作為此較線以資選擇。

## 第三章 定測

### 21 最終路線之擇定

定測乃初測更進一步之精細工作，亦即鐵路測量中最後一步之工作。

初測目的係欲由中線測量及地形測量繪成一平面圖，由水準測量繪成一縱斷面圖。定測目的係欲由此種平面圖及縱斷面圖上擇定一最終路線，再用定線樁施之於實地，以爲日後施工之標準。同時並測其縱斷面及橫斷面，以便計算土方之數量。

鐵路路線不能自始至終常成一直線，須用若干方向不同之直線組成之。在此等直線之間，又特用一種有規則的曲線聯絡之，其方向緩緩變更。定測工作即欲設置此等直線與曲線。

定測中最終路線之擇定，有兩種方法可用：

第一法——定線工程司用初測平面圖及縱斷面圖，作爲一種參考資料，由圖上觀察最終路線，應取之大概方向，而後仍按初測方法，就實地設置若干直線樁。至於直線之間，用曲線聯絡之部分則留至將來施工時補測之。此種方法，完全要依定線工程司之豐富經驗，銳利目光，雖有時能得到完滿之結果，但終非一妥善方法。因有時在崎嶇山路之中，路線只須向左右移動數尺，可將土方

減去不少數量。如非有經驗之工程司，每不易察出此種情形也。此種方法又可稱爲「實地定線法」，現時已甚少用之者。

第二法——完全依初測平面圖及縱斷面圖爲根據，尤注重圖上之等高線。先將應採路線，在圖上設計妥當，所有直線之方向，曲線及其角度，路線之坡度等等，皆分別註明，實測時即依此進行。此種方法，稱爲「紙上定線法」，乃爲一般所採用。

## 22 紙上定線

紙上定線，須先於平面圖上繪一試驗線，而後求此試驗線上各樁與等高線相交之點。依各交點之高度，反繪成一縱斷面圖。由此縱斷面圖上，規定路線應取之坡度。故定線工程司在圖上選擇路線，對於等高線須有充分研究，或將路線置在初測線之左，或在其右，一視地形而定，務期得到一適當坡度。

規定坡度，應注意(1)路線之「管馭點」，即路線中之最低處，如河流，及最高處如山脊，務使挖土與填土之總數量爲一最小數。(2)「曲線補償率」。因火車行駛於曲線上，車輪常受有摩擦力，假若是在坡度上，即等於將坡度加大。故若向上坡道行駛，機車之牽引力更將減少。補救之法，係依曲線之曲度比率，將坡度減少一個成數。此成數即稱爲「曲度補償率」。例如曲度補償率規定爲每度0.03%，則在 $4^\circ$ 曲線上，將爲0.12%，在 $5^\circ$ 曲線上，將爲0.15%。易言之，若在直線上坡度本可採用0.8%者，在 $4^\circ$ 曲線上，則只能採

用 0.68%；在  $5^\circ$  曲線上，只能採用 0.65%。(3) 最高水位。路線兩旁之洩水問題亦關重要。凡經過平野之地時，應仔細調查歷年最高水位，務使路基在最高水位以上約一二公尺，以免將來洪水時，路基遭受浸圯。(4) 挖土處之路基，若長度超過一百公尺，宜在一坡度上，以便兩旁溝渠之水易於宣洩。此坡度最小須為 0.2%。(5) 車站不宜設在坡度上，應在水平線上，俾車輛進出車站，易於開動停止。

紙上定線，並非一次即可成功，有時因不能得到適宜坡度，須再將路線向左右移動，而後另繪一縱斷面圖，重新規定坡度。如此經過數次更改，方能得到一滿意之結果。

路線雖經在紙上擇定，有時在實地上因某項問題，仍須稍加變更，不能完全依照擬定路線。例如路線沿山坡而行，因坡下須建築擋土牆工程困難，不甚適用；又如路線經過某河流，預計建一橋樑，但若將路線向一旁移動若干尺，則可稍費土工，將河流更改方向，免建橋樑，而此更改河流之費較建築橋樑之費所省實多，且將來養路又比較容易。遇有以上情形，自以將路線稍加變更爲宜。

### 23 測量隊之組織及任務

定測隊之組織及任務與初測隊相仿，亦有一經緯儀組，擔任中線之測定；一水平儀組，擔任縱斷面之測定；一橫斷面組，擔任橫斷面之測定。

(一)經緯儀組除測定直線之外，並須設置曲線。在未設置曲線之先，須將曲線起點及終點之位置算出，而後方能進行測量，故其工作非常煩難。普通多有一人爲之助，擔任記載野簿，計算曲線之工作，使前者可專力於經緯儀之觀測，以便增加工作速率。

中線測量，除各正樁例應測定外，所有地形崎嶇不平之處，對於土方之數量甚有關係者，皆應分別添設加樁。此乃比初測較爲複雜之事。

(二)水平組之工作並不比初測複雜，只緊隨經緯儀組之後，觀測各正樁及加樁之高度。因在初測時已經於相當距離設有水平基點。故此次只須加以覆測，以資核對而已。不過遇有水平基點與新路綫相距甚近者，將來施工時，難免不遭覆滅，宜於此時另設一點。

測水平儀者每晚仍須按當日所測各樁，製成一縱斷面圖，以便定線工程司對於路綫應取之坡度，作一最後決定。

定測縱斷面圖與初測者完全相同，不過較多以下數項：

地面高度，路基高度，挖土深度及填土高度；

曲線之起點及終點，曲線之曲度及角度，是向右抑向左彎曲；坡度之大小；垂曲線之長度；橋樑溝渠之位置，種類，及長度；B. M. 之地點，以上數項皆須分別註明。第十四圖表示一部分定測縱斷面圖。

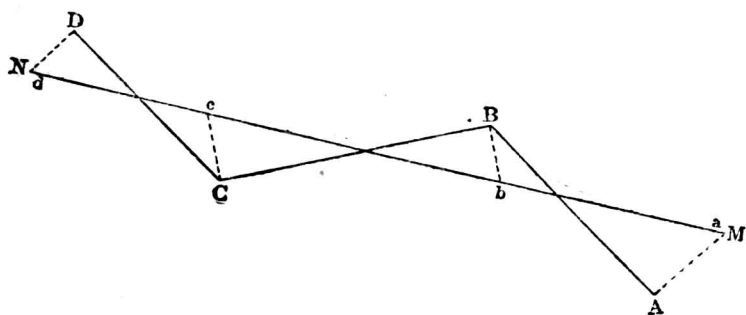
(三)橫斷面組所用器械及測量方法，與初測中之地形測量大約相同，將於下節詳細說明之。

## 24 中線測量

定測中之路線係由紙上設定，而後施之於實地者，故實測時完全依其在紙上之位置而定。此新定之線雖間或仍用初測路線中之一部分，但大體則常與原線成交跨之勢。而且在定測中，常有用一條甚長之直線，代替初測中若干條折線者。因此，在未施測之先，宜在紙上求得定測線與初測線之相對位置，而後依此位置實地測量之。

欲求定測線與初測線之相對位置，多用一種支距法如下：

如第十五圖假設  $A B C D$  表示一部分初測線， $M N$  表示定測



第 十 五 圖

線。由  $A$  點作一  $AB$  之垂直線  $Aa$ ，使交  $MN$  於  $a$  點。同樣，由  $B$ ， $C$ ，及  $D$  各作  $BC$  及  $CD$  之垂直線  $Bb$ ， $Cc$  及  $Dd$ ，使各交  $MN$  於  $b$ ， $c$ ，及  $d$ 。在圖上用比例尺量得  $Aa$ ， $Bb$ ， $Cc$ ，及  $Dd$  等距離。於是若在實地上按照量得之距離，測定  $Aa$  及  $Bb$  兩支距，即可設定

M N 直線，至於 C c 及 D d 兩支距，則可用以核對測量有無錯誤。因 a, b, c, d 四點按理必在同一直線上，若實測時成一曲折之線，則必紙上之量算，或實地之測量，發生錯誤，須加以相當之更正。

故作中線測量，第一步，須先將經緯儀安置在初測線之經緯點上，求得第一支距。再移置儀器於下一經緯點，求得第二支距。如此，可求得定測中之第一直線（所有 a, b 等點皆須打入一號木樁，並加以註明）。同樣，再求得定測中之第二，第三等直線。於是將儀器分別安置在定測第一直線上之 a 或 b 點，及第二，第三等直線上之其他各點，將各直線分別延長，求得各該線之各個交點。此等交點乃是定測中最關重要之點，所有直線及曲線之設置，皆以之為根據。

第二步，再將儀器安置在起點，以求得之第一交點為前視，按照普通方法，設置各中間樁，直至第一交點為止。

第三步，將儀器安置在第一交點，按照後面所述單曲線實地測量法，設置第一曲線，而後再繼續設置第二直線。

按用此種方法設置之直線，其中難免無發生誤差之處。因用比例尺在紙上量得之支距，其尺寸未必十分準確。但各支距只與本直線發生關係；與其他各直線則絲毫無關。故無論任何直線，若與圖上有不符之處，其誤差亦儘限於本線，與其他各直線並不發生關係。

定測係就初測平面圖上設定路線，故並不用再繪具平面圖，儘於初測圖上，用紅黑水將各定測之直線繪明。各直線之間另用曲線

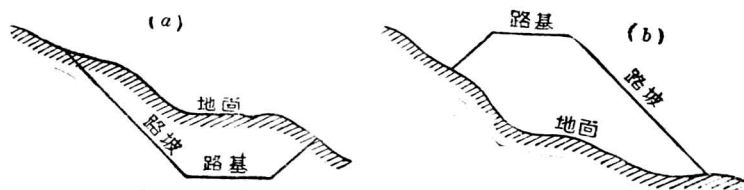


聯結之，並註明各直線交點 (P. I.) 之號數；各曲線起點 (B. C.) 及終點 (E. C.) 之樁號，曲線之角度 (I)，半徑 (R)，及長度 (C.L.)；切線之長度 (T)。第十六圖表示一部分鐵路測量平面圖 其中實線表示定測線，虛線表示初測線。

### 25 橫斷面測量

橫斷面測量之作用，係欲求得任一點之地面實在形勢，用以計算填土或挖土之土方。

所謂橫斷面者，乃一與中線成垂直之平面，其邊緣為路基，兩旁路坡，以及原有地面，如第十七圖。此橫斷面中與路基及兩旁路坡



第十七圖

相交之處，乃是三條直線，惟與原有地面相交之處，則為一不規則之線，而此不規則之程度，則視地勢如何而定。遇有平坦之地面，可假設其為一直線，有時並可假設為一水平線；遇有崎嶇不平之地面，則假設其為若干直線所組成，所有各直線之交點，稱為中間點即為地勢發生變化之處。作橫斷面測量，即欲求得此等中間點之高度。故橫斷面測量之精度，實依中間點之數量而定，中間點取得愈

多，則結果愈精確。

橫斷面測量之方法及所用之器械，與初測中之地形測量大約相同。法先於縱斷面圖上，求得某號中心樁之地面高度及路基高度，於是距離  $d$  可以算得（如路基在地面之上，則路基高 - 地面高 = 填土若干尺；如路基在地面之下，則地面高 - 路基高 = 挖土若干尺）。

將五尺桿立在中心樁上，則手攜水平儀之器高  $H. I.$  等於

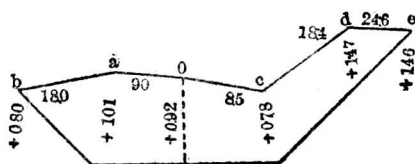
$$\text{地面高} + 1.5 \text{ 公尺}$$

再沿地面之一邊，將水平尺立在最近一中間點，觀測其讀數。於是該點之高度等於

$$H. I. - \text{讀數}$$

由此高度可以求得該點應挖或應填之尺數。如製水平尺時，能將尺上 1.5 公尺之處作為 0 點，由此往上再按尺寸畫分，則觀讀時可免加減 1.5 公尺之勞。試舉一例如下。

假如某樁之地面高為 324.15，路基高為 323.23，如第十八圖。



第十八圖

此表示該點為一挖土之處，其應挖之深度

$$d = 324.15 - 323.23 = 0.92 \text{ 公尺。}$$

手攜水平儀在中心樁之 H. I. =  $324.15 + 1.50 = 325.65$ 。

令水平尺在 a 點之讀數為 1.41，於是 a 點之高度為

$$325.65 - 1.41 = 324.24$$

$$324.24 - 323.23 = 1.01$$

即為 a 點應挖之深度。所有讀數只須讀至最近一公分為止。至於該點與中心樁之距離，則用皮尺測量，一如地形測量中所用之方法。

第一中間點測完之後，其他各點可依法進行。惟向坡上測量，遇有中間點之地面高出手攜水平儀之上時，可將水平尺立在中心樁上將五尺桿立在欲測之點，反轉觀測。於是

$$\text{該點之高度} = \text{中心樁之高度} + \text{讀數} - 1.50$$

用手攜水平儀作橫斷面測量，乃最簡捷之法，尤以對於地面各點之高度相差過大之處，如用普通水平儀觀測，則移動儀器甚費手續，如用手攜水平儀，則移動既輕而易舉，且不用仔細安置。而且用手攜水平儀測量所得結果，若就計算橫斷面之土方而言，亦堪稱精準也。但如地勢比較平坦，各點之高度相差並不甚大，則用普通水平儀測量亦甚便利。其法如下：

將儀器安置在任一點，務使視線高出橫斷面上之任何點。將水平尺立在中心樁上，觀其讀數，求得器高

$$\text{H. I.} = \text{中心樁之高度} + \text{讀數}$$

再將水平尺依次立在各中間點，觀其讀數，求得各點之高度

$$\text{高度} = \text{H. I.} - \text{讀數}$$

總之，凡橫斷面之各點，能經儀器之一次安置，即可全行觀測者，則以用普通水平儀為宜，因手攜水平儀之視力不足，距離過遠之點將不能觀視清楚。如地勢變化甚大，儀器須經數次之安置者，則以用手攜水平儀為宜。

在橫斷面簿中，記載各點之高度及距離，另有一種方式，係先將各點與中心樁之距離，依次分別記載於兩邊。在此等數目下面，各繪橫線一道，橫線之下再分別記載各點應挖或應填之數。例如在第十八圖中，b, a, o, c, d, e各點記載之方式，將為

|                      |                     |       |                     |                      |                      |
|----------------------|---------------------|-------|---------------------|----------------------|----------------------|
| (b)                  | (a)                 | (o)   | (c)                 | (d)                  | (e)                  |
| $\frac{18.0}{+0.80}$ | $\frac{9.0}{+1.01}$ | +0.92 | $\frac{8.5}{+0.78}$ | $\frac{18.4}{+1.47}$ | $\frac{24.6}{+1.46}$ |

意即中心樁(o)點應挖 0.92 公尺；(a) 點距中心樁為 9 公尺，其應挖之深度為 1.01 公尺，餘倣此。

普通表示挖土之記號，係於應挖數之前加一(+)號。表示填土之記號，係於應填數之前加一(-)號。

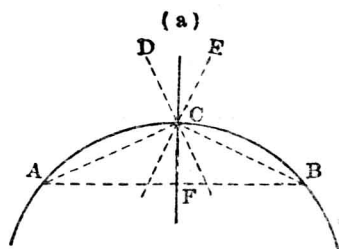
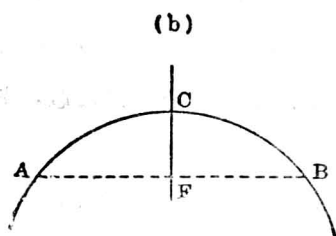
另有一種記載之方式，亦常有人應用者，係將各點與中心樁之距離，寫在橫線之下，橫線之上並不寫各點應挖或應填之數，只寫各點前一點高或低若干尺之數。例如在第十八圖中，各點之記載，按上述之方式，將為

|                      |                     |      |                     |                      |                      |
|----------------------|---------------------|------|---------------------|----------------------|----------------------|
| (b)                  | (a)                 | (o)  | (c)                 | (d)                  | (e)                  |
| $\frac{-0.21}{18.0}$ | $\frac{+0.09}{9.0}$ | 0.00 | $\frac{-0.14}{8.5}$ | $\frac{+0.69}{18.4}$ | $\frac{-0.01}{24.6}$ |

意即 (a) 點較中心樁高 0.09 公尺；(b) 點較 (a) 點低 0.21 公尺；(c) 點較中心樁低 0.14 公尺；(d) 點較 (c) 點高 0.69 公尺；又 (e) 點較 (d) 點低 0.01 公尺。所有 (+), (-) 記號在此處並非表示挖土及填土，乃表示較前一點高或低之意思，不可誤會（此處所以將距離寫在橫線之下面者，即欲表示其與上一方式意義之區別）

以上兩種記載法，各有其優劣之點。第一式之優點為繪圖非常便利：只須先繪一底線作為路基，各點即可按其應填或應挖之數一一繪出。其劣點則為在野地上，一面須觀測其高度，一面並須將其應填或應挖之數，由讀數中算出，如有誤算，不易查考。並且觀測時必先求得中心樁之高度  $d$ 。第二式之優點為無須先求得中心樁之高度  $d$ ，即可開始觀測，記載亦非常方便，且無誤算之病。其劣點則為繪圖時須根據前一點，方能求得該點之高低，遇有零數尤為費事。

在曲線上作橫斷面測量，因前後各樁與本樁之方向各不相同，故「方線」亦成一重要問題。如第十九圖之 (a) 命 A, C, B, 為曲線上



第十 九 圖

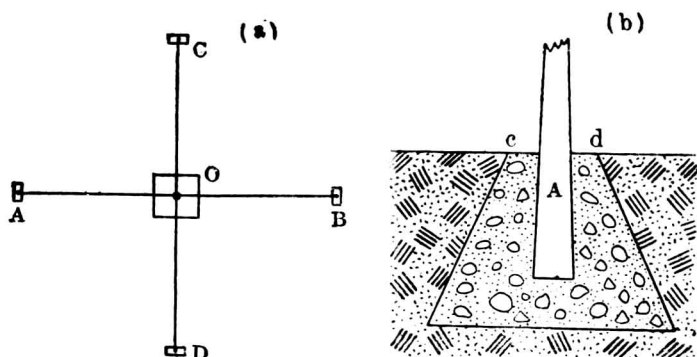
之鄰近三點，其距離相等。今欲求 C 點之橫斷面。若依 A 點為標準，用方線架方成 CD 線，則 CD 雖與 CA 線成正交，但並非垂直於曲線。同樣，若依 B 點為標準，方成 CE 線，則 CE 雖與 CB 線成正交，仍非垂直於曲線。惟有就 CD, CE 兩線之間求一分中線 CF，方與曲線成垂直。

另有一法，如第十九圖之 (b)，連結 A, B 兩點，求得 AB 線之分中點 F。於是 CF 線將與曲線成垂直，測量 C 點之橫斷面，即可沿 CF 線進行。

### 26 永久樁之設置

定測所打之木樁，儘為臨時性質。若定測之後，未能及時興工，則所打臨時木樁日久必多遺失，至興工時欲用為根據已不可能，苟仍按定測圖重新設置，又屬費事良多。為慎重起見，特於定測之後，將所有主要點皆易以永久樁。此等主要點為各直線之交點 (P. I.)；曲線之起點 (B. C.) (亦即前一直線之終點)；曲線之終點 (E. C.) (亦即後一直線之起點)。有此三點，無論為直線抑曲線，皆可重新設定。

永久樁多用石料或洋灰，約十公分見方，六十公分長。埋設永久樁之法，係於原樁之四周先設置四個對角樁，如第二十圖之 (a)。再用線繩兩根，就對角樁上測定對角線 AB 及 CD，使相交於原樁上之釘眼 O，並各就 A, B, C, D 四點釘以釘眼。於是將原樁拔去，將永久樁埋入，下用洋灰混凝土為基礎。如第二十圖之 (b)，A 表



第 二 十 圖

示永久樁， $cd$  表示混凝土基礎。復用線繩就  $A, B, C, D$  四點牽成對角線  $AB$  及  $CD$ 。於是兩線之交點  $O$  必仍與原有經緯點相吻合

## 27 洩水面積

在定線測量中，尚有兩個問題，亦甚關重要，其一為洩水面積，其二為細部測定。茲且分述於下。

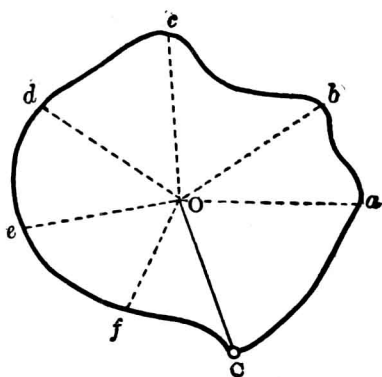
鐵路沿線遇有溝渠之地，必須安設水管或涵洞，以資宣洩。水管或涵洞之大小，須依上流之洩水面積而定。

凡雨水流落在地面上，必順傾斜之地勢，各向下流尋其宣洩之路，匯聚於溝渠之內，再由各溝渠歸宗於江河。此各個溝渠所承受之一部分雨水流落之面積，即稱為該溝渠之洩水面積。

洩水面積在平坦之地，範圍比較廣大，測定比較困難。但因地勢平坦，則宣洩緩慢，雖經大雨之後，不致一時全行擁流於溝渠之

內，故溝渠大小之規定亦比較容易。惟在岡巒起伏之地，地勢陡斜，不易停水，一經大雨之後，立即向下奔騰，溝渠必備有充分之面積，容其宣洩，勿使停滯。是以洩水面積之測定，在山嶺之區，尤關重要。但在山嶺之區，因有山脊線及山谷線之分，凡雨水流落在山脊之左面者，必歸入其左面之山谷中，雨水流落在山脊之右面者，必歸入其右面之山谷中。故測定洩水面積，只須就各山谷所承受各山脊線之範圍求之。

測定洩水面積多用視距法。如第二十一圖，C 表示路線上水管或涵洞所在之地，實線表示各山脊線之範圍。將儀器安置於此範圍以內之適中地點如 O，命測夫立水平尺於各山脊線上，如 a, b, c, d, e, f 等點，觀測其角度及距離。而後按照比例尺繪之於圖紙上，用面積計算器求得其面積。



第二十一圖

計算洩水面積，欲求一確當之公式實不可能。因雨水流落在地面上之後，常有種種原因，影響於其向下排洩之量：(1)地勢傾斜之程度，(2)雨水向地下浸入之程度，(3)草莽樹林常有停蓄水流之處，及(4)其他不可知之原因。故計算時只能依賴實地之觀察，應用一種純依經驗的公式。如左近有現成橋樑涵洞，應利用為參考



之資料，歷年大水之痕跡，亦為一有力之證據。

純依經驗的公式共有數種之多，茲且擇其中最通用之兩種述之於下：

(1) 邁爾氏公式 Myer's formula

$$a = C\sqrt{A}$$

其中  $a$  = 水管或涵洞之面積，以平方英尺計。

$A$  = 洩水面積，以英畝計。

$C$  = 一常數，其值自平野之地約為 1 至山嶺之區約為 4°

(2) 塔爾波公式 Talbot's formula

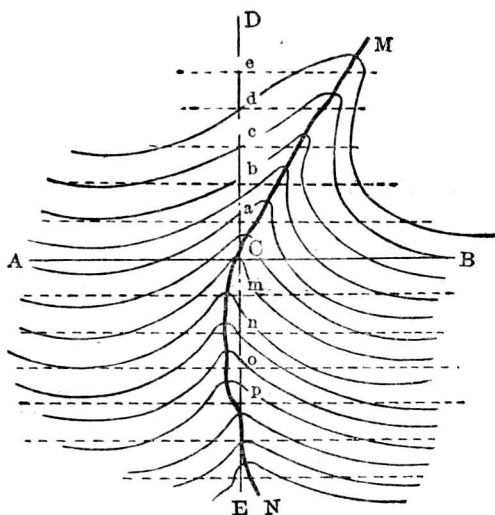
$$a = c\sqrt[4]{A^3}$$

在山嶺之區， $c$  之值約自  $\frac{2}{3}$  至 1；在地勢起伏之野地，常受冰雪之患者， $c$  之值約為  $\frac{1}{3}$ ；在平野之地，則將  $c$  之值遞減至  $\frac{1}{5}$  或  $\frac{1}{6}$  亦可。

## 28 細部測定

沿線各山谷常曲折變化多端，且其形勢各不相同，安設水管或涵洞，應與路線成正交或成斜交。絕不能順山溝之勢而亦左右曲折。因之，山溝常有某部分須加開挖，俾成一順直之水路者，而此應加開挖之土方，須先施以細部測定，方能加以計算。再者，水管或涵洞究應取何位置，亦須先有細部測定，而後方能決定也。

第二十二圖表示一種細部測定。A B 表示路線。M C N 表示



第 二 二 圖

山谷線。C 爲谷心之中線樁。D C E 爲擬建之涵洞。其中 a-d 一部分，因不在山谷線之中，須加開挖。計算開挖之土方，則用 a-d 線間之等高線求之。

細部測定係用手攜水平儀或普通水平儀，按照地形測量法進行。因此種工作之目的，係欲求山谷之詳細形勢，故等高線之間距多爲一公尺，所用比例尺多爲四百分之一。法先就谷心之中線樁 C，如圖，用方線架作一與中線 A B 成垂直之線 D C E。於此垂直線上，上下每隔四五公尺之距離各打一臨時樁，如 a, b, c, d, m, n, o, p 等點。再就此等分點，用方線架各設一與 D C E 成正交之線，如圖中所示之虛線。而後就此等方線以中線樁之測得高度爲根據，測定

各等高線。

### 29 定測應注意之事項

(1) 定測目的在測量擬定路線之水平，地形，及里程，以資規劃工程概算，而備敷線施工。

(2) 曲線半徑之大小及線路之坡度，皆由隊長在平面圖及縱斷面圖上規定之。

(3) 曲線半徑不得小過二百三十公尺(我國定制)，或曲度不得大過  $5^\circ$ 。

(4) 中線之直線區間，每二十公尺(或三十公尺，英制為一百英尺)打二號樁一個。遇地形複雜不平處，得添置樁號，交角點置一號樁一個。曲線起點及終點各設一號樁一個，並註明 B.C. 或 E.C. 及里程。轉鏡點(指經緯儀用)置一號樁一個，並註明 T. P. 字樣。

(5) 縱斷面水平測量，除正樁例應觀測外，所有地形複雜不平處添置之加樁，亦應分別觀測。遇有河流，應查明其歷年最高水位。

(6) 橫斷面測量之範圍，自中線向左右各須三十公尺至六十公尺，依擬定填挖之高度而定。惟一二十公尺以內，須詳細測量。如遇河流道路，將來必須設防護工程，或與路線接近之市街村落，預定設站等處，須酌量增廣其範圍。

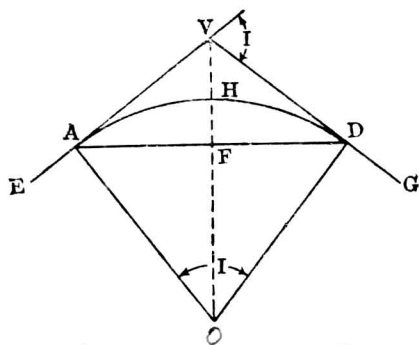
(7) 橫斷面測量須察地勢變化之簡複，而定測點之詳略疏密，務期將來計算土方時，得有正確便利之依據。

(8)測量中應隨地調查地質情形，如石地，土地，砂地，濕地，如遇有擬開挖之山地須加鑽探，考察其土質係硬石，軟石，抑是硬土。

## 第四章 單曲線 (simple curves)

### 30 單曲線各部分之解釋

鐵路路線中各彎曲部分皆為規則的曲線，其中最常用之一種為單曲線。所謂單曲線者，即其形式為一圓弧。其各部分之解釋，有如第二十三圖。A H D 表示一單曲線，路線係由 A 至 D。



第 二 三 圖

切線——E A 及 D G 兩線稱為「切線」(tangent)。

頂點——若將 E A 及 D G 兩線延長，使相交於一點 V。此 V 點即稱為「頂點」(vertex)。

曲線起點及終點——由切線入曲線之點，例如圖中之 A，稱為「曲線起點」，(beginning of curve)，普通多以 B. C. 代表之，亦有用 P. C. 代表者，意為「曲線點」(point of curvature)；由曲線入切線之點，例如圖中之 D，稱為「曲線終點」(end of curve)，普通多以 E. C. 代表之，亦有用 P. T. 代表者，意為「切線點」(point of tangency)。

切線距——由頂點 V 至 B.C. 或 E.C. 之距離, 如 VA 或 VD, 稱爲「切線距」, T, (tangent distance)。

外距——由頂點至曲線中點 H 之距離, 稱爲「外距」, E, (external distance)。

中長——由弦線 AD (chord) 之中點 F 至曲線中點 H 之距離, 稱爲「中長」, M, (middle ordinate)。

半徑——圓弧之半徑 OA 即爲曲線之「半徑」, R, (radius)。

中心角——兩切線相交之外角, 即等於曲線之「中心角」I, (intersection angle)。

長弦——弦線 AD 稱爲「長弦」C' (long chord)。

由簡單幾何學及三角學關係, 可得以下幾個公式:

如第二十四圖。

$$AOV = VOD = \frac{I}{2}$$

$$AO = OD = R$$

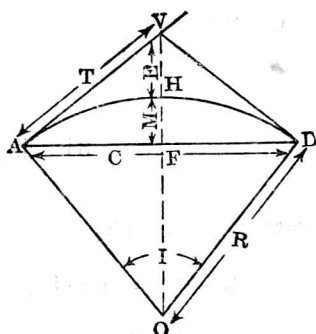
$$AV = VD = T$$

$$VH = E$$

$$HF = M$$

$$AD = C$$

於是



第二十四圖

$$\frac{AV}{AO} = \tan AOV$$

$$T = R \tan \frac{I}{2}, \text{ 或 } \tan \frac{I}{2} = \frac{T}{R} \dots\dots\dots (1)$$

$$\text{又 } HV = OV - OH = OV - OA = \frac{OA}{\cos \frac{I}{2}} - OA$$

$$= OA(\sec \frac{I}{2} - 1) = OA \operatorname{exsec} \frac{I}{2}$$

$$E = R \operatorname{exsec} \frac{I}{2}, \text{ 或 } \operatorname{exsec} \frac{I}{2} = \frac{E}{R} \dots\dots\dots (2)$$

$$\text{又 } FH = OH - OF = OA - OA \cos \frac{I}{2} = OA \operatorname{vers} \frac{I}{2}$$

$$M = R \operatorname{vers} \frac{I}{2}, \text{ 或 } \operatorname{vers} \frac{I}{2} = \frac{M}{R} \dots\dots\dots (3)$$

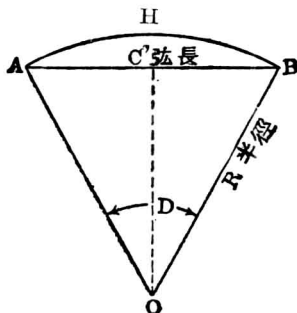
$$\text{又 } AD = 2AF = 2OA \sin \frac{I}{2}$$

$$C = 2R \sin \frac{I}{2}, \text{ 或 } \sin \frac{I}{2} = \frac{C}{2R} \dots\dots\dots (4)$$

### 31 曲線之表示法

在鐵路制度中，曲線之表示特用一種簡縮法：或單稱曲線半徑之長度，例如「半徑一千公尺之曲線」，此在歐陸各國多用之。用此種稱謂時，半徑愈小，則曲線之彎度愈大。或單稱其一定長度之弦所含之中心角，例如「一度半之曲線」，此種角度簡稱為「曲度」(degree of curve)，普通多以 D 代表之。此在英美兩國多用之。用此種稱謂時，角度愈大，即半徑愈小，則曲線之彎度亦愈大。因鐵路

路線所用曲線之半徑常是甚大，測量時欲求曲線之中心，事實上實不可能，故曲線之設置，多另用其他便利方法。



第二十五圖

如第二十五圖，命  $AB$  代表曲線  $AHB$  之一定長度 ( $C'$ ) 之弦，於是由以上定義， $AOB$  角將等於  $D$ 。

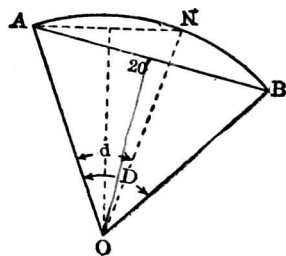
$$AO \sin \frac{1}{2} D = \frac{1}{2} AB = \frac{1}{2} C'$$

$$R = \frac{\frac{1}{2} C'}{\sin \frac{1}{2} D}, \text{ 或 } \sin \frac{1}{2} D = \frac{C'}{2R}$$

此一定長度之弦，世界各國習慣上所用者共有二種：一為一百英尺，為英美兩國所採用；一為二十公尺，為歐陸各國所採用。我國所定制度，亦以二十公尺之弦長為準則。



所謂「分弦」者，即其長度不及規定長度之弦也，其所含之中心角則稱為「分角」。如第二十六圖， $AB$  為規定長度 20 公尺之弦， $AN$  即稱為分弦， $AON$  角稱為分角。因在鐵路測量中設置曲線，不能直接沿弧線上測量，特將此曲線分為若干小段，每一小段曲線之弦長，即等於規定長度，其兩端不及一整弦之長者，則用分弦。即



第 二 六 圖

- (a) 由 B. C. 至曲線上第一點用一分弦(有時仍用整弦)。
- (b) 其餘各點皆用整弦。
- (c) 由曲線上末一點至 E. C. 亦用一分弦(有時仍用整弦)。

此種分法，目的在使曲線中各點之樁號皆成一整數。例如有一曲線其 B. C. 為  $318 + 254.32$ ，E. C. 為  $318 + 572.46$ 。於是第一分弦之長將為 5.68 公尺，第一點之樁號為  $318 + 260$ 。以下各樁號為  $318 + 280$ ， $318 + 300$ ，……。末一分弦之長將為 12.46 公尺，末一點之樁號為  $318 + 560$ 。

按此種方法所量得由 B. C. 至 E. C. 之總距離，即稱為「曲線長」， $L$  (length of curve)。故

鐵路曲線實乃若干直線之連結線。但按幾何學原則，此等直線之總和實不及曲線之實在弧長。更就另一方面而言之，若將規定長

度之弦分成幾個分弦，則此等分弦之總和亦較整弦略長。易言之，若有兩相等之分弦，其所含中心角各為  $\frac{1}{2}D$ ，則其長度必較 10 公尺略長。若命  $c$  為分弦之長， $d$  為所含中心角，於是

$$\sin \frac{1}{2} d = \frac{c}{2R}, \text{ 或 } c = 2R \sin \frac{1}{2} d,$$

$\frac{D}{20} = \frac{d}{c}$  係分弦之長度與中心角之大小成比例。

分弦之形式上的長度將為  $20 \frac{d}{D}$ 。此形式上的長度與實在長度之差，以分弦等於 11 公尺左右為最大。但普通所用曲線之曲度甚小，故此差數亦甚小。例如在  $10^\circ$  之曲線中，12 公尺之分弦，其實在長度為

$$2R \sin 3^\circ = 12.057 \text{ 公尺。}$$

故設置曲度甚大之曲線，宜用較短之弦，十公尺或甚至五公尺，俾能近乎真形。

曲線之長度常以公式  $20 I \div D$  表示之，但其實在長度等於

$$I \times \frac{\pi}{180^\circ} \times R$$

後一數常大於前一數。不過在普通情形下，此種差數並無若何關係，對於鋼軌之長度，只增加一極有限之尺寸而已（曲線之長度乃是內外兩鋼軌之平均長度）。

### 33 單曲線各部分之關係

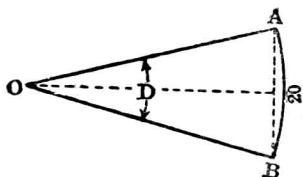
今且將單曲線各部分之關係立一表於下：

|    | 已知值   | 未知值 | 公 式   |
|----|-------|-----|---|
| 1  | P. I. | T   | $T = R \tan \frac{I}{2}$  |
| 2  | R. I. | E   | $E = R \operatorname{exsec} \frac{I}{2} = R \left( \sec \frac{I}{2} - 1 \right)$                          |
| 3  | R. I. | M   | $M = R \operatorname{vers} \frac{I}{2} = R \left( 1 - \cos \frac{I}{2} \right)$                           |
| 4  | P. I. | C   | $C = 2R \sin \frac{I}{2}$   |
| 5  | R. I. | L   | $L = R \left( I \frac{3.1416}{180} \right) = R \times I \times .0174533$                                  |
| 6  | I. L. | R   | $R = \frac{L}{I} \times 57^\circ.2958$  |
| 7  | I. T. | R   | $R = T \cot \frac{I}{2}$  |
| 8  | I. T. | E   | $E = T \tan \frac{I}{4}$  |
| 9  | I. T. | C   | $C = 2T \cos \frac{I}{2}$   |
| 10 | I. T. | M   | $M = T \cot \frac{I}{2} \operatorname{vers} \frac{I}{2}$  |
| 11 | I. E. | R   | $R = \frac{E}{\operatorname{exsec} \frac{I}{2}}$  |
| 12 | I. E. | T   | $T = E \cot \frac{I}{4}$  |
| 13 | I. E. | C   | $C = 2E \frac{\sin \frac{I}{2}}{\operatorname{exsec} \frac{I}{2}} = 2E \cot \frac{I}{4} \cos \frac{I}{2}$ |
| 14 | I. E. | M   | $M = E \cos \frac{I}{2}$  |
| 15 | I. C. | R   | $R = \frac{1}{2} C \operatorname{cosec} \frac{I}{2}$  |
| 16 | I. C. | M   | $M = \frac{1}{2} C \tan \frac{I}{4}$  |

續前表

|    | 已知值   | 未知值 | 公 式   |
|----|-------|-----|---|
| 17 | I. C. | T   | $T = \frac{1}{2} C. \sec \frac{I}{2}$   |
| 18 | I. C. | E   | $E = \frac{1}{2} C. \frac{\operatorname{exsec} \frac{I}{2}}{\sin \frac{I}{2}} = \frac{1}{2} C. \tan \frac{I}{4} \sec \frac{I}{2}$ |
| 19 | I. M. | R   | $R = \frac{M}{\operatorname{vers} \frac{I}{2}}$   |
| 20 | I. M. | C   | $C = 2 M \cot \frac{I}{4}$  |
| 21 | I. M. | T   | $T = M \frac{\tan \frac{I}{2}}{\operatorname{vers} \frac{I}{2}}$  |
| 22 | I. M. | E   | $E = M \sec \frac{I}{2}$  |
| 23 | R. T. | I   | $\tan \frac{I}{2} = \frac{T}{R}$  |
| 24 | R. C. | I   | $\sin \frac{I}{2} = \frac{C}{2R}$   |
| 25 | R. M. | I   | $\cos \frac{I}{2} = \frac{R-M}{R}$  |
| 26 | R. E. | I   | $\cos \frac{I}{2} = \frac{R}{R+E}$  |
| 27 | T. C. | I   | $\cos \frac{I}{2} = \frac{C}{2T}$   |
| 28 | T. E. | I   | $\tan \frac{I}{4} = \frac{E}{T}$  |
| 29 | C. M. | I   | $\tan \frac{I}{4} = \frac{2M}{C}$   |
| 30 | M. E. | I   | $\cos \frac{I}{2} = \frac{M}{E}$  |

由以上所列之一般公式中觀之，可見曲線之各部分皆與半徑  $R$  成正比例。至於  $R$  與  $D$  之關係，則有如下式：



$$\sin \frac{1}{2} D = \frac{\frac{20}{2}}{R} = \frac{10}{R} \dots\dots(31)$$

$$\text{或 } R = \frac{10}{\sin \frac{1}{2} D} \dots\dots\dots(32)$$

例如  $D = 1^\circ$  (稱之為  $D_1$ )。

第 二 七 圖

命  $R_1 = 1^\circ$  曲線之半徑。

$$\text{於是 } R_1 = \frac{10}{\sin \frac{1}{2} 1^\circ}$$

$$\log 10 = 1.000000$$

$$\log \sin 30' = 7.940842$$

$$\log R_1 = 3.059158$$

$$R_1 = 1145.9 \text{ 公尺, 或 } = 1146 \text{ 公尺 (近似值)}。$$

由(31),(32)兩公式觀之，將見  $R$  與  $\sin \frac{1}{2} D$  成反比例，如曲度甚小，則  $R$  直接與  $D$  成反比例。

(例一) 已知  $R_1$  或  $D_1$ ，試求  $R_a$  (任何曲度  $D_a$  之曲線半徑) 或  $D$

$$\text{由(32)公式, } R_1 = \frac{10}{\sin \frac{1}{2} D_1}, \text{ 又 } R_a = \frac{10}{\sin \frac{1}{2} D_a},$$

$$\frac{R_a}{R_1} = \frac{\sin \frac{1}{2} D_1}{\sin \frac{1}{2} D_a}, \quad R_a = R_1 \frac{\sin \frac{1}{2} D_1}{\sin \frac{1}{2} D_a}$$

如曲度甚小，則角度與其正弦成比例（近似的），即

$$\frac{R_a}{R_1} = \frac{\sin \frac{1}{2} D_1}{\sin \frac{1}{2} D_a} = \frac{\frac{1}{2} D_1}{\frac{1}{2} D_a}$$

$$R_a = \frac{R_1 D_1}{D_a} \dots \dots \dots (33)$$

但  $R_1 = 1146$  公尺，故  $R_a = \frac{1146}{D_a} \dots \dots \dots (34)$

例如  $R_a \frac{1146}{8} = 143.33$

R 與 D 之值可以互相換用。在一般鐵路測量學中，常附有一種曲線之曲度及半徑表。以 20 公尺之弦長為準則，求得不同曲度之曲線半徑，或不同半徑之曲度之值。本書特採為第五第六兩表附列於後。

例如上舉之例， $D = 8^\circ$ ，查第五表， $R = 143.36$  公尺。

### 34 一般公式之應用

(例二) 已知 I 及 R 或 D，試求 T。

例如  $I = 24^\circ 26'$ ， $R = 400$  公尺

於是  $T = R \tan \frac{I}{2} = 400 \times .21651 = 86.604$  公尺。

(註)  $\tan 12^\circ 13' = .21651$  係由三角函數真數表中求得。

又如  $I = 60^\circ 48'$ ， $D = 7^\circ$

查第五表  $D = 7^\circ$  時， $R = 163.8$

$$T = 163.8 \tan 30^{\circ}24'$$

$$\log 163.8 = 2.214314$$

$$\log \tan 30^{\circ}24' = 9.768414$$

$$\log T = 1.982728$$

$$T = 96.1 \text{ 公尺。}$$

[例三] 已知 R 及 I 試求 E。

例如  $I = 46^{\circ}30'$ ,  $R = 500$  公尺

於是  $E = R(\sec \frac{I}{2} - 1) = 500(1.088386 - 1) = 44.193$  公尺。

(註)  $\sec 23^{\circ}15' = 1.088386$  係由真數表中求得。

[例四] 已知 R 及 I. 試求 L

例如  $I = 76^{\circ}30'$ ,  $R = 600$  公尺

於是  $L = R \cdot I \times .017453 = 600 \times 76.5 \times 0.017453 = 801.106$  公尺

[例五] 已知分角 d 及 R 或 D. 試求分弦 c。

由 32 節中所述, 得

$$c = 2R \sin \frac{1}{2} d \dots \dots \dots (35)$$

又  $20 = 2R \sin \frac{1}{2} D$

如用近似法, 則  $\frac{c}{20} = \frac{\sin \frac{1}{2} d}{\sin \frac{1}{2} D} = \frac{d}{D} \dots \dots \dots (36)$

測量中多用上述近似法, 至於公式 (35) 之精準法則少有用之者。

例如  $d = 4^{\circ}2'$ ,  $D = 6^{\circ}30'$

由公式(36)得  $c = \frac{20 \times d}{D} = \frac{20 \times 4.033'}{6.5} = 12.41$  公尺。

*化為度*

(例六) 已知  $c$  及  $R$  或  $D$ 。試求  $d$ 。

由公式(36)得  $d = \frac{cD}{20}$

測量中多用  $\frac{d}{2}$  之值,故上式可改為

$$\frac{d}{2} = \frac{cD}{40}$$

如  $D = 1^{\circ}$ , 則

$$\frac{d}{2} = c \frac{60'}{40} = c \times 1.5'$$

*化為分*

對於任何曲度  $D_a$ , 得

$$\frac{d}{2} = c \times 1.5' \times D_a \text{ (以分數計)} \dots\dots\dots (37)$$

此為一最簡捷之法,讀者宜習用之。

例如  $c = 12.41$ ,  $D = 6^{\circ}30'$

用(36)式

$$\begin{aligned} d &= \frac{cD}{20} \\ &= \frac{12.41 \times 6.5}{20} \\ &= 4^{\circ}2' \\ \frac{d}{2} &= 2^{\circ}1' \end{aligned}$$

用(37)式

$$\begin{aligned} \frac{d}{2} &= c \times 1.5' \times D_a \\ &= 12.41 \times 1.5 \times 6.5 \\ &= 121' \\ &= 2^{\circ}1' \end{aligned}$$

(例七) 已知  $I$  及  $D$ , 試求  $L$ 。  $L$  為曲線之長度,係用上述之分弦及整弦測得者。



在此例中，共有三種情形。

(a) B. C. 爲一整樁號，E. C. 爲一零樁號，中心角 I 中共含有 n 個 D，餘一分角  $d_2$  爲分弦  $c_2$  所含着。

於是

$$I = nD + d_2$$

$$\frac{I}{D} = n + \frac{d_2}{D} = n + \frac{c_2}{20}$$

$$20 \frac{I}{D} = 20n + c_2$$

但  $L = 20n + c_2$ ,  $\therefore L = 20 \frac{I}{D}$  (近似值)。

(b) B. C. 爲一零樁號，E. C. 爲一整樁號。此與(a)例之情形相同，仍得

$$L = 20 \frac{I}{D} \dots\dots\dots (38)$$

(c) B. C. 及 E. C. 皆爲零樁號，上一公式仍能適用。

故綜合以上三種情形，皆得同一公式

$$L = 20 \frac{I}{D}, \quad I = \frac{LD}{20}, \quad \text{及} \quad D = 20 \frac{I}{L}.$$

此等公式雖皆爲近似值，但實爲一般所通用。

例如已知  $D = 7^\circ$ ,  $I = 39^\circ 37'$

於是

$$= 39^\circ 37'$$

$$\frac{I}{D} = 7 \left| \begin{array}{l} 39.6167^\circ \\ \hline 5.6595 + \dots\dots \end{array} \right.$$

$$L = 20 \times 5.6595 = 113.19 \text{ 公尺。}$$

(例八) 已知  $D$  及  $L$ , 試求  $I$ 。

例如已知  $D=8^\circ$ ,  $B.C.=93+493.20$ ,  $E.C.=93+701.24$ 。

於是  $E.C.=93+701.24$

$B.C.=93+493.20$

$L=208.04$

$$I = \frac{8 \times 208.04}{20} = 83.^\circ 216 = 83^\circ 13'$$

### 35 英尺制曲線

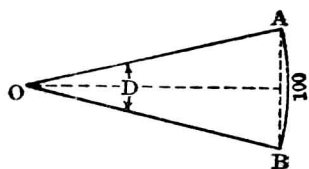
英美兩國之習慣，設置曲線，係用 100 英尺為一定長度之弦，此法我國昔時亦多採用之。現時鐵道部雖已規定鐵路測量必用公尺制，但國內已成鐵路中，仍多保有英尺制者，故本書特加以概略之敘述於下。

(例 I) 已知  $R$ , 試求  $D$ 。

如第二十八圖

$$R \sin \frac{1}{2} D = \frac{100}{2}$$

$$\sin \frac{1}{2} D = \frac{50}{R}$$



第 二 八 圖

(例 II) 已知  $D$ , 試求  $R$ 。

$$R = \frac{50}{\sin \frac{1}{2} D}$$

如

$$D = 1^\circ$$

$$\text{則} \quad R_1 = \frac{50}{\sin \frac{1}{2} D}$$

$$\log 50 = 1.698970$$

$$\log \sin 30' = 7.940842$$

$$\log R_1 = 3.758128$$

$$R_1 = 5729.6 \text{ 或 } = 5730 \text{ 英尺(近似值)}$$

(例III) 已知  $R_1$  或  $D_1$ , 試求  $R_a$

$$\text{由公式(33), 得} \quad R_a = R_1 \frac{D_1}{D_a}$$

$$\text{但} \quad R_1 = 5730,$$

$$R_a = \frac{5730}{D_a} \text{ (近似值)}$$

$$\text{例如} \quad R_{10} = \frac{5730}{10} = 573 \text{ 英尺。}$$

第七表係按英尺制求得之曲線半徑及其對數表, 其中曲度  $D$  爲 100 英尺之弦所含之中心角。

(例IV) 已知分弦  $c$  及  $R$  或  $D$ , 試求分角  $d$ 。

$$c = 2R \sin \frac{1}{2} d$$

$$\text{又} \quad 100 = 2R \sin \frac{1}{2} D$$

$$\frac{c}{100} = \frac{\sin \frac{1}{2} d}{\sin \frac{1}{2} D} = \frac{d}{D} \text{ (近似值)}$$

$$\text{或} \quad c = \frac{100d}{D},$$

$$\text{又} \quad d = \frac{cD}{100}$$

例如  $c = 63.7, D = 6^\circ 30'$

$$d = \frac{63.7 \times 6.5}{100} = 4.^\circ 14 = 4^\circ 8'$$

(例 V) 已知 I 及 D, 試求 L

由(例七)得  $I = d_1 + nD + d_2$

$$\frac{I}{D} = \frac{d_1}{D} + n + \frac{d_2}{D} = \frac{c_1}{100} + n + \frac{c_2}{100}$$

但  $L = c_1 + 100n + c_2$

$$\frac{I}{D} = \frac{L}{100}, \text{ 或 } L = 100 \frac{I}{D} \text{ (近似值)}$$

例如  $D = 7^\circ, I = 39^\circ 37'$

$$\frac{I}{D} = 7 \left| \frac{39.6167}{5.6595} + \dots \right. \therefore L = 566.0 \text{ 英尺}$$

(例 VI) 已知 D 及 L, 試求 I

例如  $D = 8^\circ, B.C. = 86 + 49.3, E.C. = 93 + 70.1$

於是  $E.C. = 93 + 70.1$

$$B.C. = 86 + 49.3$$

$$L = \begin{array}{r} 7 \\ \hline 20.8 \end{array}$$

$$D = \begin{array}{r} 8 \\ \hline 57.664 \end{array}$$

$$\begin{array}{r} 60' \\ \hline 39.84 \end{array}$$

$$I = 57^\circ 40'$$

### 36 B. C. 及 E. C. 之實地測量法

設置單曲線。首須求得曲線起點 B. C. 及終點 E. C. 之位置，求定 B. C. 及 E. C.，而後方能設置曲線中之各中間樁。B. C. 及

E. C. 之位置，須經實地測量，但在未測量之先，應知曲線之曲度  $D$  或半徑  $R$  之大小。此  $D$  或  $R$  多於紙上定之，所謂紙上定線者是也。紙上定線係就初測平面圖上規定若干條直線，在此等直線之間，以最適合之曲線聯絡之。而此等曲線之曲度或半徑，則用一種「鐵路曲線板」求得之。

(註)鐵路曲線板之形式為一種圓弧，或用木製，或用紙，或用假象牙，以套數論，每套自四十至一百塊之多。其製造法或按曲度，或按半徑。如按曲度，多自  $0^{\circ}15'$  至  $20^{\circ}$ ；如按半徑，多自 60 公尺至 4000 公尺。凡欲繪幾度或半徑若干尺之曲線，即取一適合此曲度或半徑之曲線板，放在兩直線之間，沿板緣繪一曲線，使與兩直線相切，即得所求之曲線。

紙上規定  $D$  或  $R$  之後，於是實地測量 B. C. 及 E. C. 之位置：

(1) 先沿第一直線直測至頂點  $V$ ，釘以大樁，書明樁號。

(2) 將儀器移至  $V$ ，測量兩直線之交角  $I$ ，用複測法返復觀測兩次，取其平均值。

(3) 已知  $I$  及  $D$  或  $R$ ，即可求得切線距。

(4) 儀器仍留在  $V$ ，由  $V$  點向第二直線測量  $T$  之距離，設置 E. C. (先設置 E. C. 而後再設置 B. C.，乃一經濟之法)。

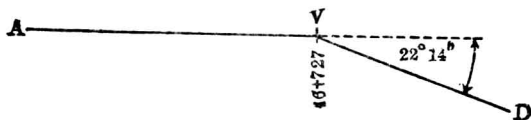
(5) 由  $V$  點之樁號減去  $T$ ，求得 B. C. 之樁號，而後由第一直線上最近之一樁號測定 B. C. 點，或由  $V$  向第一直線返回測量  $T$  之距離亦可。

(6) 由 I 及 D 或 R 計算曲線之長度 L, 以求得 E. C. 之樁號  
(不可由 V 之樁號加 T 之距離求得之)。

試舉一例於下

(例九) 已知 R = 500 公尺, V = 46 + 727, 又測得

I = 22°14' (見第二十九圖)



第二十九圖

於是 
$$T = R \tan \frac{1}{2} I = 500 \times \tan 11^{\circ} 7'$$

$$= 500 \times .19649 = 98.24$$

又查第六表, R = 500, D = 2°17'30"

由公式(38) 
$$L = 20 \frac{I}{D} = 20 \times \frac{22^{\circ} 14'}{2^{\circ} 17'.5}$$

$$= 20 \times \frac{22.2333}{2.2917} = 194.04$$

V = 46 + 727                      B.C. = 46 + 628.76

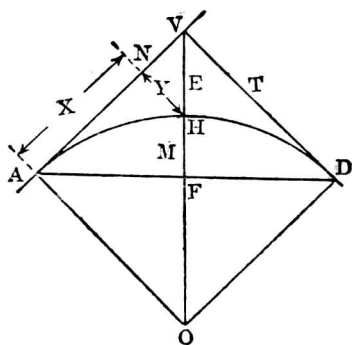
T =            98.24                      L =            194.04

B.C. = 46 + 628.76                      E.C. = 46 + 822.80

如在 V 點測得交角 I 之後, 不用公式, 另用一種曲線函數表, 亦可求得 T 及 L 之值, 結果既甚準確, 手續亦極直接了當也。

第八表為曲線函數表, 係按照 R = 100 公尺編制, 表示不同交

角  $I$  之曲線長  $L$ , 切線距  $T$ , 及外距  $E$ , 之值。至於  $X$  及  $Y$  兩數則稱為切線橫距, 如第三十圖中之  $AN$ , 及切線縱距, 如圖中之  $HN$ 。如已知  $I$  及  $R$ , 可由表中查得相當於已知角度  $I$  之  $L, T, E, X$  及  $Y$ , 各以  $R$  之值乘之, 即得所求之數。



第三十圖

例如已知  $I = 22^\circ 14'$ ,  $R = 500$

查表得

| $L$    | $T$    | $E$   | $X$    | $Y$   |
|--------|--------|-------|--------|-------|
| 38.804 | 19.649 | 1.912 | 19.281 | 1.876 |

於是

$$L = 38.804 \times 5 = 194.02 \text{ 公尺}$$

$$T = 19.649 \times 5 = 98.245 \text{ 公尺}$$

$$E = 1.912 \times 5 = 9.56 \text{ 公尺}$$

$$X = 19.281 \times 5 = 96.405 \text{ 公尺}$$

$$Y = 1.876 \times 5 = 9.38 \text{ 公尺}$$

### 37 曲線中點 $H$ 之設定

設定曲線中點  $H$ , 可用(一)中距  $E$ , 或用(二)切線橫距  $X$  及縱距  $Y$ 。今且分述於下:

(一)用中距 E

如上述之例，  $I = 22^{\circ}14'$ 。

$AVD = 180^{\circ} - 22^{\circ}14' = 157^{\circ}46'$  (第三十圖)

VH 爲 AVD 角之分中線，

故 
$$\angle AVH = \frac{\angle AVD}{2} = 78^{\circ}53'$$

又查表得  $VH = E = 9.56$  公尺

於是 (1) 當儀器安置在 V 點時，後視 A 點。(2) 將望遠鏡向左轉動  $78^{\circ}53'$ 。(3) 由 V 沿視線量得 9.56 公尺之距離，則測得之點必爲所求之曲線中點 H。

(二)用切線橫距 X 及縱距 Y。

如上述之例，  $I = 22^{\circ}14'$

查表得  $X = 96.405$  公尺，  $Y = 9.38$  公尺

於是由 A 沿 AV 切線測量 96.405 公尺之距離，得 N 點。再於 N 點求得 AN 之垂直線 NH。沿此垂直線上測量 9.38 公尺之距離，得 H。即爲所求之曲線中點。

38 偏角法

按照幾何學原理，凡在一弧線中，任一弦線與切線 或任兩弦線所交之角，等於所含圓弧之一半，易言之，即等於該圓弧所對中心角之一半。如第三十一圖， $\angle V A a$  角等於圓弧  $A a$  之一半。或  $\angle A O a$  角之一半。又  $\angle a A b$  角等於圓弧  $a b$  之一半 或  $\angle a O b$  角之一半。由



切線至弧線上任一點所測得之角度，即稱為該點之總偏角，例如圖中之  $VAn$ ,  $VAb$ ,  $VAc$  等角。

測量直線時（例如鐵路線上之切線），各點之設置法多用

(1) 鍊尺，由前一點測量其距離，同時用

(2) 經緯儀測定其方向。

不過在同一直線上，各點之方向皆相同。同樣，設置曲線時，曲線上之各點亦用

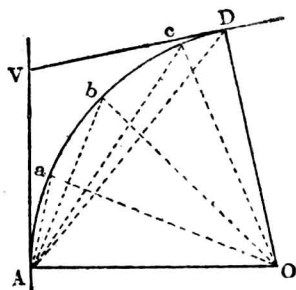
(1) 鍊尺由前一點測量其距離；同時用

(2) 經緯儀測定其方向。

不過在曲線上，各點之方向各不相同，須用算得之角度求定之。而此算得之角度，通常多用各點之總偏角。例如在第三十一圖中弦線  $Aa$  及總偏角  $V A a$  定  $a$  點之位置；弦線  $ab$  及總偏角  $V A b$  定  $b$  點之位置。如能求得各點之總偏角，則應用此種方法設置曲線極為便利。在鐵路測量中，不特設置單曲線用偏角法，即設置緩和曲線亦多用之。總之，無論設置任何曲線，皆可用偏角法。只須能求得

(1) 各點之總偏角及

(2) 弦線長



第三一圖

單曲線之總偏角計算甚易，有時還可利用一種偏角表，依次查得各點之總偏角。本書所附之第九表名曲線偏角表，係按照每一整弦 20 公尺計算（如半徑甚小，則按照每 5 公尺或每 10 公尺之弦長計算）。第十表名曲線偏角累計表，係按照每一整弦 20 公尺之百分之一計算。

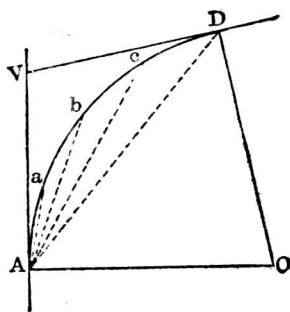
如用此種方法測量任一曲線，則以後木樁若有遺失，仍可按照野簿上所記之偏角及弦長重新設置之。

茲且舉一例於下：

(例十) 已知某曲線之曲度  $D$ ，試求各點之總偏角。

(1) 曲線起點及終點皆在整樁號上。

如第三十二圖， $Aa$ ， $ab$ ， $bc$ ， $cD$ ，皆各等於 20 公尺。



第三十二圖

又  $VAa$ ， $aAb$ ， $bAc$ ， $cAD$  皆各等於  $\frac{1}{2} D$ 。於是

$$VAa = \frac{1}{2} D$$

$$VAb = VAa + \frac{1}{2} D = D$$

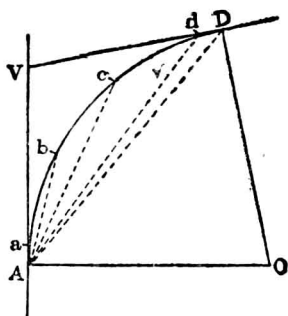
$$VAc = VAb + \frac{1}{2} D = \frac{3}{2} D$$

$$VAD = VAc + \frac{1}{2} D = 2D$$

又  $VAD = VDA = \frac{1}{2} I$ ，此可作為核對觀測有無錯誤之用。

(2) 曲線起點及終點皆在零樁號上。

如第三十三圖，令  $V_{Aa} = \frac{1}{2}d_1$ ，此可由分弦  $Aa$  求得之。



第 三 三 圖

於是 
$$V_{Ab} = V_{Aa} + \frac{1}{2} D = \frac{1}{2} d_1 + \frac{1}{2} D$$

$$V_{Ac} = V_{Ab} + \frac{1}{2} D = \frac{1}{2} d_1 + D$$

.....

$$V_{AD} = \frac{1}{2} d_2 + \text{前一點之總偏角。}$$

又 
$$V_{AD} = V_{DA} = \frac{1}{2} I, \text{ 亦可作為核對之用。}$$

例題——已知某曲線之曲度為  $3^{\circ}20'$ ，中心角為  $18^{\circ}22'$ ，起點為  $4+732$ ，試求各點之總偏角。

解——曲線之形式上的長度等於

$$18^{\circ}22' \div 3^{\circ}20' \times 20 = 110.2 \text{ 公尺。}$$

故曲線之終點應為

$$B.C. = 4 + 732$$

$$L = \frac{110.2}{\quad}$$

$$E.C. = 4 + 842.2$$

樁號 4 + 740 之偏角  $d_1$  等於

$$d_1 = \frac{8}{20} \times \frac{1}{2} (3^\circ 20') = 0^\circ 40'$$

末一分弦應加入之偏角  $d_2$  等於

$$d_2 = \frac{2.2}{20} \times \frac{1}{2} (3^\circ 20') = 0^\circ 11'$$

於是各點之總偏角將為

$$B. C. \text{ 樁號 } 4 + 732 \dots\dots\dots = 0^\circ 00'$$

$$4 + 740 = 0^\circ 00' + 0^\circ 40' = 0^\circ 40'$$

$$4 + 760 = 0^\circ 40' + 1^\circ 40' = 2^\circ 20'$$

$$4 + 780 = 2^\circ 20' + 1^\circ 40' = 4^\circ 00'$$

$$4 + 800 = 4^\circ 00' + 1^\circ 40' = 5^\circ 40'$$

$$4 + 820 = 5^\circ 40' + 1^\circ 40' = 7^\circ 20'$$

$$4 + 840 = 7^\circ 20' + 1^\circ 40' = 9^\circ 00'$$

$$E. C. \quad 4 + 842.2 = 9^\circ 00' + 0^\circ 11' = 9^\circ 11'$$

$$= \frac{1}{2} (18^\circ 22') \text{ 核對。}$$

(附註) 如上例係用英尺制測量，則計算之法將如下。

$$D = 3^\circ 24', \quad I = 18^\circ 22', \quad B.C. = 47 + 32.$$

$$L = \frac{18^\circ 22'}{3^\circ 24'} \times 100 = 540.2 \text{ 英尺}$$

於是

$$B.C. = 47 + 32$$

$$L = 5 + 40.2$$

$$E.C. = 52 + 72.2$$

$$\text{樁號 48 之偏角} = \frac{68}{100} \times \frac{1}{2} (3^\circ 24') = 1^\circ 09'$$

末一分弦爲 72.2 英尺, 其偏角爲

$$\frac{72.2}{100} \times \frac{1}{2} (3^\circ 24') = 1^\circ 14'$$

於是各點之總偏角將爲

$$B.C. \dots\dots \text{樁號 } 47 + 32 \dots\dots\dots = 0^\circ 00'$$

$$48 \quad = 0^\circ \quad + 1^\circ 09' = 1^\circ 09'$$

$$49 \quad = 1^\circ 09' + 1^\circ 42' = 2^\circ 51'$$

$$50 \quad = 2^\circ 51' + 1^\circ 42' = 4^\circ 33'$$

$$51 \quad = 4^\circ 33' + 1^\circ 42' = 6^\circ 15'$$

$$52 \quad = 6^\circ 15' + 1^\circ 42' = 7^\circ 57'$$

$$E.C. \dots\dots\dots 52 + 72.2 = 7^\circ 57' + 1^\circ 14' = 9^\circ 11'$$

$$= \frac{1}{2} (18^\circ 22')$$

(例十一) 如已知 R, 可用第九, 第十兩表求得各點之總偏角。

例題——R = 500 公尺, I = 11°12', B.C. = 8 + 481.71。

解——第一分弦長 8500 - 8481.71 = 18.29

$$\frac{18.29}{20} = .9145$$

查第十表, 在 R = 500 公尺之下, 對 .91 之偏角爲 1°2'34"

又 .0045 就 .91 及 .92 兩數推算之, 得 18"

故 .9145 之偏角為  $1^{\circ}02'52''$

又查第九表, 在  $R=500$  公尺之下,

弦長 20 公尺之偏角  $=1^{\circ}08'45''$

$$40 \qquad \qquad = 2^{\circ}17'31''$$

$$60 \qquad \qquad = 3^{\circ}26'16''$$

故 B.C.……樁號  $8+481.71 \dots\dots\dots = 0^{\circ}00'00''$

$$8+500 \quad = 0^{\circ}00'00'' + 1^{\circ}2'52'' = 1^{\circ}02'52''$$

$$8+520 \quad = 1^{\circ}2'52'' + 1^{\circ}8'45'' = 2^{\circ}11'37''$$

$$8+540 \quad = 1^{\circ}2'52'' + 2^{\circ}17'31'' = 3^{\circ}20'23''$$

$$8+560 \quad = 1^{\circ}2'52'' + 3^{\circ}26'16'' = 4^{\circ}29'08''$$

$$\frac{1}{2}I = \frac{1}{2}(11^{\circ}12') = 5^{\circ}36'$$

$$d_2 = 5^{\circ}36' - 4^{\circ}29'08'' = 1^{\circ}06'52''$$

再反查第十表, 在  $R=500$  公尺之下, 對  $1^{\circ}06'52''$  之弦長, 推得 .9725

故  $c_2 = 20 \times .9725 = 19.45$  公尺

$$E.C. = 8560 + 19.45 = 8 + 579.45$$

### 39 單曲線實地測量法

(1) 按照前述之法, 設定 B. C. 及 E. C.。

(2) 將儀器安置在 B. C. (第三十一圖中之 A 點)。

(3) 將平板遊標放在  $0^{\circ}$ 。

(4) 將望遠鏡對準 V 點，(或對準 E 點，再將望遠鏡倒轉)。

(5) 鬆上止動螺絲，將遊標放在等於  $\frac{1}{2}d_1$  (有時為  $\frac{1}{2}D$  之角度。

(6) 將鍊尺之始端放在 A 點，將等於分弦  $\dot{A}a$  距離 (有時等於 20 公尺) 之一端對準在望遠鏡視線之上，於是設定 a 點，打木樁。

(7) 再將遊標放在等於 b 點之總偏角。

(8) 將鍊尺之始端放在 a 點，將 20 公尺之一端對準在視線之上。於是設定 b 點。如此繼續進行。

(9) 計算 E. C. 之總偏角，應觀其是否適等於  $\frac{1}{2}I$ ，以資核對。

(10) 測至 E. C. 點時，應觀看所計算之分弦  $e_2$  與 E. C. 點之總偏角，是否與預先測定之 E. C. 點適相吻合。

(11) 移置儀器於 E. C. (圖中之 D 點)。

(12) 將遊標仍轉回到  $0^\circ$ ，再向後轉到  $\frac{1}{2}I$  之角度。

(13) 後視 A 點。

(14) 轉動遊標至  $0^\circ$ 。

(15) 前視 V 點，觀看其是否適在視線之上。

由上述方法中觀之，將見如此做去，可得到三步核對。

第一、若 E. C. 點之總偏角等於  $\frac{1}{2}I$ ，則偏角之計算並無誤。此一步之核對，如中間各點能謹慎依次相加，極易達到。

第二、若實地上所量得之末一分弦之長，與算得之距離適相等，則鍊尺測量並無錯誤。

第三、若算得之 E. C. 點之總偏角能使望遠鏡之視線適對準在 E. C. 點上，則經緯儀測量並無錯誤。不過此亦只就大體而言，至若中間各點有無錯誤仍不得而知，容或有一中間點之總偏角未經設置準確，但並非此一步之核對所能發覺也。

單曲線之設置，如能使經緯儀安置在 A 點時，一次完成至 D 點，方為最佳。不過此在事實上常不易做到，因有下述數種原因。

一、若曲線之中心角  $I$  近於  $180^\circ$ ，則測至最後數點時，欲在望遠鏡中瞄準一適當準確之交點，將非常困難，或竟至不可能。概言之，在經緯儀每次安置中，所測之總偏角不宜大過  $30^\circ$ 。

二、有時在曲線中間遇有障礙，致不能由 A 點直測過去。

三、在山地測量時，因地勢高低變化之關係，致不能由 A 點直視到 D 點。

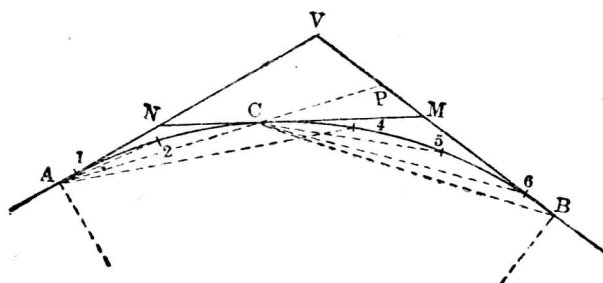
因以上種種原因，勢不得不測至若干點之後，將儀器移置於此最後一點，再繼續向前測量。有時每測二三樁之後，即須將儀器移動一次。移動經緯儀共有兩法可用，茲且分述於下。

第一法——(1)如第三十四圖，儀器在 A 點時，設置曲線至 C 點為止。

(2)移置儀器於 C 點。

(3)將遊標轉回到  $0^\circ$ ，並再向後轉到等於  $\angle VAC$  之角度。





第 三 四 圖

(4) 後視 A 點。

(5) 鬆上止動螺絲，轉動遊標至  $0^\circ$ ，於是望遠鏡之視線將對準在 C 點之切線 CN 上。

(6) 倒轉望遠鏡，再將遊標轉至新偏角  $\frac{1}{2} D$  (如 C 為一整樁) 或  $\frac{1}{2} d$  (如 C 為一零樁)。

(7) 按照前法設置④點。

用此種方法，假若曲線之曲度為一整度數，而經緯儀亦是移置在整樁上，則毫無不方便之處。但若曲線之曲度為一帶零之度數，而實際情形又不容 C 點能適為一整樁號，則應用此種方法，對於新偏角將有重加一番計算之勞，因此，又不免要增加誤差之發生。

第二法——(1) 如前法設置 C 點，並將儀器移置於 C。

(2) 將遊標轉回到  $0^\circ$ ，後視 A 點。

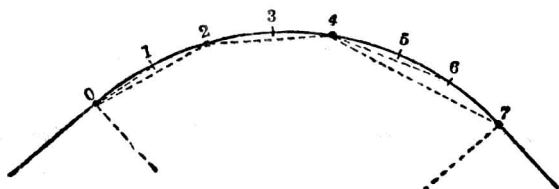
(3) 倒轉望遠鏡，鬆上止動螺絲，再將遊標轉到等於④點之適當總偏角  $VA_4$ ；因  $VA_4 = NAC + CA_4 = NCA + CA_4$ ，但  $NCA = PCM$ ，又  $CA_4 = MC_4 = \frac{1}{2} D$  或  $\frac{1}{2} d$  故  $PCM + MC_4 = VA_4$ 。

(4) 按照前法設置④點。

(5) 其餘各點亦皆用最初算得之總偏角，一如經緯儀仍在 A 點者然。

用此種方法，對於角度之計算，野簿之記載，省去手續不少，無論儀器經過幾次之移置，無論經緯點是否在整樁上，偏角之計算始終如一。不過每次後視時，應將遊標轉至等於該後視點之總偏角，並非轉至  $0^\circ$  矣。試舉一例於下。

(例十二) 如第三十五圖，假設欲設置一曲線，其曲度為  $4^\circ$ ，中心



第三十五圖

角為  $28^\circ$ 。在②，④兩樁號處皆發生障礙。

解——在設置②點之後，將儀器移置於②。使遊標之讀數等於①點之偏角，(在此例為  $0^\circ$ )。後視①點。倒轉望遠鏡。再將遊標之讀數分別轉至  $6^\circ$  及  $8^\circ$ ，於是望遠鏡之視線將分別對準在③及④(遊標在  $4^\circ$  時，視線正與曲線相切)。再移置儀器於④點，使遊標之讀數等於  $4^\circ$ ，後視②。倒轉望遠鏡，將遊標分別轉到  $10^\circ$ ,  $12^\circ$ ，及  $14^\circ$ 。即可依次設置⑤，⑥，⑦各點(遊標在  $8^\circ$  時，視線將與曲線相切)。

| 測 點   | 曲 線      | 說 明      | 總偏角   | 磁 方 位    | 附 記   |
|-------|----------|----------|-------|----------|-------|
| 8+600 |          |          |       | N34°20'E |       |
| 580   | ◎+579.45 |          | 5°36' |          | E. C. |
| 560   |          | R=500    | 4°29' |          |       |
| 540   |          | L=97.74  | 3°20' |          |       |
|       | +530.58  | T=49.02  | 2°48' |          | H.    |
| 520   |          | I=11°12' | 2°12' |          |       |
| 500   |          | 右        | 1°03' |          |       |
|       | ◎+481.71 |          |       |          | B. C  |
| 480   |          |          |       |          |       |
| 8+460 |          |          |       | N23°15'E |       |

第 三 六 圖

第三十六圖表示設置單曲線之野簿記載式。簿中應記明 B. C 及 E. C. (見第二欄)，曲線之半徑或曲度，中心角，長度及切線距 (均見第三欄)，以爲日後之參考。

## 40 由曲線中點設置曲線法

如遇有在 B. C. 點不能直測至 E. C. 點，但在曲線中點 H 可以直測至 B. C. 及 E. C. 兩點時，可按照下述方法進行。

如第三十七圖，V H 爲 A V D 角之分中線，

$$\text{故 } \angle AVH = \angle HVD = \frac{1}{2}(180^\circ - I).$$

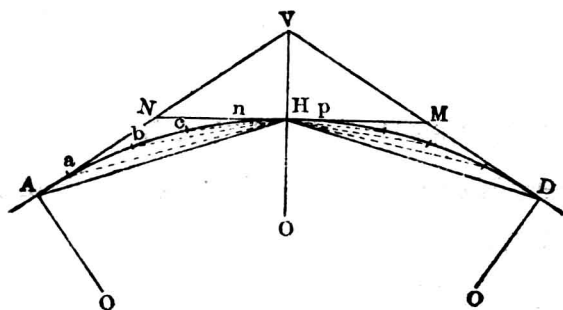
又 N M 爲在 H 點之切線。

於是  $\angle NHA = \angle MHD = \frac{1}{2} \angle AOH = \frac{1}{4} I$   
 = 儀器在 B. C. 點時所測 H 點之總偏角。

同樣,  $NHa = \frac{1}{4} I - \frac{1}{2} d_1$   
 $NHb = \frac{1}{4} I - (\frac{1}{2} d_1 + \frac{1}{2} D)$

.....

$NHn = \frac{1}{2} d_n, (d_n \text{ 爲分弦 } nH \text{ 所含之分角})$



第 三 七 圖

試就(例十一)而言。

$$I = 11^\circ 12', \quad \frac{1}{4} I = 2^\circ 48'$$

$$AD = 8579.45 - 8481.71 = 97.74 \text{ 公尺}$$

$$AH = 48.87 \text{ 公尺}$$

H 之樁號為 S + 530.58

H 與 S + 520 之距離為 10.58, 其偏角查第十表得 36'22"。其

餘各點之總偏角可依次求之。

$$\text{得 } 8+520=36'22''$$

$$8+500=36'22''+1^{\circ}08'45''=1^{\circ}45'07''$$

$$\text{B.C. } =2^{\circ}48'$$

$$8+540=32'23''$$

$$8+560=32'23''+1^{\circ}08'45''=1^{\circ}41'08''$$

$$\text{E.C. } =2^{\circ}48'$$

求得各點之總偏角，即可依次設定之。

(1) 儀器安置在 V 點，測得交角 I，並求得外距 E。

(2) 後視 A 點。

(3) 將遊標放在等於  $\frac{1}{2}(180^{\circ}-I)$  之角度。

(4) 在望遠鏡之視線上設置一點，並測量其距離使等於外距

E，得曲線中點 H。

(5) 移置儀器於 H，將遊標放在  $0^{\circ}$ 。

(6) 後視 V 點。

(7) 將遊標轉到  $90^{\circ}$ 。設置一線 NM。於是 NM 將與曲線相切。

(8) 再將遊標轉動等於  $\frac{1}{2}d_n$  之角度(如先將遊標轉回到  $0^{\circ}$ ，後視 n 點，再轉動  $\frac{1}{2}d_n$  之角度，較便計算)。

(9) 設置 n 點，而後依次設置其餘各點直至 B. C.。(用求得各點之總偏角)。

(10) 將遊標仍轉回到  $0^{\circ}$

(11) 後視 M 點。

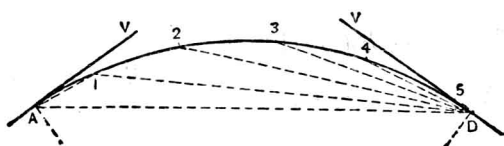
(12) 再將遊標向右轉動等於  $\frac{1}{2}d_p$  之角度。

(13) 如法設置 p 點及其餘各點 直至 E. C.。

#### 41 由 E. C. 設置曲線法

按工作之步驟，每一曲線設定之後，應即將儀器安置在 E. C.，繼續測量第二直線。故如設置曲線，不用 B. C. 而用 E. C. 為經緯點，則可省去搬回儀器至 B. C. 之勞。其法如下。

(1) 計算由 B. C. 至 E. C. 及其他各點 1, 2, 3, 4, 5 之總偏角，一如前法(第三十八圖)。



第三十八圖

(2) 將儀器由 V 點遷移至 E. C.。

(3) 將遊標放在  $0^\circ$ ，後視 B. C.

(4) 將遊標依次轉到等於 1, 2, 3, 4, 5 各點之總偏角，分別設定以上各點。

(5) 觀測 V 點，看其是否等於  $\frac{1}{2}I$  以資核對。

#### 42 兩架經緯儀同時觀測法

路線中遇有深塘或其他不能施行鍊尺測量之地點，可用兩架

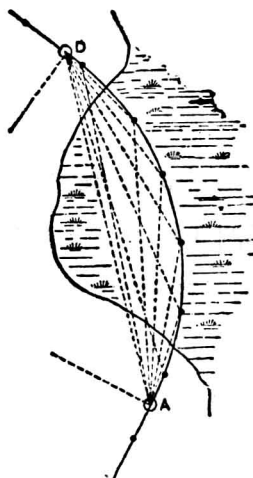
經緯儀同時觀測之。

(1) 先用三角測量法或其他方法測定長弦  $AD$  之距離。

(2) 用前述之公式求得曲線之各函數。

(3) 分別計算由  $A$  及  $D$  兩點至曲線上各點之總偏角。

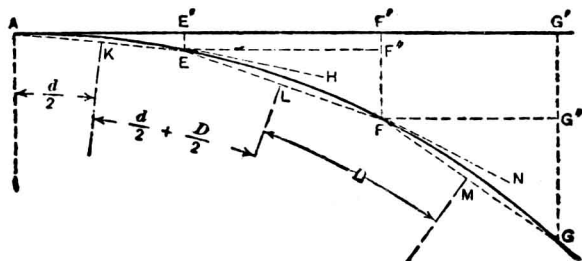
(4) 兩架儀器分別安置在  $A, D$  兩點 (見第三十九圖) 用求得各該點之總偏角, 分別設置各點, 由測夫握花桿一根以資瞄準。兩方面均已瞄準之後, 即用長樁一根打入塘中。



第三十九圖

#### 43 切線支距法

如第四十圖, 已知曲線  $AG$  之曲度  $D$ , 及始點  $B, C$  與終點  $E, G$ 。



第四十圖

在 A 點作一切線 AG'。

命 AE 爲第一分弦。於是

$$E'AE = \frac{1}{2}d = \alpha_1$$

如 AE = 20, 則  $E'AE = \frac{1}{2}D$ 。

又命 EF 及 FG 皆爲整弦, 由 E 及 F 各作 EF'' 及 FG'' 與 AG' 平行, 並作 EH 及 FN 兩切線。

於是

$$F''EF = F''EH + HEF = d + \frac{1}{2}D = \alpha_2$$

$$G''FG = G''FN + NFG = d + D + \frac{1}{2}D = \alpha_3$$

.....

$$AE' = AE \cos E'AE = c_1 \cos \alpha_1$$

同樣  $EF'' = 20 \cos \alpha_2$

$$FG'' = 20 \cos \alpha_3$$

.....

又  $EE' = AE \sin E'AE = c_1 \sin \alpha_1$

同樣  $FF'' = 20 \sin \alpha_2$

$$GG'' = 20 \sin \alpha_3$$

.....

$$FF' = FF'' + F''F' = c_1 \sin \alpha_1 + 20 \sin \alpha_2$$

$$GG' = FF' + GG'' = c_1 \sin \alpha_1 + 20 \sin \alpha_2 + 20 \sin \alpha_3$$



故欲測定 E 點，即在切線 AG' 上量 AE' 及 EE' 兩距離。此種方法稱為「切線支距法」。

計算時對於以上各式之正弦及餘弦，宜求其真值，不必求其對數值。

如欲知測量之結果有無誤差，則仍可用以下兩式加以核對。

$$AG' = R \sin AOG$$

$$GG' = R \text{ vers } AOG$$

其中 O 為曲線之中心。

在此兩公式中，含有半徑 R (或曲度 D) 及中心角 I；在以前幾個公式中，則含有分弦 c；但因公式

$$d = \frac{cD}{20}$$

乃是一近似值，故核對時亦只能求一近似值，不能希望得到一甚精準之結果。無論如何，切線支距法實為一種精準之方法，其特點為並不需用經緯儀，單用鍊尺即可着手測量。或即使應用經緯儀，如曲線上遇有障礙，不能用普通方法時，亦可採用切線支距法。

茲且將實地測量法述之於下：

- (1) 計算 AE, EF', F'G', ……，及 EE', FF', GG', ……。
- (2) 用鍊尺測量 AE', EF', FG' …… 諸距離，求得 E', F', G', …… 諸點。
- (3) 將鍊尺之一端放在 A 點，其他一端放在 E' 點，使鍊尺中

間，等於  $AE$  ( $c_1$ ) 及  $EE'$  兩距離之點合在一起。於是此交合之點即為  $E$  點之所在。

(4) 同樣，將鍊尺之兩端分別放在  $E, F'$  兩點，用  $EF$  (20 公尺) 及  $FF'$  兩距離求得  $F$  點；將鍊尺之兩端分別放在  $F, G'$  兩點，用  $FG$  (20 公尺) 及  $GG'$  兩距離求得  $G$  點。

#### 44 切線偏距法

如第四十一圖，已知曲線之曲度  $D$  或半徑  $R$  及始點  $B, C$  與終點  $E, C$ 。

命  $AN$  為曲線  $AB$  之切線。

$AE$  為第一分弦 =  $c_1$  (或

20 公尺)

$EE'$  垂直於  $AE' = a_1$ ，此

$a_1$  稱為「切線偏角支距」，簡稱為「切線偏距」，

$EF = FB$  均為整弦。

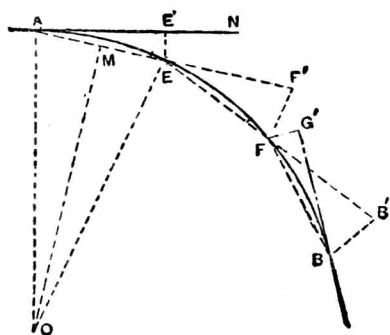
延長  $AE$  至  $F'$ ，使  $EF' = EF$ ；延長  $EF$  至  $B'$ ，使  $FB' = FB$ 。

於是  $FF' = BB'$ ，皆稱為「弦線偏角支距」，簡稱為「弦線偏距」

$AO = EO = R$

作  $OM$  垂直於  $AE$

於是於  $AE'E, OMA$  兩正三角形中，



第四一圖

$$EE' : AE = ME : EO$$

$$a_1 : c_1 = \frac{c_1}{2} : R, \text{ 或 } a_1 = \frac{c_1^2}{2R} \dots\dots\dots (39)$$

$$\text{如 } AE \text{ 爲一整弦, 則 } a = \frac{\overline{20}^2}{2R} \dots\dots\dots (40)$$

根據公式(39), 特製成一切線偏角支距表(第十一表), 以半徑  $R$  爲根據, 按弦長之百分之一累計。

例如  $R=160$ ,  $c_1=12$  公尺

查表, 在  $R=160$  一欄之下, 對  $\frac{12}{20} = 60$  節之數爲 0.450, 故  $a_1 = 0.45$  公尺。

又用公式(39)得  $a_1 = \frac{\overline{12}^2}{2 \times 160} = 0.45$  公尺

又如  $R=300$ ,  $c_1=8.4$  公尺

查表, 在  $R=300$  一欄之下, 對  $\frac{8.4}{20} = 42$  節之數爲 0.118 公尺, 故  $a_1 = 0.118$  公尺。

又用公式(39)得

$$a_1 = \frac{\overline{8.4}^2}{2 \times 300} = 0.1176 \text{ 公尺}$$

#### 45 弦線偏距法

如第四十二圖,  $AN$  爲曲線  $AB$  之切線。

$AE = EF = 20$  公尺,  $AO = R$ 。

命  $EE'$  垂直於  $AE'$ 。

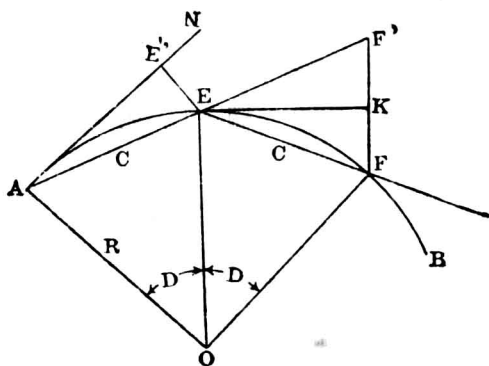
延長  $AE$  至  $F'$ , 命  $EF' = EF$

聯結  $F'F$ ，並命  $K$  為  $F'F$  之中點。聯結  $EK$ 。

於是因  $\angle F'EF = 180^\circ - (\angle FEO + \angle OEA)$

但  $\angle OEA = \angle OFE$

故  $\angle F'EF = \angle EOF = D$



第四二圖

於是在  $EOF, F'EF$  兩相似三角形中，

$$OE:EF = EF:F'F, \text{ 或 } F'F = \frac{\overline{EF}^2}{OE} = \frac{\overline{20}^2}{R} \dots\dots\dots(41)$$

同樣可求得第四十一圖中之  $BB', \dots$  亦等於

$$\frac{\overline{20}^2}{R}$$

但由公式(40)

$$EE' = a = \frac{\overline{20}^2}{2R},$$

故  $F'F = B'B \dots\dots = 2EE'$

即弦線偏距(弦長=20公尺)等於其切線偏距之二倍。此理在圖中觀之亦甚明顯。

$$\text{因 } \angle F'EF = D, \text{ 又 } \angle F'EK = \angle FEK = \frac{1}{2} D.$$

故 EK 亦為曲線 AB 之切線。於是 FK 即為切線偏距。

依此原則，弦線偏距可由切線偏距表中直接求得之。

例如  $R = 300$

查第十一表，在  $R = 300$  一欄之下，對 100 節之切線偏距為 0.667 公尺。

於是弦線偏距  $= 2 \times 0.667 = 1.334$  公尺。

又如  $R = 160$ 。

弦長 20 公尺之切線偏距為 1.25 公尺。

於是弦線偏距  $= 2 \times 1.25 = 2.50$  公尺。

實地測量法：

(1) 由表中查得切線偏距  $EE'$  及弦線偏距  $FF'$ ,  $BB'$ , ……。

(2) 用鍊尺沿 AN 切線測量  $AE' = AE$  距離 ( $AE'$  微小， $AE$  今取其近似值，與測量之精度並無妨礙)。

(3) 將鍊尺之一端放在 A 點，其他一端放在  $E'$  點，使鍊尺中間等於 AE 及  $EE'$  兩距離之點合在一起。於是此交合之點即為 F 點之所在。

(4) 用鍊尺延長 AE 至  $F'$ ，使  $EF' = 20$  公尺。

(5) 將鍊尺之一端放在 E 點，其他一端放在  $F'$  點，使鍊尺

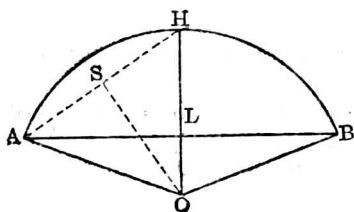
等於 20 公尺及 FF' 距離之點合在一起。於是此交合之點即爲  
點之所在。同樣求得 B 及其他各點。

46 中長法

例十三) 已知曲度 D 或半徑 R 及曲線上之任一弦線。試求此弦  
線上之中長。

如第四十三圖，命 AB 爲已知之弦線 = C。

$$AO = R, \angle AOB = A$$



第 四 三 圖

由公式(3),  $M = R \text{ vers } \frac{1}{2}I$

得  $M = R \text{ Vers } \frac{1}{2}A$

如 AB = 20 公尺, 則  $M = R \text{ vers } \frac{1}{2}D$

又  $OL = \sqrt{R^2 - (\frac{C}{2})^2}$

$$HL = M = R - \sqrt{R^2 - (\frac{C}{2})^2} \dots\dots\dots (42)$$

$$M = R - \sqrt{(R - \frac{C}{2})(R + \frac{C}{2})} \dots\dots\dots (43)$$

如計算  $M$ ，用平方數及平方根表，則以用(42)式爲宜，如用對數表，則以用(43)式爲宜。

若  $C = 20$  公尺或小於此數，可用下述之近似值公式。

$$HL:AH = \frac{AH}{2} : R$$

$$M = \frac{\overline{AH}^2}{2R}。$$

$AB$  與  $R$  相較爲值甚小，故  $AH$  可假設等於  $\frac{AB}{2} = \frac{C}{2}$ 。

於是  $M = \frac{C^2}{8R}$  (近似值).....(44)

例如  $C = 20$ ， $R = 300$ (查表  $D = 3^\circ 49' 10''$ )

用(3)式  $M = 300 \text{ vers } 1^\circ 55' = 300 \times .00056 = 0.168$  公尺

用(43)式  $M = 300 - \sqrt{290 \times 310} = 300 - 299.833$   
 $= 0.167$  公尺

用(44)式，

$$M = \frac{400}{8 \times 300} = 0.167 \text{ 公尺}$$

#### 47 變更曲線

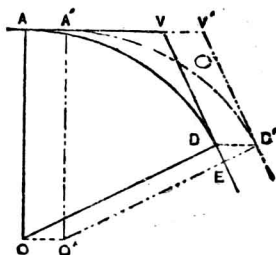
紙上定線，根據於草測平面圖上之地形線，地形線雖由實地量而得，但施測時欲其能與實在地形適相吻合，而不發生絲毫異，實不可能。因之，紙上定線，有時難免有不符實際情形之處，所定之曲線未必即爲最適宜者。苟須將曲線向左右稍爲變更，則

挖工程較能減少，工程設施亦比較容易者，自以將曲線變更爲宜，不可從事遷就已定之線也。

今且將變更曲線之法列述於下。

(例十三) 已知舊曲線 AD 其半徑  $AO = R$ ，及其切線 AV, VD, 如

第四十四圖。今欲另設一新曲線，其半徑仍爲 R，其終點，則止於另一平行切線 V'D' 上，兩切線之距離 = p 試求新曲線之起點 A' 之樁號。



第四十四圖

命 A'D' 爲所求之新曲線，

$$O'A' = O'D' = R$$

因 V'D' 爲 A'D' 曲線之切線，故 O'D' 垂直於 V'D'。

於是 ED' 等於 VD, V'D' 兩切線之距離 = p。

聯結 DD', 及 OO'

因 OA = 又 // 於 O'A',

故 OO' = 又 // 於 AA'

OD = 又 // 於 O'D',

故 DD' = 又 // 於 OO'

於是

$$AA' = 又 // 於 DD'$$

$$D'DE = V'VE = I$$

$$DD' \sin I = D'E = p$$

$$AA' = DD' = \frac{p}{\sin I} \dots \dots \dots (45)$$

若新切線 V'D' 在原切線 VD 之外邊，則 AA' 距離應加入於舊曲線之起點 A 之樁號中。若在內邊，則應由 A 之樁號中減去。



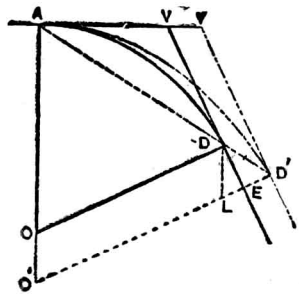
(例十四) 已知舊曲線 AD, 其半徑  $AO=R$ , 及其切線 AV, VD, 如

第四十五圖, 今欲另設一新曲線, 其起點仍在舊曲線之起點, 其終點則止於另一平行切線 V'D' 上。

試求新曲線之半徑  $R'$ 。

命 AD' 爲所求之新曲線

$$O'A = O'D' = R'$$



第四十五圖

$D'E = p =$  兩切線之距離

作弦線 AD, AD'; 並聯結 DD'; 又作 DL 與 AO 平行。

於是  $DLD' = AO'D' = I$

$$\begin{aligned} DL &= OO' \\ &= R' - R \\ &= D'L \end{aligned}$$

因之,  $DL \cos DLD' = LE$

或  $DL \text{ vers } DLD' = DL - LE$   
 $= D'E$

$$(R' - R) \text{ vers } I = p$$

$$(R' - R) = \frac{p}{\text{vers } I} \dots\dots\dots(46)$$

又  $D'DE = 90^\circ - DD'E$

$$\begin{aligned} &= 90^\circ - \frac{1}{2}(180^\circ - DLD') \\ &= \frac{1}{2}DLD' = \frac{1}{2}I \end{aligned}$$

$$\text{故 } DD' = \frac{D'E}{\sin D'DE} = \frac{P}{\sin \frac{1}{2} I} \dots\dots\dots (47)$$

又因  $\angle VAD = \angle V'AD'$ ，故  $AD$  與  $AD'$  係在同一直線上。

若將儀器安置在  $A$  點，對準  $D$  點觀視，則  $D'$  點可於  $AD$  直線上測量  $DD'$  距離設定之。

若新切線  $V'D'$  在原切線  $VD$  之外邊，如圖中所示，則

$$R' > R$$

公式(46)可以適用。若在內邊，則

$$R' < R$$

公式(46)將變為

$$R - R' = \frac{P}{\text{vers } I}$$

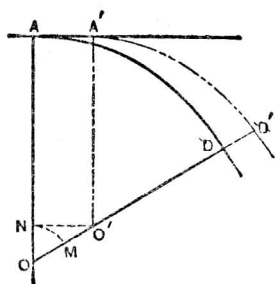
列十五) 已知舊曲線  $AD$ ，其半徑  $AO = R$ ，及其切線  $AV, VD$ 。如

第四十六圖。今欲另設一新曲線，

其終點止於另一平行切線  $V'D'$

上，直對原終點  $B$ 。試求新曲線之

半徑  $R'$  及其起點  $A'$  之樁號。



第四十六圖

命  $A'D'$  為所求之新曲線

$$O'A' = O'D' = R'$$

$$DD' = p$$

作  $O'N$  垂直於  $OA$ ；並作  $NM$  弧。

於是

$$\begin{aligned} O'M &= D'M - D'O \\ &= D'M - NA \\ &= D'M - DM \\ &= DD' \end{aligned}$$

$$O'M = p$$

但

$$ON \operatorname{exsec} NOO' = O'M$$

$$\text{故 } (R - R') \operatorname{exsec} I = p, \text{ 或 } R - R' = \frac{p}{\operatorname{exsec} I} \dots\dots\dots (48)$$

又

$$\begin{aligned} AA' &= NO' = ON \tan NOO' \\ &= (R - R') \tan I \dots\dots\dots (49) \end{aligned}$$

若新切線在原切線之外邊，如圖中所示，則

$$R > R'$$

AA' 距離應加入於舊曲線之起點 A 之樁號中。若在內邊，則

$$R < R'$$

$$\text{公式(48)將變爲 } R' - R = \frac{p}{\operatorname{exsec} I}$$

AA' 距離應由 A 之樁號中減去。

## 48 曲線上之障礙

設置曲線，難免中間不遇有障礙。如遇有這種情形發生時，如何測通過去，乃成爲問題。測量者須熟習幾何學原理，善於計算，並應用其智力，隨機應變以處置之，不可拘泥於一成不變之例。蓋測量曲線上之障礙，固有種種方法可用：或移置儀器於曲線上其他之

點；如曲線上只有一二點不能看見時，或用切線支距法，或用切線弦線偏距法，設置此一二點，其餘諸點仍用經緯儀設置之，不必移動儀器；有時或由弦線上用中長設置之。

惟讀者應注意者，設置曲線，所以每用整弦者，乃為便於計算及測量起見，並非必需如此也。苟在整樁上發生障礙，但左近尙有其他便利之點可資利用，則不妨竟利用之。

茲且舉一二例於下：

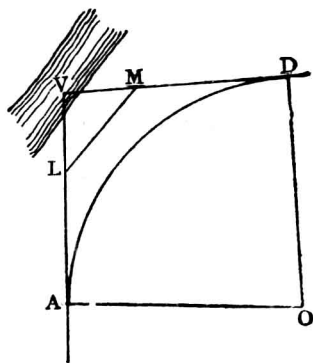
(例十六) 頂點  $V$  適不能達到。

例如  $V$  點適在房屋之中，或在河川池沼之上，此本係常見之事也。如遇此種情形，可即

(1) 另設一直線  $LM$ ，如第四十七圖，測量其長度。

(2) 儀器分別安置在  $L$  及  $M$  兩點，觀測  $VLM$  及  $VML$  兩角。

(3) 在  $VLM$  三角形中，已知  $LM$  邊長及  $VLM$ ， $VML$  兩角，可以計算  $LV$  及  $VM$  兩邊。



第四七圖

(5) 因  $I = VLM + VML$ ，既已求得  $I$ ，可以計算  $VA$  及  $VD$  兩切線。

(6)  $AL = VA - VL$ ,  $DM = VD - VM$ 。於是 A, D 兩點可以測定。

例題——假設  $LM = 54.68$  公尺;  $VLM = 15^\circ 18'$ ;

$VML = 18^\circ 22'$ ;  $D = 3^\circ 40'$ 。試求 AL 及 MD。

解—— $I = 15^\circ 18' + 18^\circ 22' = 33^\circ 40'$

$$T = R \tan \frac{1}{2} I$$

查表  $D = 3^\circ 40'$ ,  $R = 312.58$

|   |          |
|---|----------|
| log 312.58 .....                                      | 2.494961 |
| log tan $16^\circ 50'$ .....                          | 9.480801 |
| log T .....   | 1.975762 |
| T .....   | 94.57 公尺 |
| $LV = LM \frac{\sin 18^\circ 22'}{\sin 33^\circ 40'}$ |          |
| log LM .....  | 1.737829 |
| log sin $18^\circ 22'$ .....                          | 9.498444 |
| colog sin $33^\circ 40'$ .....                        | 0.256208 |
| log LV .....  | 1.492481 |
| LV .....  | 31.08    |

$$LV = 31.08$$

$$AV = 94.57$$

$$AL = 63.49$$

$$MV = LM \frac{\sin 15^\circ 18'}{\sin 33^\circ 40'}$$

|  |          |
|--|----------|
| $\log LM$ .....                        | 1.737829 |
| $\log \sin 15^\circ 18'$ .....         | 9.421395 |
| $\text{colog} \sin 33^\circ 40'$ ..... | 0.256208 |
| $\log MV$ .....                        | 1.415432 |
| $MV$ .....                             | 26.03    |

$$MV = 26.03$$

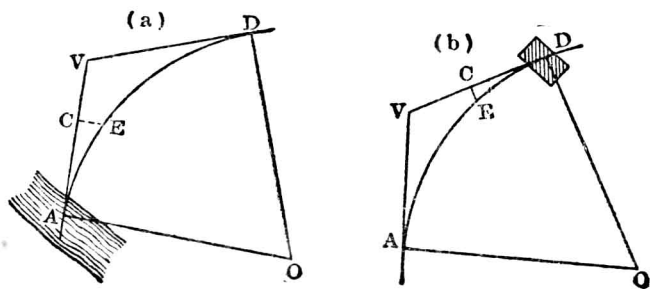
$$DV = 94.57$$

$$MD = 68.54$$

(例十七) B. C. 或 E. C. 適不能達到。

如是 B. C. 不能達到：

(1) 用切線支距法先求得曲線上之任一點 E, (最好, E 適為一整樁); 如第四十八圖之(a)。



第 四 八 圖

(2) 將儀器移置於 E 點, 而後按照普通方法設置其餘各點。

(3) 測量 V D 切線距以為核對。

(4)如是 E. C. 不能達到，則由 B. C. 測至 E 點之後(見圖之 b)，即可按照普通測量直線上之障礙物法，繞過 D 點，繼續向前測量。

在定測中，因路線係在紙上擇定，須遷就地形，故 B. C. 或 E. C. 常有測至稻田或水塘中者。經緯儀架在稻田或水塘之中，尚可勉強插緊，但測經緯儀者在此爛泥或深水中，將感不能立足之苦。遇有此種情形，可用長凳兩條，安置在架旁，測經緯儀者即立在長凳上觀測。

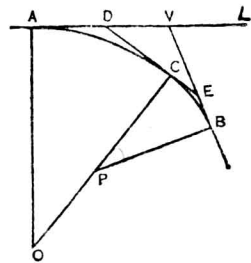
## 第五章 複曲線(compound curves)

### 49 複曲線之性質及應用

所謂複曲線者，即兩個或兩個以上半徑不同之單曲線所連續結合而成之曲線。此兩個單曲線在其結合之點，必有一公切線。如第四十九圖，AC 及 CB 為兩個單曲線，

CE 為在結合點 C 所作之公切線。C 點普通多稱為「複線點」，並以 P. C. C 表示之。  
*P.C.C. = point of compound curves.*

鐵路路線上採用複曲線之機會固甚少，僅於遇有岡巒起伏之地，須變更曲線之彎度時，偶一用之，但其性質及如何應用法，則不可不知也。



第 四 九 圖

此種曲線亦可按各個單曲線分別設置之，但當其連結一起時，實有其特別之性質，應加以研究。茲且分別述說於下。

在以下諸公式中， $R_1$  常代表較小之半徑； $R_2$  代表較大之半徑，關於各單曲線次序之先後。又在半徑較小之曲線中，命  $T_1$  及  $I_1$  為其切線及中心角。在半徑較大之曲線中，命  $T_2$  及  $I_2$  為其切線及中心角。



如第四十九圖，在  $CB$  曲線中， $PB = R_1$ ； $CPB = I_1$ ； $VB = T_1$

又在  $AC$  曲線中， $OA = R_2$ ； $AOC = I_2$ ； $AV = T_2$ 。

又  $LVB = I_0$ 。

### 50 複曲線之一般公式

(例十八) 已知  $R_1, R_2, I_1, I_2$ 。試求  $I, T_1, T_2$ 。

解——作公切線  $DCE$ ，(如第四十九圖)

於是  $VDE = I_2$

$VED = I_1$

$I = VDE + VED = I_1 + I_2$

$AD = CD = R_2 \tan \frac{1}{2} I_2$

$CE = EB = R_1 \tan \frac{1}{2} I_1$

$DE = R_1 \tan \frac{1}{2} I_1 + R_2 \tan \frac{1}{2} I_2 \dots\dots\dots(50)$

在  $DVE$  三角形中，已知三角及  $DE$  邊，可以求得  $VD$ 、 $VE$ 。

於是  $AV = AD + VD = T_2$

$VB = EB + VE = T_1$

(例十九) 已知  $T_1, R_1, I_1, I_0$ 。試求  $T_2, R_2, I_2$ 。

解—— $I_2 = I - I_1$

$CE = EB = R_1 \tan \frac{1}{2} I_1$

$$VE = VB - EB = T_1 - R_1 \tan \frac{1}{2} I_1$$

在 D V E 三角形中，已知 V E 邊及三角，可以求得 D V 及 D E 兩邊；由此再求得 C D

$$CD = DE - CE$$

於是 
$$T_2 = AV = AD + DV$$

$$= CD + DV$$

又 
$$R_2 = \frac{CD}{\tan \frac{1}{2} I_2}$$

(例二十) 已知  $T_2, R_2, I_2, I_0$ 。試求  $T_1, R_1, I_1$ 。

解—— $I_1 = I - I_2$

$$AD = DC = R_2 \tan \frac{1}{2} I_2$$

$$DV = AV - AD = T_2 - R_2 \tan \frac{1}{2} I_2$$

在 D V E 三角形中，已知 D V 邊及三角，可以求得 D E 及 V E 兩邊；由此再求得 C E

$$CE = DE - DC$$

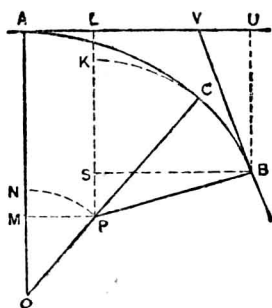
於是 
$$T_1 = VB = VE + EB$$

$$= VE + CE$$

又 
$$R_1 = \frac{CE}{\tan \frac{1}{2} I_1}$$

(例二十一) 已知  $T_1, R_1, R_2, I_0$ 。試求  $T_2, I_2, I_1$

解——如第五十圖，分別以 O 及 P 為圓心，O P 及 P C 為半



第五十圖

徑，作 PN 及 CK 弧。

作垂線 MP, LP, SB, UB。

於是  $AM = LP$

$$AN = CP = R_1 = KP$$

兩數相減

$$NM = LK = LS - KS$$

$$OP \text{ vers } NOP = VB \sin VBS - PB \text{ vers } KPB$$

$$(R_2 - R_1) \text{ vers } I_2 = T_1 \sin I - R_1 \text{ vers } I$$

$$\text{Vers } I_2 = \frac{T_1 \sin I - R_1 \text{ vers } I}{R_2 - R_1} \dots\dots\dots (51)$$

$$I_4 = I - I_2$$

$$AV = MP + SB - UV$$

$$T_2 = (R_2 - R_1) \sin I_2 + R_1 \sin I - T_1 \cos I \dots\dots\dots (52)$$

(例二十二) 已知  $T_1, R_1, I_1, I_0$  試求  $T_2, R_2, I_2$

解——

$$I_2 = I - I_1$$

由(例二十一)中得

$$R_2 - R_1 = \frac{T_1 \sin I - R_1 \text{vers } I}{\text{vers } I_2} \dots\dots\dots (53)$$

$$\text{又 } T_2 = (R_2 - R_1) \sin I_2 + R_1 \sin I - T_1 \cos I \dots\dots\dots (52)$$

例二十三) 已知  $T_2, T_1, R_1, I$ 。試求  $R_2, I_2, I_1$

解——由公式(52)

$$R_2 - R_1 = \frac{T_2 + T_1 \cos I - R_1 \sin I}{\sin I_2} \dots\dots\dots (54)$$

由(53), (54)兩式,得

$$\frac{T_1 \sin I - R_1 \text{vers } I}{\text{vers } I_2} = \frac{T_2 + T_1 \cos I - R_1 \sin I}{\sin I_2}$$

或  $\frac{\text{vers } I_2}{\sin I_2} = \frac{T_1 \sin I - R_1 \text{vers } I}{T_2 + T_1 \cos I - R_1 \sin I}$

但  $\frac{\text{vers } I_2}{\sin I_2} = \tan \frac{1}{2} I_2$

故  $\tan \frac{1}{2} I_2 = \frac{T_1 \sin I - R_1 \text{vers } I}{T_2 + T_1 \cos I - R_1 \sin I} \dots\dots\dots (55)$

例二十三) 已知  $T_2, R_2, R_1, I$ 。試

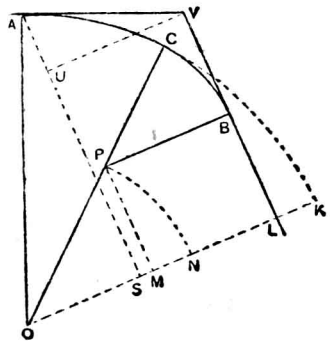
求  $T_1, I_2, I_1$

解——如第五十一圖,以O及P  
為圓心,OP及PC為半徑,作NP  
及KC弧。

作垂線OK, AS, PM, VU。

於是  $LM = BP$

$$= KN$$



第五一圖

$$MN = LM - LN$$

$$= KN - LN$$

$$= KL$$

$$LK = MN = KS - LS$$

$$OP \text{ vers } NOP = AO \text{ vers } AOK - AV \sin VAS$$

$$(R_2 - R_1) \text{ vers } I_1 = R_2 \text{ vers } I - T_2 \sin I$$

$$\text{vers } I_1 = \frac{R_2 \text{ vers } I - T_2 \sin I}{R_2 - R_1} \dots\dots\dots (5)$$

$$I_2 = I - I_1$$

$$VB = AS - PM - AU$$

$$T_1 = R_2 \sin I - (R_2 - R_1) \sin I_1 - T_2 \cos I \dots\dots\dots (5)$$

(例二十四) 已知  $T_2, R_2, I_2, I_0$  試求  $T_1, R_1, I_1$ 。

解—— $I_1 = I - I_2$

由公式(56), 得

$$R_2 - R_1 = \frac{R_2 \text{ vers } I - T_2 \sin I}{\text{vers } I_1} \dots\dots\dots (5)$$

$$\text{又 } T_1 = R_2 \sin I - (R_2 - R_1) \sin I_1 - T_2 \cos I \dots\dots\dots (5)$$

(例二十五) 已知  $T_2, T_1, R_2, I_0$  試求  $R_1, I_2, I_1$ 。

解——由公式(57), 得

$$R_2 - R_1 = \frac{R_2 \sin I - T_2 \cos I - T_1}{\sin I_1} \dots\dots\dots (5)$$

又由(58), (59)兩式, 得

$$\frac{R_2 \text{vers } I - T_2 \sin I}{\text{vers } I_1} = \frac{R_2 \sin I - T_2 \cos I - T_1}{\sin I_1}$$

但  $\frac{\text{vers } I_1}{\sin I_1} = \tan \frac{1}{2} I_1$

故  $\tan \frac{1}{2} I_1 = \frac{R_2 \text{vers } I - T_2 \sin I}{R_2 \sin I - T_2 \cos I - T_1} \dots\dots\dots(60)$

51 複曲線之實地測量法

(1) 先用上述之公式計算  $T_1, T_2$ 。

(2) 求得  $AV$  及  $VB$  兩切線之頂點  $V$ 。再按照已知之切線長  $AV = T_2, BV = T_1$ , 設置  $A, B$  兩點, 同時並設置  $D, E$  兩點。

(3) 將儀器安置在曲線起點  $A$ , 按照普通方法設置單曲線  $AC$  至  $C$  點。

(4) 將儀器移置於  $C$ 。轉動遊標至  $0^\circ$ , 再反轉至等於  $C$  點之總偏角。

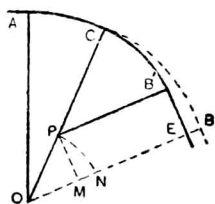
(5) 後視  $A$  點。轉動遊標至  $0^\circ$ , 觀看  $D$  點是否在視線之上, 以為核對。

(6) 倒轉望遠鏡, 再觀看  $E$  點是否在視線之上, 以為核對。於是仍按照普通方法設置單曲線  $CB$  至  $B$  點。

52 複曲線之變更

(例二十六) 已知單曲線  $AB$ , 其半徑  $OA = R_2$ , 其終點止於某一已

知切線上。如第五十二圖。今欲將此單曲線變更爲一複曲線，其第二單曲線之半徑 =  $R_1$  終點則止於另一平行切線上。試求此複曲線之複線點 P. C. C.



第五十二圖

解——命 C 爲所求之複線點 P. C. C.

CB' 爲所求之第二單曲線。

BE 爲已知之平行切線。

$BE = p =$  兩切線之距離。

以 O 爲圓心，OP 爲半徑，作 PN 弧。作 FM 垂線。

於是  $ON = OP = R_2 - R_1$

$$\begin{aligned} \text{又} \quad EB &= OB - OE \\ &= R_2 - (OM + R_1) \\ &= R_2 - R_1 - OM \end{aligned}$$

故  $EB = ON - OM = MN$

或  $MN = p.$

$$\begin{aligned} \text{vers } \angle COB &= \frac{MN}{OP} \\ &= \frac{p}{R_2 - R_1} \dots\dots\dots (61) \end{aligned}$$

既已求得  $\angle COB$  角，即可計算 CB 弧，由此求得 C 點之位置

(例二十七) 已知單曲線 AC，其半徑  $AO = R_1$ ；及一並不與此曲線相切之直線 EB，如第五十三圖。今欲由此曲線上之某一點 C

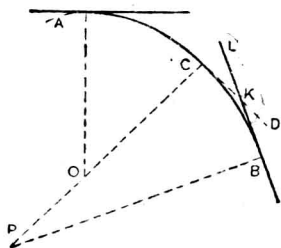
作一第二曲線，並與直線 LB 相切。

試求第二曲線之半徑  $R_2$ 。

解——命 CB 爲所求之曲線

由 C 作一切線 CD 與 LB 相交

於 K。



第五三圖

求得 CK 距離及 DKB 角。

$$\text{於是 } R_2 = \frac{CK}{\tan \frac{1}{2} DKB} \dots\dots\dots (62)$$

實地測量法：——

(1) 按照普通方法設置 AC 曲線至 C。

(2) 移置儀器於 C。轉動遊標至  $0^\circ$ ，再反轉至等於 C 點之總偏角。

(3) 後視 A 點。轉動遊標至  $0^\circ$ 。倒轉望遠鏡，設置 CK 切線。求得與 LB 線之交點 K。

(4) 測量 CK 距離。

(5) 移置儀器於 K。觀測 DKB 角。

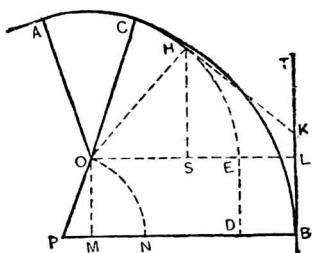
(6) 用公式(62)計算  $R_2$  及  $D_2$ 。

(7) 再移置儀器於 C，按照普通方法設置 CB 曲線。測量 KB 距離，觀其是否等於 CK，以資核對。

(例二十八) 已知單曲線 ACHE，其半徑  $OA = R_1$ ；及一並不與此曲線相切之直線 TB。如第五十四圖。今欲由此曲線另作一第



二曲線，其半徑 =  $R_2$ ，並與直線 TB 相切。試求此複曲線之複線點 P. C. C.。



解——命 CB 爲所求之第二曲線

第五四圖

$$PC = R_2$$

C 爲所求之 P.C.C.

$LE = p = TB$ , ED 兩切線之距離。

由曲線 A C H E 上任一便利之點 H 作切線 HK，使與 TB 相交於 K。

測量 HK 及 TKH 角。

於是  $HOL = TKH$

$$\begin{aligned} LE &= SL - SE \\ &= HK \sin TKH - OH \text{ vers } HOL \end{aligned}$$

$$p = HK \sin TKH - R_1 \text{ vers } TKH$$

又  $DB = MB - MD$

$$\begin{aligned} MN &= MB - NB \\ &= MB - MD \quad (NB = OC = OE = MD) \\ &= DB = p \end{aligned}$$

$$MN = PO \text{ vers } OPN = (R_2 - R_1) \text{ vers } I_2$$

故  $\frac{p}{R_2 - R_1} = \text{vers } I_2 \dots\dots\dots (63)$

又因  $\angle AOH$  角為已知

$$\angle AOH - \angle COH = \angle AOC = I_1$$

但  $\angle COH = \angle CPB - \angle TKH$

$\angle CPB$  角已由上式求得， $\angle TKH$  角並已測量

故  $\angle COH$  角為已知

因之， $\angle AOC$  角可以求得。由此可以測定  $C$  點。

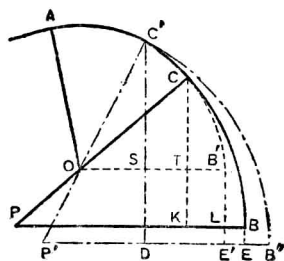
$$\begin{aligned} \text{再者 } KB &= KL + LB \\ &= HS - HK \cos \angle TKH + OM \\ &= OH \sin \angle TKH - HK \cos \angle TKH + OP \sin \angle OPN \\ &= R_1 \sin \angle TKH - HK \cos \angle TKH + (R_2 - R_1) \sin I_2 \end{aligned}$$

由此，可以計算  $KB$  之距離。設置曲線  $CB$  至  $B$  點後，再測量

$KB$  距離，以資核對。

(例二十九) 已知複曲線  $ACB$ ，其終點止於某一切線上，如第五

十五圖。今欲另設一複曲線，其半徑仍不變，其起點仍就原有之起點，其終點則止於另一平行切線上。試求新複曲線之複線點  $P, C, C'$ 。



解——此一問題，共有四種

情形可以發生：

第 五 五 圖

I. 新切線在舊切線之外，半徑較小之曲線在先。

II. 新切線在舊切線之內，半徑較小之曲線在先。

III. 新切線在舊切線之外，半徑較大之曲線在先。

IV. 新切線在舊切線之內，半徑較大之曲線在先。

茲且分別述之。

I. 命  $AC'B''$  爲所求之複曲線，其  $AC'$  一部分仍用原有之曲線。

$C'$  爲所求之複線點。

連結  $C'O$  並延長之至  $P'$ ,  $C'P' = R_2$ 。

連結  $P'B''$ 。

引長  $AC$  弧至  $B'$ , 連結  $OB'$ 。

作垂線  $C'SD$ ,  $CTK$ ,  $B'LE'$ , 及  $BE$ 。

命  $EB'' = p =$  兩切線之距離。

$$\begin{aligned} \text{於是} \quad EB'' &= E'B'' - LB \\ &= DB'' - SB' - (KB - TB') \\ &= P'C' \text{ vers } C'P'B'' - OC' \text{ vers } C'OB' \\ &\quad - (PC \text{ vers } CPB - OC \text{ vers } COB') \end{aligned}$$

$$\text{或} \quad p = (R_2 - R_1) \text{ vers } I'_2 - (R_2 - R_1) \text{ vers } I_2$$

其中  $I'_2 = C'P'B'' = C'OB'$

$$\text{故} \quad \frac{p}{R_2 - R_1} = \text{Vers } I'_2 - \text{Vers } I_2 \dots\dots\dots (64)$$

由此可以求得  $I'_2$ 。

又 
$$\begin{aligned} I_2 &= C'OC + COB' \\ &= C'OC + I_2 \end{aligned}$$

因之,可以計算 C O C 角, 設定 C' 點。

II. 同樣,如新切線在舊切線之內,半徑較小之曲線在先,則得

$$\frac{P}{R_2 - R_1} = \text{vers } I_2 - \text{vers } I_2' \dots\dots\dots(65)$$

III. 如新切線在舊切線之外,半徑較大之曲線在先,則得

$$\frac{P}{R_2 - R_1} = \text{vers } I_1 - \text{vers } I_1' \dots\dots\dots(66)$$

IV. 如新切線在舊切線之內,半徑較大之曲線在先,則得

$$\frac{P}{R_2 - R_1} = \text{vers } I_1' - \text{vers } I_1 \dots\dots\dots(67)$$

## 第六章 緩和曲線(transition curves)

### 53 緩和曲線在鐵路上之重要

凡一物體運動於曲線之上，常有一種離心力，欲將其擲出於路線之外，若欲將其保持在路線之內，必須產生一種向心力以抵抗之。我輩乘自行車時，遇有彎曲之路，必將身體向內傾斜，即此意也。按力學原。則，此種向心力等於

$$\frac{WV^2}{gR}$$

其中

$W$  = 物體之重量，

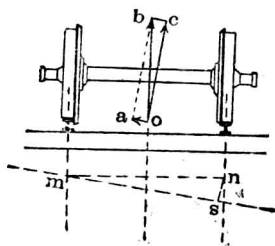
$V$  = 物體每秒運動之速度，

$g$  = 重力每秒之加速度，

$R$  = 曲線之半徑。

在鐵路上，路線若為直線，則兩軌當然在同一水平位置；若為曲線，須將外軌撥起適當之高度，稱為「外軌超高度」，使車輪行駛於鋼軌上時，鋼軌生於車輪之反動力，將含有一種橫的分力，適等於所需之向心力。

如第五十六圖，若  $ob$  表示此種反動力，則  $oc$  將表示車輪之重量  $W$ ，



第五十六圖

ao 將表示一種向心力。命之為 P。此分力 P 乃為我輩所欲研究者。

由 smn, oca 兩相似三角形, 得

$$sn : sm = ao : co$$

但  $sn =$  外軌之超高度, 命之為 e,

$sm =$  兩軌之軌距; G (近似),

$$ao = P$$

$$co = W$$

於是 
$$P = \frac{We}{G}$$

但  $P =$  橫的分力, 即向心力,

故 
$$\frac{We}{G} = \frac{WV^2}{gR}$$

或 
$$e = \frac{GV^2}{gR}$$

鐵路在直線上, 兩軌須在同一水平; 在曲線上, 兩軌則須一高一低。於是在由切線進至曲線之點, 即曲線之起點, 及由曲線進至切線之點, 即曲線之終點, 問題將要發生。此兩點一面屬於直線, 兩軌既須在同一水平, 一面又屬於曲線, 兩軌又須一高一低, 同時而有兩種性質, 乃是極端矛盾之事。欲免除此種矛盾現象, 有幾種方法曾經採用:

(一) 在切線上與 B. C. 點相距約三四十公尺之處, 即開始將外軌提高。

(二) 在曲線上自 B. C. 點起, 逐漸將外軌提高。

(三)將外軌之超高一部分分擔在切線上，一部分分擔在曲線上。

無論採用上述何種方法，火車進出曲線時，常要發生極不適意之震盪與摩擦。最後有人採用一種緩和曲線，於是所有不適意之震盪與摩擦乃完全免除。

#### 54 緩和曲線之基本原則

若有一曲線，其彎度時刻變化：在起點處其半徑為無限之大，於是逐漸變小，直待與原有單曲線相遇時，適等於單曲線之半徑。如此，則在該曲線之起點，外軌之超高度將等於零，由此逐漸加高，直至與單曲線相切之處，將適等於該單曲線所需之超高度。至在曲線中間之各點，所得之超高度亦將適如所求之值。能適合此種情形者，惟有緩和曲線。

按照前述之公式， $e$  係與  $R$  成反比例，易言之，即與  $D$  成正比例。故緩和曲線中沿線各點之曲度，必與其距離成正比例，易言之，即

$e$  與  $l$  成正比例，或  $\frac{e}{l}$  為一常數

其中  $l$  為曲線上某點與起點之距離。

但 
$$e = \frac{GV^2}{gR}$$

故 
$$\frac{GV^2}{gRl} = A \text{ (一常數)}$$

或 
$$Rl = \frac{GV^2}{gA}$$

因  $G, V, g, A$  皆為常數，

故 
$$Rl = C(\text{一常數})。$$

於是 
$$Rl = R_c l_c, \text{ 或 } R = \frac{R_c l_c}{l} \dots\dots\dots(68)$$

又 
$$\frac{1}{D} = \frac{l_c}{D_c}, \text{ 或 } \frac{D}{D_c} = \frac{l}{l_c} (\text{近似值}) \dots\dots\dots(69)$$

其中  $R_c =$  單曲線之半徑，

$D_c =$  單曲線之曲度，

$l_c =$  緩和曲線之總長。

命  $s =$  在任一點之緩和曲線與切線之總傾斜角，即在任一點之曲線之半徑與在曲線起點之半徑所交之角。此種角稱為「螺線角」，因緩和曲線為一種螺形線，例如在第五十八圖中，在  $B$  點之螺線角  $= BGN$ 。

$s_c =$  緩和曲線與單曲線結合處之螺線角，例如圖中之  $CFN$ 。

於是  $Rds = dl, \text{ 或 } ds = \frac{dl}{R}$

由(68) 
$$= \frac{ldl}{R_c l_c}$$

$$s = \frac{l^2}{2R_c l_c} \dots\dots\dots(70)$$

以下各點之表示法，將為本書所採用：

(1) 由切線進緩和曲線，稱為  $T. S.$ ，即  $tangent-spiral$  (亦



有稱爲 B. T. C. 者，意爲緩和曲線之起點)。

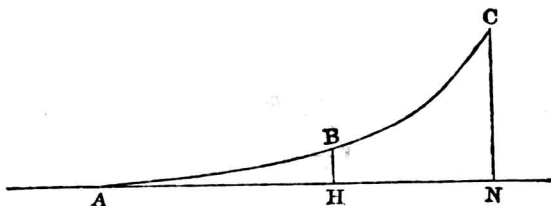
(2) 由緩和曲線進單曲線，稱爲 S. C.，即 spiral-curve, (亦有稱爲 P. T. C. 者，意爲緩和曲線之中點)。

(3) 由單曲線進緩和曲線，稱爲 C. S.，即 curve-spiral (亦有稱爲 P. T. C. 者)。

(4) 由緩和曲線進切線，稱爲 S. T.，即 spiral-tangent (亦有稱爲 E. T. C. 者，意爲緩和曲線之終點)。

### 55 三次拋物線

如第五十七圖。



第 五 七 圖

命  $BH = x$ ，即由切線至緩和曲線上任一點之支距，

$AH = y$ ，即由 T. S. 至此支距之距離。

於是按照微積分學之原則，將得

$$dx = dl \sin s, \quad dy = dl \cos s$$

所有  $s$  之值普通皆是甚小，故可假設

$$\sin s = s \quad \cos s = 1$$

於是  $dx = s dl$  又  $dy = dl$

$$= \frac{l^2 dl}{2R_c l_c} \quad y = l$$

$$= \frac{y^2 dy}{2R_c l_c}$$

求其積分，得  $x = \frac{y^3}{6R_c l_c} \dots\dots\dots (71)$

此為一種「三次拋物線」之方程式，而為鐵路定線上所常用者。

若不假設  $\cos s = 1$  之近似值，則上面之公式將為

$$dx = \frac{l^2 dl}{2R_c l_c}$$

求其積分，得  $x = \frac{l^3}{6R_c l_c} \dots\dots\dots (72)$

此稱為「三次螺形線」，其結果將較三次拋物線為準確。三次拋物線以用切線支距法設置曲線時用之較宜。近來鐵路測量多愛用偏角法，故  $x = \frac{l^3}{6R_c l_c}$  方程式較  $x = \frac{y^3}{6R_c l_c}$  尤便於應用。但此兩種方程式所表示之曲線，其性質初無二致也。

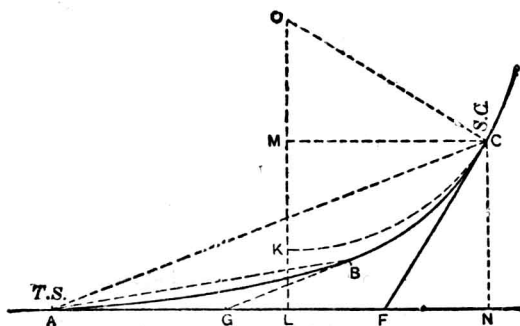
### 56 緩和曲線各部分之關係

如第五十八圖。

$$BGN = s = \frac{l^2}{2R_c l_c}$$

又  $CFN = s_c = \frac{l_c^2}{2R_c l_c} = \frac{l_c}{2R_c}$

即  $s_c = \frac{l_c}{R_c}$  (以弧角計)  $\dots\dots\dots (73)$



第五圖

或  $s_c = \frac{l_c D_c}{2 \times 20}$  (以度數計).....(74)

若將單曲線由 C 向後引長至 K，使與 AN 切線成平行。於是因  $KOC = CFN = s_c$ ，故其長度 CK 將為  $\frac{l_c}{2}$ 。

又  $AL = q = \frac{l_c}{2}$  (近似)

再者，在緩和曲線上之任一點 B

$$\sin BAN = \sin i = \frac{x}{l} \quad (\text{近似})$$

或  $i = \frac{x}{l}$  (近似)  $= \frac{l^3}{6R_c l_c} = \frac{l^2}{6R_c l_c}$

但由(70)  $s = \frac{l^2}{2R_c l_c}$

因之  $i = \frac{s}{3}$  又  $i_c = \frac{s_c}{3}$ .....(75)

又  $i : i_c = l^2 : l_c^2$  ; 或  $i = i_c \left(\frac{l}{l_c}\right)^2$ .....(76)

又反偏角  $ABG = BGN - BAN$

$$= s - i = 3i - i = 2i$$

$$ACF = 2i_c \dots\dots\dots(77)$$

由以上諸公式觀之，可得緩和曲線各部分之關係如下：

- (1) 曲線各點之曲度與由 T. S. 至該點之長度成正比例(公式 69)
- (2) 曲線各點之偏角與由 T. S. 至該點之長度之平方成正比例(公式 76)
- (3) 由切線所作之支距與由 T. S. 至該點之長度之立方成正比例(公式 72)
- (4) 在緩和曲線與單曲線聯結之點之螺線角等於曲度相同而長度則為緩和曲線之半之單曲線之中心角(公式 73)
- (5) 在緩和曲線上任一點之偏角等於在該點之螺線角之三分之一(公式 75)

57 一般公式

例三十) 已知  $l, l_c, R_c$ 。試求  $y$  及  $y_c$ 。

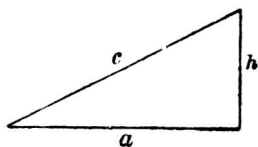
解——如第五十九圖，

$$c^2 - a^2 = h^2$$

$$(c+a)(c-a) = h^2$$

$$c-a = \frac{h^2}{c+a} = \frac{h^2}{2c} \text{ (近似)}$$

$$= e$$



第五十九圖

在三次螺形線中之任一點，命

$$c = dl, a = dy, h = dx$$

$$\begin{aligned} \text{於是} \quad de &= dl - dy = \frac{dx^2}{2dl} \\ &= \frac{l^4 dl^2}{2 \times 4R_c^2 l_c^2 dl} = \frac{l^4 dl}{8R_c^2 l_c^2} \end{aligned}$$

$$\text{求其積分，得} \quad e = l - y = \frac{l^5}{40R_c^2 l_c^2}$$

$$y = l - \frac{l^5}{40R_c^2 l_c^2} \dots\dots\dots(78)$$

$$y_c = l_c - \frac{l_c^5}{40R_c^2 l_c^2} = l_c - \frac{l_c^3}{40R_c^2} \dots\dots\dots(79)$$

(例三十一) 已知  $R_c, y_c, x_c, s_c$ 。試求  $AL = q, LK = p$  ( $K$  為單曲線向後引長至與切線相平行之點)。

解——如第五十八圖，

$$CN = x_c, AN = y_c$$

$$AL = AN - LN = AN - OC \sin COK$$

$$\text{或} \quad q = y_c - R_c \sin s_c \dots\dots\dots(80)$$

$$LK = LM - KM = CN - OC \text{ vers } COK$$

$$\text{或} \quad p = x_c - R_c \text{ vers } s_c \dots\dots\dots(81)$$

在鐵路路線中，並非任何單曲線之兩端，皆須應用緩和曲線，通常有一定之規定，單曲線之曲度或半徑不超過某限度者，即無須用之。至應用緩和曲線時，其長度亦預為規定，曲度愈大，又火車行駛之速度愈大，則緩和曲線之長度應愈長。

我國定制，凡單曲線之曲度達  $2^\circ$  (半徑 572.99 公尺) 及以上

者，應即引用緩和曲線。又單曲線之曲度達  $4^\circ$  (半徑 286.54 公尺) 或更大者，其緩和曲線之長度須有 55 公尺。至緩和曲線之形式，或為三次螺形線，或為三次拋物線 則得由工程司任意採用之。

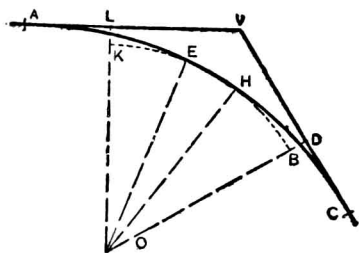
本書特按照上述諸公式，製成第十二及第十三兩表，以單曲線之半徑  $R$  為準則，並將緩和曲線之長度分為三類，即 60 公尺，80 公尺，及 100 公尺。因我國定制，在幹線上單曲線之最大曲度為  $5^\circ$ ，即最小半徑為 230 公尺。故本表之最小半徑擬為  $R=200$  公尺。其他亦皆擇最常用之數編入 其不常用之半徑不列焉。

按照三次螺形線方程式、緩和曲線之長度， $l$ ，係沿曲線上測量者；但實際測量時，係依弦長計算。故本表中所指緩和曲線之長度皆以弦線計算，以期便於實測。

(例三十二) 已知  $I, l_c$ ，及  $R_c$  或  $D_c$ 。試求切線距  $T_3$ 。

解——如第六十圖。因單曲線兩端所用之緩和曲線普通皆是相同。故兩切線距  $AV$  及  $VC$  亦是相等。

命  $AL=q$ ， $LK=p$ 。按照前述之公式，或直接由第十三表中先求得  $p$  及  $q$  之值。



第六十圖

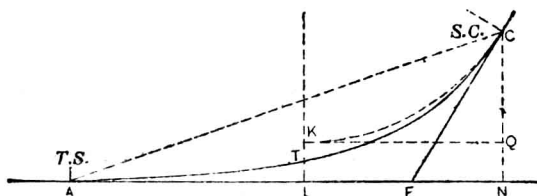
$$\begin{aligned} \text{於是} \quad AV &= AL + LV \\ &= AL + OL \tan \frac{1}{2} \text{LOD} \end{aligned}$$

$$\begin{aligned} \text{或 } T_s &= q + (R_c + p) \tan \frac{1}{2} I \\ &= q + T_c + p \tan \frac{1}{2} I \dots\dots\dots (82) \end{aligned}$$

其中  $T_c$  為單用單曲線，其中心角等於  $I$  時之切線距。

### 58 近似法

如第六十一圖， $AC$  為緩和曲線。 $AN$  為  $T.S.$  點之切線。



第 六 一 圖

$CF$  為  $S.C.$  點之切線。 $K$  為單曲線由  $C$  向後引長，至與  $AN$  切線成平行之點， $KQ$  與  $AN$  成平行。

由公式(73)，得  $KC = s_c R_c = \frac{l_c}{2}$  (近似)

又  $q = \frac{l_c}{2}$  (近似)

由公式(39)，得  $CQ = \frac{KC^2}{2R} = \frac{(\frac{l_c}{2})^2}{2R_c} = \frac{l_c^2}{8R_c}$  (近似)

又  $CN = x_c = \frac{l_c^3}{6R_c l_c} = \frac{l_c^2}{6R_c}$

於是  $CN = \frac{4}{3} CQ = CQ + \frac{CQ}{3}$   
 $= CQ + QN$

$$CQ = 3QN = 3KL = 3p \text{ (近似)}$$

$$CN = 4QN = 4KL = 4p \text{ (近似)} \dots\dots\dots(83)$$

由公式(72), 得  $\frac{x}{x_c} = \frac{l^3}{l_c^3} \dots\dots\dots(84)$

$$\frac{TL}{CN} = \frac{\left(\frac{l_c}{2}\right)^3}{l_c^3}$$

或

$$CN = 8TL = 4KL$$

$$TL = \frac{KL}{2} = \frac{p}{2} \text{ (近似)} \dots\dots\dots(85)$$

59 例題

(例題一)  $R = 230$  公尺,  $l_c = 60$  公尺, 試求  $s_c, i_{20}, i_{40}, i_c, x_c, y_c, q,$  及  $p$ 。

解——  $s_c = \frac{l_c}{2} \times \frac{180^\circ}{\pi} = \frac{30}{230} \times 57.2958$   
 $= 7.^\circ 46 = 7^\circ 28'$

$$i_c = \frac{s_c}{3} = 2^\circ 29'$$

$$i_{20} = \left(\frac{20}{60}\right)^2 \times i_c = \frac{2^\circ 29'}{9} = 16'$$

$$i_{40} = \left(\frac{40}{60}\right)^2 \times i_c = \frac{4}{9} \times 2^\circ 29' = 1^\circ 6'$$

$$x_c = \frac{l_c^3}{6R_c l_c} = \frac{l_c^2}{6R_c} = \frac{60^2}{6 \times 230} = 2.61 \text{ 公尺}$$

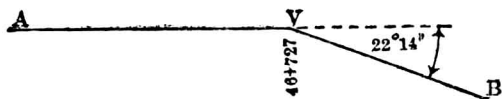
$$y_c = l_c - \frac{l_c^3}{40R_c^2} = 60 - \frac{60^3}{40 \times 230^2} = 59.90 \text{ 公尺}$$



$$q = y_c - R_c \sin s_c = 59.90 - 230 \times 0.12995 \\ = 30.01 \text{ 公尺}$$

$$p = x_c - R_c \text{ vers. } s_c = 2.61 - 230 \times 0.00848 \\ = 0.66 \text{ 公尺}$$

(例題二)有兩切線 AV, VB, 如第六十二圖所示。今欲於中間以半徑 250 公尺之單曲線聯結之。單曲線之兩端各用一緩和曲線, 其長度為 60 公尺。



第 六 二 圖

解—— $I = 22^{\circ}14'$ ,  $V = 46 + 727$ 。

查第八表,  $T_c = 19.649 \times 2.5 = 49.12$  公尺

又查第十三表,  $q = 30.02$ ,  $p = 0.61$

$$\tan \frac{1}{2}(22^{\circ}14') = 0.19649$$

$$T_s = q + T_c + p \tan \frac{1}{2}I \\ = 30.02 + 49.12 + 0.61 \times 0.19649 \\ = 79.26$$

又查第十三表  $s_c = 6^{\circ}52'$

$$2s_c = 13^{\circ}44'$$

$$I = 22^{\circ}14'$$

$$I - 2s_c = 8^{\circ}30' = I_c$$

查第八表

$$I_c = 8^\circ 30'$$

$$L = 14.835 \times 2.5 = 37.09$$

$$V = 46 + 727.00$$

$$\underline{\hspace{1.5cm}} \quad 79.26 = T_s$$

$$T.S. = 46 + 647.74$$

$$\underline{\hspace{1.5cm}} \quad 60.00 = l_c$$

$$S.C. = 46 + 707.74$$

$$\underline{\hspace{1.5cm}} \quad 37.09 = L$$

$$C.S. = 46 + 744.83$$

$$\underline{\hspace{1.5cm}} \quad 60.00 = l_c$$

$$S.T. = 46 + 804.83$$

儀器在 46 + 647.74, 緩和曲線上各點之偏角爲

$$46 + 667.74, \quad i = 0^\circ 15'$$

$$46 + 687.74, \quad i = 1^\circ 01' \text{ (見第十二表)}$$

$$46 + 707.74, \quad i = 2^\circ 17'$$

儀器在 46 + 707.74, 回轉至 T. S. 點之反偏角爲

$$2i_c = 2 \times 2^\circ 17' = 4^\circ 34'$$

單曲線上各點之總偏角爲

$$46 + 720, \quad i = \frac{12.26}{20} \times 2^\circ 17'.5 = 1^\circ 24'$$

$$46 + 740, \quad i = 2^\circ 17'.5 + 1^\circ 24' = 3^\circ 42'$$

$$46 + 744.83, \quad i = 3^\circ 42' + \frac{4.83}{20} \times 2^\circ 17'.5 = 4^\circ 15'$$

(查第九表  $R = 250, i = 2^\circ 17.5'$ )

$$\text{又} \quad \frac{I - 2s_c}{2} = \frac{8^\circ 30'}{2} = 4^\circ 15' \text{ (核對)}。$$

$$\text{(附註) 因} \quad i_c = \frac{s_c}{3} = \frac{l_c D_c}{3 \times 40}$$

$$\text{故若} \quad l_c = 60$$

$$\text{則} \quad i_c = \frac{D_c}{2}$$

即 S. C. 點之偏角 (儀器在 T. S. 點)  $i_c$  適等於單曲線之偏角  $\frac{D_c}{2}$ , 故欲求單曲線之偏角, 可由第十二表中直接求得之, 不必另查第九表也。

### 60 緩和曲線之實地測量法

(1) 先沿切線測至 V 點。測量中心角 I。

(2) 按照規定之緩和曲線之長度  $l_c$ , 求得  $s_c$  及 p, q 之值。

(3) 按照單曲線之曲度  $D_c$  或半徑  $R_c$ , 並量得之中心角 I, 求得切線距  $T_s$ 。

(4) 由 V 向後量  $T_s$  之距離, 求得 T. S. 點; 並向前量  $T_s$  之距離, 求得 <sup>S.T</sup> T. S. 點。

(5) 將儀器安置在 T. S., 用由表中查得之緩和曲線上各點之總偏角, 設置相當各點, 直至 S. C. 為止。

(6) 移置儀器於 S. C.。將遊標轉至  $0^\circ$ , 再反轉至等於  $2i_c$  之角度。

(7) 後視 T. S. 點。於是當遊標轉到  $0^\circ$  時，視線將對準在 S. C. 點之切線上。

(8) 反轉望遠鏡。按照普通方法設置單曲線。用單曲線上各點之總偏角，其中心角為  $I - 2s_c$ 。

(9) 再將儀器移置於 S. T. 點(並非 C. S. 點)，按照前法置設第二緩和曲線。

(10) 測至 C. S. 點時加以核對，觀其有無錯誤。如核對不符，須重新設置 C. S. 點。

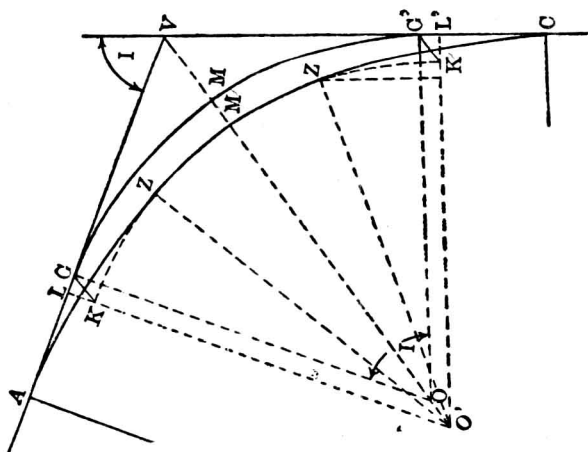
緩和曲線上各點之位置皆須十分準確，如測至 C. S. 點時，緩和曲線與單曲線並不能適相吻合，則寧願變更單曲線上之點以遷就緩和曲線上之點，因前者之關係比較不如後者之重要也。

### 61 向內移動法

第六十三圖表示因引用緩和曲線，單曲線須向內移動之情形。GMG' 表示原定之單曲線，其中心角  $= I$ ，半徑  $= OG$ ，切線距  $= GV$  或  $G'V(T_c)$ 。今因採用緩和曲線，單曲線須向內移動 MM' 之距離，於是成爲 KMK'。其中 Z, Z' 爲單曲線與緩和曲線之兩結合點，即 S. C. 與 C. S.。ZK 及 Z'K' 則爲單曲線之向兩端引長。A 爲 T. S.，C 爲 S. T.，AV 或 VC 等於  $T_c$ 。

於是因 KM'K' 爲 GMG' 向內移動之單曲線，故

$$MM' = OO' = GK = G'K'$$



第 六 三 圖

但 
$$GK = \frac{LK}{\cos GKL} = \frac{P}{\cos \frac{1}{2} I}$$

故 
$$MM' = - \frac{P}{\cos \frac{1}{2} I} \dots\dots\dots (86)$$

又 
$$\begin{aligned} AG &= AL + LG \\ &= AL + LK \tan GKL \\ &= q + p \tan \frac{1}{2} I \dots\dots\dots (87) \end{aligned}$$

設置緩和曲線，在歐陸諸國多採用前節所述之法，在英國則採用向內移動法。用此種方法時，手續非常簡單。即

(1) 先求得向內移動之距離 
$$\frac{P}{\cos \frac{1}{2} I}$$

(2) 按照普通方法測量切線至 L 點。

(3) 再由 L 點量得  $p = LK$  之支距，設定 K 點。

(4) 將儀器安置在 K 點，按照普通方法設置單曲線  $KM'K'$  由 K 至  $K'$ 。如此，即完成定線之工作。俟將來實行築路時，再由 L 點向後量得  $AL = q$  之距離，設定 T. S.。於是將儀器安置在 T. S.，用偏角法將第一緩和曲線測定。再移置儀器於 S. T.，向後測定第二緩和曲線。

### 62 支距法

如已知  $D_c$  或  $R_c$  及  $l_c$ ，亦可用支距法設置緩和曲線。法先由第十三表中，或用  $x_c = \frac{l_c^2}{6R_c} = \frac{l_c^2 \sin \frac{1}{2} D_c}{6 \times 10}$  之公式，求得  $x_c$  之值。再由  $x_c$  求得其他各點之支距，用公式

$$x = x_c \left( \frac{l}{l_c} \right)^3$$

此種方法有時固甚有用，但通常設置緩和曲線多用偏角法。

茲且舉一例於下：

(例題) 已知  $R = 300$ ,  $l_c = 80$ 。試求各點之支距。

(解) 查第十三表， $R = 300$ ,  $l_c = 80$ ，得

$$x_c = 3.56$$

於是  $l_c = 80$                        $x_c = 3.56$

$$l_s = 60 \qquad x_s = 3.56 \times \left( \frac{60}{80} \right)^3 = 1.50$$

$$l_2 = 40 \quad x_2 = 3.56 \times \left(\frac{40}{80}\right)^3 = 0.45$$

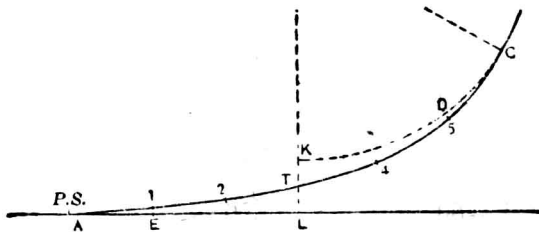
$$l_1 = 20 \quad x_1 = 3.56 \times \left(\frac{20}{80}\right)^3 = 0.05$$

用支距法設置緩和曲線，係一面測量各點之支距  $x$ ，一面測量切線上之距離  $y$ 。此距離本應按公式  $y = l - \frac{l^3}{40R^2l^2}$  求得之。但實際上因  $y$  與  $l$  相差極微，故並不須如此計算，只須命在 20 公尺之點， $y$  亦等於 20 公尺；在 40 公尺之點， $y$  亦等於 40 公尺；……。如此，結果亦甚準確。

### 63 緩和曲線上之障礙

設置緩和曲線，有時中間遇有障礙，致不能在 T. S. 點將全部曲線一次測成，必須移置儀器於中間任一方便之點，按照重新求得之偏角繼續設置之。惟此重新求得之偏角究應如何求得，乃為本節所欲述說者。

如第六十四圖，若將緩和曲線分成若干相等之長度，如 A-1, 1-2, 2-T, ……。按照公式(69)，在任一三次螺形線中 曲線之曲



第 六 四 圖

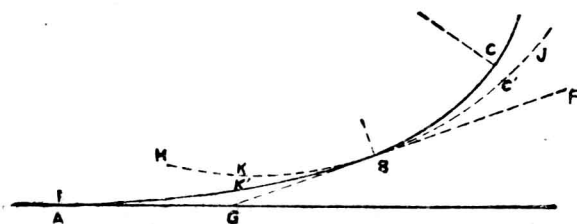
度  $D$  常與其長度成正比例。今  $A-1=1-2=\dots=5-C$ ，因之，  
 曲線在 1 點之曲度  $=\frac{1}{6}D_c$ ；在 5 點之曲度  $=\frac{5}{6}D_c$ 。又單曲線之  
 曲度  $=D_c$ 。

於是  $\frac{1}{6}D_c = D_c - \frac{5}{6}D_c$ ； $\frac{2}{6}D_c = D_c - \frac{4}{6}D_c$ ；……易言之，  
 曲線在 1 點，2 點，或 3 點之曲度將各等於在 5 點，4 點，或 3 點之  
 單曲線與螺形線間兩曲度之差。

由上所述，在任一緩和曲線中。凡在相等距離之點，無論其係  
 由切線  $AL$  或單曲線  $CK$  計算其曲度之變化常相等。於是按照 44  
 節，兩點之切線偏距必相等，即  $E-1=D-5$ ，

於是在  $AE1$ ， $CD5$  兩三角形中，因  $E-1=D-5$ ； $A-1=C-5$ ；  
 又支距  $E-1 \div$  距離  $A-1 = \sin EA1$ （近似）；支距  $D-5 \div$  距離  
 $C-5 = \sin DC5$ （近似）。故  $\sin EA1 = \sin DC5$ （近似），即  $\angle EAI$   
 $= \angle DC5$ （近似）。同樣可以證明  $\angle LAT = \angle KCT$ 。

因此，若將儀器安置在緩和曲線上之任一點  $B$ ，如第六十五圖，  
 並將視線對準在切線  $BG$  上則（一）對於緩和曲線上前面任一點之



第 六 五 圖



偏角將爲(1)單曲線 H B J 上由 B 點至該點之“總偏角”(單曲線之曲度則等於在 B 點之緩和曲線之曲度);及(2)緩和曲線 A B C 上由原切線之 T. S. 點至相等距離之點之“總偏角”,兩項之和。(二)對於向後任一點之偏角將爲以上兩項之差。

如圖,由 B 點至 C 點之偏角 =  $\angle FBC = \angle FBC' + \angle C'BC$ ;

由 B 點至 K' 點之偏角 =  $\angle GBK' = \angle GBK - \angle K'BK$ ,

其中  $BC = BC'$ , 又  $BK' = BK$ 。

試舉一例於下:

(例題)有一緩和曲線,其長度爲 80 公尺。今欲每隔 10 公尺設置一樁,但在第 4 點前遇有障礙。試求儀器移置後各點之總偏角。假設  $D_c = 5^\circ$ 。

今因第 4 點前遇有障礙,可將儀器安置在第 4 點。

$$\text{解—— } s_c = \frac{l_c \times D_c}{40} = \frac{80 \times 5^\circ}{40} = 10^\circ$$

$$i_c = \frac{s_c}{3} = \frac{10^\circ}{3} = 3^\circ 20'$$

$$i_4 = i_c \left(\frac{l_4}{l_c}\right)^2 = 3^\circ 20' \times \left(\frac{1}{2}\right)^2 = 50'$$

切線 B G 與 A B 所交之角 =  $2i_4 = 2 \times 50' = 1^\circ 40'$

在 4 點之曲度  $D = \frac{40}{80} \times 5^\circ = 2^\circ 30'$

在  $2^\circ 30'$  之單曲線上,分弦 10 公尺之偏角 =  $\frac{2^\circ 30'}{4} = 37.5'$

又由 T. S. 點至 1, 2, 3 各點之總偏角爲

$$i_1 = i_c \left( \frac{l_1}{l_c} \right)^2 = 3^\circ 20' \times \left( \frac{1}{8} \right)^2 = 3'$$

$$i_2 = i_c \left( \frac{l_2}{l_c} \right)^2 = 3^\circ 20' \times \left( \frac{1}{4} \right)^2 = 12'.5$$

$$i_3 = i_c \left( \frac{l_3}{l_c} \right)^2 = 3^\circ 20' \times \left( \frac{3}{8} \right)^2 = 28'$$

於是儀器在 4 點時，對於緩和曲線上各點之總偏角將為

$$5 \text{ 點} \quad 37'.5 + 3' = 40'.5$$

$$6 \text{ 點} \quad 75' + 12'.5 = 87'.5 = 1^\circ 27'.5$$

$$7 \text{ 點} \quad 112'.5 + 28' = 140'.5 = 2^\circ 20'.5$$

$$8 \text{ 點} \quad 150' + 50' = 200' = 3^\circ 20'$$

$$3 \text{ 點} \quad 37'.5 - 3' = 34'.5$$

$$2 \text{ 點} \quad 75' - 12'.5 = 62'.5 = 1^\circ 2'.5$$

$$1 \text{ 點} \quad 112'.5 - 28' = 84'.5 = 1^\circ 24'.5$$

$$\text{T.S. 點} \quad 150' - 50' = 100' = 1^\circ 40'$$

由 4 點至 T. S 點之反偏角亦等於  $2i_4 = 1^\circ 40'$ ，故計算並無錯誤。

實地測量法：——

(1) 儀器先安置在 T. S. 點，按照前述設置緩和曲線之法，用求得各點之總偏角  $i_1, i_2, \dots$  設置 1, 2,  $\dots$  各點直至 B 為止，

(2) 移置儀器於 B 點。將遊標反轉到等於  $2i_B$  之角度，後視 T. S. 點。

(3) 倒轉望遠鏡，將遊標轉回到  $0^\circ$  (視線適在 BG 切線上)，

再轉到等於求得 $(B+1)$ 點之總偏角。於是設置 $(B+1)$ 點。

(4) 同樣將遊標轉到等於求得 $(B+2)$ ,  $(B+3)$ , ……各點之總偏角, 向前設置 $(B+2)$ ,  $(B+3)$  ……各點。

## 第七章 豎曲線(vertical curves)

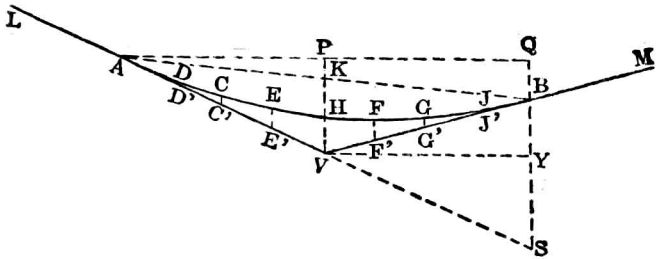
### 64 豎曲線在鐵路線之重要

鐵路不能自始至終取一平直之路線前既已明言之。在橫面，路線遇有變更方向之處，多引用一種規則曲線：單曲線，複曲線，或緩和曲線，於兩直線之間，使方向更變時，火車能依曲線徐緩進行，不致由此一直線突進至彼一直線。同樣，在縱面，路線遇有變更坡度之處，亦須引用一種規則豎曲線，於兩坡度線之間，使火車行駛於其間，不致突變其上下方向，而能平順徐緩由一坡度進至另一坡度。此在路線由上坡忽變至下坡或由下坡忽變至上坡時（即兩坡度線成 $\wedge$ 或 $\vee$ 字形），尤為重要。在此種地方，中間如無一種曲線聯絡之，則火車行駛至交點時，不特將感到一種驚人之衝擊，甚或有出軌之虞。

普通所用之一種豎曲線，多為拋物線形。弧曲線固亦可用，但不能如拋物線之變化緩和，而且應用簡單。

### 65 拋物線

在第六十六圖中，命  $LV$  及  $VM$  表示兩坡度線，相交於  $V$ 。 $AHB$  為拋物線，與  $LV$  及  $VM$  相切於  $A$  及  $B$  兩點。



第 六 六 圖

今假設此拋物線即為所求之豎曲線，長 160 公尺。按 20 公尺之樁距，則自 A 至 B 應分為 9 點。試求各點之高度。

按解析幾何學之原則，拋物線之方程式為

$$y^2 = 4px, \text{ 或 } y^2 = (\text{常數})x。$$

惟上述之方程式在計算時並不常用，所通用者乃

$$x_1 : x_2 = y_1^2 : y_2^2 \dots \dots \dots (88)$$

之一公式。由此公式觀之，將見由切線上任一點所作之縱距，係與該點之切線距之平方成正比例。

作水平線 AQ, VY 及垂直線 VP, SQ。連結 A, B, 使交 VP 於 K。於是因拋物線由頂點 V 向兩邊伸展之距離常相等，故

$$AP = PQ$$

因之，  $AK = KB, AV = VS$

又由公式(88)得

$$SB : VH = (2AV)^2 : AV^2 = 4 : 1$$

$$SB = 4VH$$

同樣可得  $VH = 4C'C$ ;  $C'C = 4D'D$ ;.....。

又由相似三角形,得  $KV = \frac{SB}{2}$

但  $SB = 4VH$

故  $KV = 2HV$

易言之,即 H 係在 V 及 K 之中點。

V 點之高度係由兩已定坡度線中求得之。如能知豎曲線之長度  $L'$ ,則可以定 VA 及 VB 兩距離,而 A, B 兩點之高度,即可直接由其相當之坡度線上求得之。

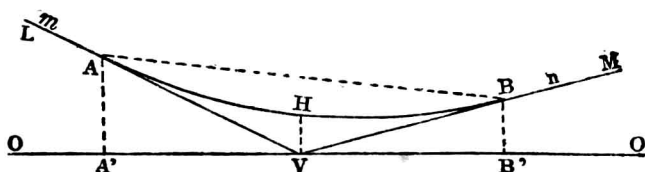
$$K \text{ 之高度} = \frac{A \text{ 之高度} + B \text{ 之高度}}{2}$$

$$H \text{ 之高度} = \frac{V \text{ 之高度} + K \text{ 之高度}}{2}$$

$$= \frac{1}{2} \left( V \text{ 之高度} + \frac{A \text{ 之高度} + B \text{ 之高度}}{2} \right)$$

$$VH = H \text{ 之高度} - V \text{ 之高度}$$

命  $m$  及  $n$  代表 LV 及 VM 兩線之坡度率。並暫假設 V 點



第 六 七 圖

係在水平基面上,即 V 之高度等於 0, 如第六十七圖。於是

$$A \text{ 之高度} = AA' = AV \times m = \frac{L'}{2} \times m$$

$$B \text{ 之高度} = BB' = BV \times n = \frac{L'}{2} \times n$$

$$\begin{aligned} H \text{ 之高度} &= \frac{1}{2} \left( 0 + \frac{\frac{mL'}{2} \pm \frac{nL'}{2}}{2} \right) \\ &= \frac{1}{8} (m \pm n) L' \dots\dots\dots (89) \end{aligned}$$

(註)上式  $(m \pm n)$  中之  $(+)$  號乃兩坡度中之一為上坡，而其他為下坡者； $(-)$  號乃兩坡度同為上坡或下坡者。

所有在此豎曲線上之其他各中間點之高度，可用下法求得之。

(1) 先求得各縱距  $D'D$ ,  $C'C$ ,  $E'E$ , .....。如第六十六圖。

$$D'D = J'J = \frac{VH}{16}$$

$$C'C = G'G = \frac{VH}{4}$$

$$E'E = F'F = \frac{9VH}{16}$$

(2) 在縱斷面圖上求得  $D'$ ,  $C'$ ,  $E'$ ,  $F'$ ,  $G'$ , 及  $J'$  各點之高度。

(3) 各點之高度加相當各縱距，即得豎曲線上相當各點之高度。

## 66 豎曲線之長度

就理論上言之，豎曲線之長度須依坡度之變化，及火車牽引之長度而定。坡度之變化愈大，則豎曲線應愈長；火車牽引愈長，則豎曲線亦應愈長。但因路線之坡度愈大，則火車之牽引力將愈小。故以上兩因素常互相調和。

大概言之，豎曲線之長度，可按以下公式計算之，

$$L' = (m \pm n) R \dots\dots\dots(90)$$

其中  $L'$  = 豎曲線之長度

$m$  及  $n$  = 兩坡度線之坡度率

$R$  = 豎曲線之半徑，兩線之交角爲凸形者，用 5000 公尺，如下述之第一例；交角爲凹形者，用 10000 公尺，如下述之第二及第三兩例。

(註) 1.  $m \pm n$  之 (+) 號乃兩坡度中之一爲上坡，而其他爲下坡者；(-) 號乃兩坡度同爲上坡或下坡者。

2. 坡度線之相交點 (即頂點  $V$ ) 若在縱斷面圖之每第二十公尺之縱線中時，豎曲線之長度即由公式(90)算得之，而取其最近每二十公尺之偶數(如下述之第一例)。

3. 坡度線之相交點若在縱斷面圖之每第十公尺之縱線中時，豎曲線之長度即由公式(90)算得之，而取其最近每二十公尺之奇倍數(如下述之第二例)。

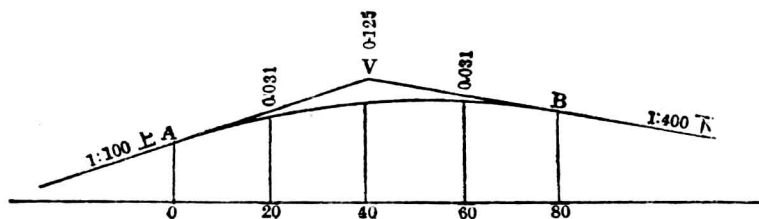
4. 坡度線之相交點若在縱斷面圖之每二十公尺之縱線間時，豎曲線之長度即由公式(90)算得之，而其一端則自最近之二十公尺之縱線起(如下述之第三例)。

#### 67 例題

#### 第 一 例



設如第六十八圖所示，百分之一上坡與四百分之一下坡兩坡度線相交。試求豎曲線之長度與各點之縱距。



第 六 八 圖

$$\text{解} \quad m = \frac{1}{100} = 0.01, \quad n = \frac{1}{400} = 0.0025$$

$$\begin{aligned} L' &= (m+n)R = (0.01 + 0.0025) \times 5000 \\ &= 62.5 \text{ 公尺} \end{aligned}$$

按圖上所示，交切點正在二十公尺之倍數之縱線中，故 62.5 之最近每二十公尺之偶數為 80 公尺，是即豎曲線之長度。

其次頂點 V 之縱距為

$$\begin{aligned} HV &= \frac{1}{8} (m+n)L' \\ &= \frac{1}{8} (0.01 + 0.0025) \times 80 \\ &= 0.125 \text{ 公尺} \end{aligned}$$

D' 點之縱距為

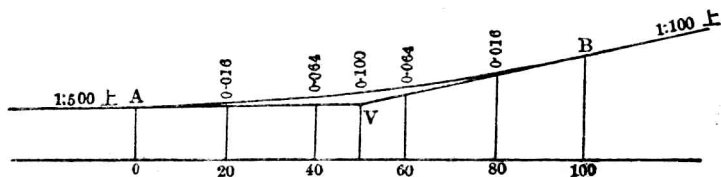
$$D'D = \frac{HV}{4} = \frac{0.125}{4} = 0.031 \text{ 公尺}$$

如 A 點之高度 = 192.350 公尺，則其他各點之高度將如下表

| 樁號   | 在坡度線上之高度 | 縱距     | 在豎曲線上之高度 |
|------|----------|--------|----------|
| A    | 192.350  | 0.000  | 192.350  |
| A+20 | 192.550  | -0.031 | 192.519  |
| A+40 | 192.750  | -0.125 | 192.625  |
| A+60 | 192.700  | -0.031 | 192.669  |
| A+80 | 192.650  | 0.000  | 192.650  |

第二例

設如第六十九圖所示，五分之一上坡與百分之一上坡兩坡度線相交。試求豎曲線之長度與各點之縱距。



第六十九圖

解  $m = \frac{1}{500} = 0.002, n = \frac{1}{100} = 0.01$

$$L' = (n - m)R = (0.01 - 0.002) \times 10000$$

$$= 80 \text{ 公尺}$$

按圖上所示，交切點在五十分距離之縱線中，為第十公尺之奇數，故一百公尺為最近每二十公尺之奇倍數，是即豎曲線之長度。

其次頂點 V 之縱距為

$$\begin{aligned}
 HV &= \frac{1}{8}(n-m)L' \\
 &= \frac{1}{8}(0.01-0.002) \times 100 \\
 &= 0.100 \text{ 公尺}
 \end{aligned}$$

E' 點之縱距爲

$$\begin{aligned}
 E'E &= \left(\frac{4}{5}\right)^2 HV = \frac{16}{25} \times 0.100 \\
 &= 0.064 \text{ 公尺}
 \end{aligned}$$

D' 點之縱距爲

$$\begin{aligned}
 D'D &= \left(\frac{2}{5}\right)^2 HV = \frac{4}{25} \times 0.100 \\
 &= 0.016 \text{ 公尺}
 \end{aligned}$$

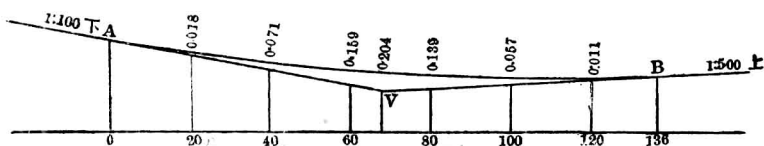
如 A 點之高度 = 374.080 公尺，則其他各點之高度將如表。

| 樁號    | 在坡度線上之高度 | 縱距     | 在豎曲線上之高度 |
|-------|----------|--------|----------|
| A     | 374.080  | 0.000  | 374.080  |
| A+20  | 374.120  | +0.016 | 374.136  |
| A+40  | 374.160  | +0.064 | 374.224  |
| A+50  | 374.180  | +0.100 | 374.280  |
| A+60  | 374.280  | +0.064 | 374.344  |
| A+80  | 374.480  | +0.016 | 374.496  |
| A+100 | 374.680  | 0.000  | 374.680  |

### 第三例

設如第七十圖所示，百分之一下坡及五百分之一上坡兩坡

線相交。試求豎曲線之長度及各點之縱距。



第七十圖

解  $m = \frac{1}{100} = 0.01, n = \frac{1}{500} = 0.002$

$$L' = (m + n)R = (0.01 + 0.002) \times 10000$$

$$= 120 \text{ 公尺}$$

按圖上所示交切點係在 68 公尺，如豎曲線之長度為 136 公尺，則曲線起點可由 0 公尺起算。

其次頂點 V 之縱距為

$$HV = \frac{1}{8}(m + n)L'$$

$$= \frac{1}{8}(0.01 + 0.002) \times 136$$

$$= 0.204 \text{ 公尺}$$

E' 點之縱距為

$$E'E = \left(\frac{60}{68}\right)^2 HV = \frac{3600}{4624} \times 0.204$$

$$= 0.159 \text{ 公尺}$$

C' 點之縱距為

$$C'C = \left(\frac{4}{6}\right)^2 E'E = \frac{4}{9} \times 0.159$$

$$= 0.071$$

D' 點之縱距爲

$$D'D = \left(\frac{2}{6}\right)^2 E'E = \frac{1}{9} \times 0.159$$

$$= 0.018 \text{ 公尺}$$

F' 點之縱距爲

$$F'F = \left(\frac{56}{68}\right)^2 HV = 0.139 \text{ 公尺}$$

G' 點之縱距爲

$$G'G = \left(\frac{36}{68}\right)^2 HV = 0.057 \text{ 公尺}$$

J' 點之縱距爲

$$J'J = \left(\frac{16}{68}\right)^2 HV = 0.011 \text{ 公尺}$$

如 A 點之高度 = 98.410, 則其他各點之高度將如下表。

| 樁     | 號 | 在坡度線上之高度 | 縱距     | 在豎曲線上之高度 |
|-------|---|----------|--------|----------|
| A     |   | 98.410   | 0.000  | 98.410   |
| A+20  |   | 98.210   | +0.018 | 98.228   |
| A+40  |   | 98.010   | +0.071 | 98.081   |
| A+60  |   | 97.810   | +0.159 | 97.969   |
| A+68  |   | 97.730   | +0.204 | 97.934   |
| A+80  |   | 97.754   | +0.139 | 97.893   |
| A+100 |   | 97.794   | +0.057 | 97.851   |
| A+120 |   | 97.834   | +0.011 | 97.845   |
| A+136 |   | 97.866   | 0.000  | 97.866   |

第十四表係用(89)及(90)兩公式,按照種種不同之坡度(其中最大爲百分之一, 1.00%, 因依一般鐵路之規定, 最大坡度多不能超過百分之一也), 求得之豎曲線之長度及縱距。其中共分四項: 一爲兩同向坡度線, 交角爲凸形者; 一爲兩同向坡度線, 交角爲凹形者; 一爲兩異向坡度線, 交角爲凸形者; 一爲兩異向坡度線, 交角爲凹形者。有此一表, 則可直接求得豎曲線之長度及各點之縱距, 無須再加計算。例如上述之第一例。在表之(3)中, 對 1.00% 及 0.25% 兩坡度線之一格爲長度 = 4, 縱距 = 0.031 及 0.125。意謂豎曲線之長度應爲  $20 \times 4 = 80$  公尺; 其各點之縱距, 自 A 數起, 應爲 0.000, 0.031, 0.125, 0.031, 及 0.000 公尺

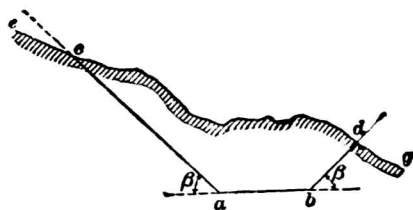
(註) 惟本表只適用於交切點在每第二十公尺之縱線中時。

## 第八章 土方之計算

### 68 填土挖土之橫斷面形

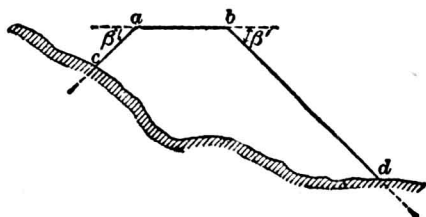
縱斷面圖上應有兩種線：一為水平測量測得之各點之高度直線聯結之。如此聯結而成之一羣直線，即表示地面之縱斷面。一為擬定之坡度線，表示路基之縱斷面形。此兩種線必常相交；地面時而在路基之上，時而又在路基之下。其在路基之上之一部分地面，乃形成挖土。其在路基之下之一部分地面，則形成填土。在土之處，因兩旁須各留一洩水溝，故其路基較在填土之處，須寬若干。因之，在同樣地勢下，挖土之橫斷面面積應較填土者為大。

第七十一圖表示挖土之橫斷面形，其中  $ecdg$  表示原有地，無論其形式如何不規則。 $ab$  表示挖土後路基之寬度； $ac$  及  $bd$  示兩旁之路坡，其與原有地面相交之點， $c$  及  $d$ ，須視坡度角  $\beta$  而



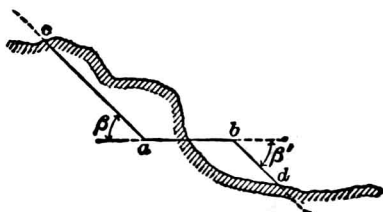
第七一圖 挖土

第七十二圖表示填土之橫斷面形，其兩旁路坡  $ac$  及  $bd$  與原有路面相交之點  $c$  及  $d$ ，亦須視坡度角  $\beta'$  而定。



第七二圖 填土

假若路基半面為挖土，半面為填土，其橫斷面形將如第七十三圖。其中  $c, d$  兩點之求定，一如以上兩例。



第七三圖

惟在以上三圖中，坡度角  $\beta$  與  $\beta'$  並非必須相等（且多半不能相等）。

## 69 路 坡

(a) 挖土——挖土應取之路坡，須視所挖之土質而定。若為硬石，露天後並不致分化者，則兩旁即令垂直開挖，亦無妨礙。若為一



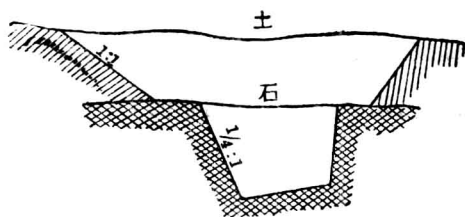
種軟石，露天後容易分化，或浸水後容易崩潰者，路坡應為 4 比 1 (即 1:4)，或 2 比 1 (1:2)，即縱的每高 4 尺或 2 尺，橫的每伸出 1 尺。若為土質，路坡多為 1 比 1 (1:1)；此種比例亦須係甚硬之土質方可，如係鬆土，須用 1 比 1.5 (1.5:1) 之路坡，即縱的每高 1 尺，橫的每伸出 1.5 尺。常有為減少土方起見，將路坡規定特小，以致日後兩旁常有泥土崩陷，聚積於洩水溝中，致成淤塞，常須修整，得償失，誠非上策。

(b) 填土——填土應取之路坡，多為 1 比 1 至 1 比 1.5 (1:1-1.5:1)。若用石填，路坡可用 1:1；如能稍費一番手續，將大塊石填在兩旁，則路坡雖稍取陡勢亦無礙。此種方法，在兩山之間，填土甚高之處，可採用之。若用土填，路坡須為 1.5:1；如路坡不取此比例，則日久之後，經過風雨之浸蝕，兩肩將逐漸傾陷，致成 1.5:1 之坡度為止。如此則路基變窄，須加修補，而此種將新材料補於舊材料之上之工作，乃極不易見好，極不經濟者也。

#### 70 挖土中之複形橫斷面

若挖土之上部分為土質，下部分為石質，其橫斷面應成為一複形，如第七十四圖，其中土質之一部分路坡為 1:1，石質之一部分路坡為 1:4。至於此種複形之橫斷面究應如何規定？土質究多深？石質之地層究係如何形式？須經過一番探鑽，方能確定。探鑽之後，規定土層及石層，計算時應即將土方及石方分開，因兩者

工價大不相同也。



第七四圖

#### 71 計算之精度與測量之精度之關係

計算土方，係根據於橫斷面形，而橫斷面形係根據於實測之結果。在橫斷面測量中，因地形之變化複雜，絕不能按其複雜之變化，而一一加以精細之測量，只能取其大概，測其略形。且橫斷面係按中心樁測量者，其不在中心樁之點，其地形之變化究竟如何，仍不得而知，實際上亦不能按尺按寸加以測量。故若按照所測之橫斷面形，計算土方，無論計算之方式如何精準，嚴格言之，其結果仍不甚可靠。故計算土方，須使計算之精度，適能符合測量之精度。如必于計算上，錙銖必較，加以工夫，將徒見其耗費時光，並無補於實事。蓋某一部分之土方計算，容或比較實際為多，但其他一部分之土方計算，亦許比較實際為少，於是其中之誤差可以互相抵消。故計算之方法雖未能十分精確，亦屬無妨，儘與測量之精度相調協可矣。

計算土方之方法共分兩步：

第一步，先假設土方之體積，可用一種簡單之幾何形體代表之。

第二步，即按照此種幾何形體計算體積。

在此種假設中，須知所用之幾何形體，乃土方之實在體積之一種近似形而已。

## 72 橫斷面之面積

所謂橫斷面之面積者，乃是通過中心樁作一與中心線成垂直之平面，在此垂直面中，為路基，兩旁之路坡，及原有路面所包圍之面積是也。此種面積與路基及兩旁路坡所交之線皆為直線，惟與原有路面則交成不規則之線，而此不規則之程度，亦有深淺之不等。在平坦之路面，所交之線可假設為一直線。如路面發生曲折變化，須於中間分取若干點，假設其係若干直線所成。

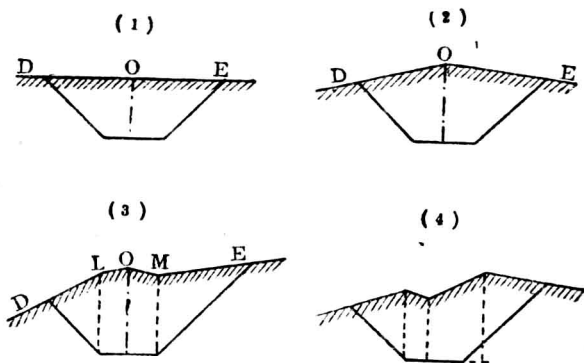
橫斷面形普通可分為四種如下：

(1)水平。 (2)三點。 (3)五點。 (4)不規則。茲分述之。

(1)水平橫斷面——所謂水平橫斷面者，即假設原有地面成水平面，如第七十五圖(1)，DOE 在同一水平線上。

(2)三點橫斷面——所謂三點橫斷面者，即假設原有地面為三條直線所組成，其交點即在中心線上。故作橫斷面測量時，只須得三點之高度，其中一點即為中心樁，其他兩點則左右兩邊各取其一，如第七十五圖(2)中之 D 及 E。

(3)五點橫斷面——所謂五點橫斷面者，即假設原有地面為四條直線所組成。作橫斷面測量時，於中心樁  $O$ ，及兩邊等於路基之寬處，如  $L$  及  $M$ ，第七十五圖 (3)，各測一點，另於兩旁再各任測一點如  $D$  及  $E$ 。如此，則得到五點之高度，其他中間各點，則假設係與隣近兩已測點在同一直線上。



第七五圖

(4)不規則橫斷面——所謂不規則橫斷面者，乃按照地面實際之情形，凡於地勢有變化之處即觀測一點，而在各點之間，則假設係各成直線，如第七十五圖(4)。

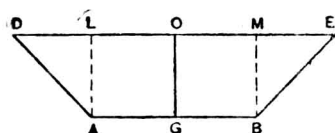
## 73 面積之計算

面積之計算，須先將實測地面形繪於紙上，而後求得在中心線上之路基，較原有地面高出(填土)或低下(挖土)之數， $h$ 。此數即為填土之高度，或挖土之深度，可於縱斷面圖上求得之。按照

此高度或深度，再繪成填土或挖土之橫斷面形。

計算橫斷面之面積，即依以上所述之四種分類。

(1) 水平橫斷面。如第七十六圖



第七十六圖

命  $b = \text{路基寬} = AB$

$s = \text{路坡} = \frac{DL}{AL} = \frac{EM}{BM}$

$c = \text{中心樁高} = OG$

$A = \text{橫斷面 DABE 之面積}$

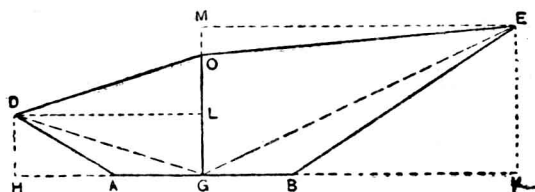
於是  $DL = EM = sc$

$$A = AB \times OG + DL \times AL$$

$$= bc + sc^2 = c(b + sc) \dots\dots\dots(91)$$

凡遇有地勢平坦之處，或結果只欲求一近似值者，計算面積多用此法。此為一種最易最速之法。

(2) 三點橫斷面。如第七十七圖



第七十七圖

命  $b = \text{路基寬} = AB$

$s = \text{路坡}$

$c = \text{中心樁高}$

$h_r =$  右邊一點之高度  $= EK$

$h_l =$  左邊一點之高度  $= DH$

$d_r =$  E 點與中線之距離  $= ME$

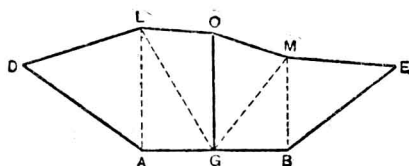
$d_l =$  D 點與中線之距離  $= DL$

$A =$  橫斷面之面積

於是  $A = OGD + OGE + GBE + GAD$

$$\begin{aligned}
 &= \frac{1}{2} OG \times DL + \frac{1}{2} OG \times ME + \frac{1}{2} GB \times EK \\
 &\quad + \frac{1}{2} GA \times DH \\
 &= \frac{1}{2} c (d_l + d_r) + \frac{1}{2} \frac{b}{2} (h_r + h_l) \\
 &= \frac{c (d_r + d_l) + \frac{b}{2} (h_r + h_l)}{2} \dots\dots\dots(92)
 \end{aligned}$$

(3) 五點橫斷面。如第七八圖。



第七八圖

仍用與前相同之表示法；此外再命

$f_r =$  M 點之高度  $= MB$

$f_l =$  L 點之高度  $= LA$

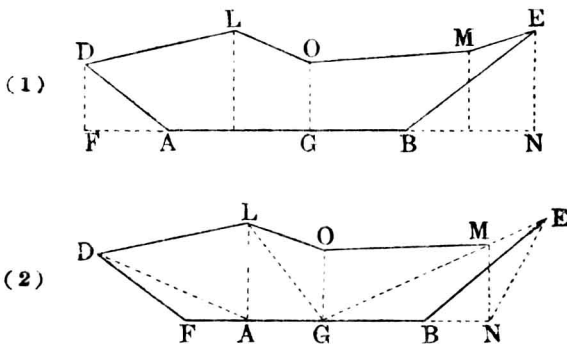
於是  $A = LGM + EMGB + DLGA$

$$= \frac{cb}{2} + \frac{f_r d_r}{2} + \frac{f_l d_l}{2}$$

$$= \frac{cb + f_r d_r + f_l d_l}{2} \dots\dots\dots (93)$$

#### (4) 不規則橫斷面

鐵路路線所經之地，多為田地或山嶺。田地之橫斷面多成水平，而山嶺之橫斷面則多為不規則。遇有不規則之橫斷面，計算面積之法，或用若干垂直線將其分成若干梯形。如第七十九圖之(1)，

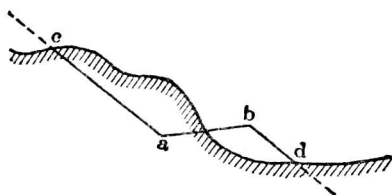


第七九圖

其面積即等於所有梯形面積之和，減去兩旁兩三角形之和；或用若干垂直線及對角線將其分成若干三角形，如圖之(2)，其面積即等於所有三角形面積之和。至於面積之公式，因形而異，姑不多贅。

路線行經半山之中，常有半面須挖土，半面須填土者，易言之，即原有地面須與路基相交，如第八十圖。遇有此種情形時，可將挖土及

填土分別計算之：計算挖土時，即假設填土中各部分之高度為零；計算填土時，即假設挖土中各部分之高度為零。至於計算所用公式，則與以上相同。

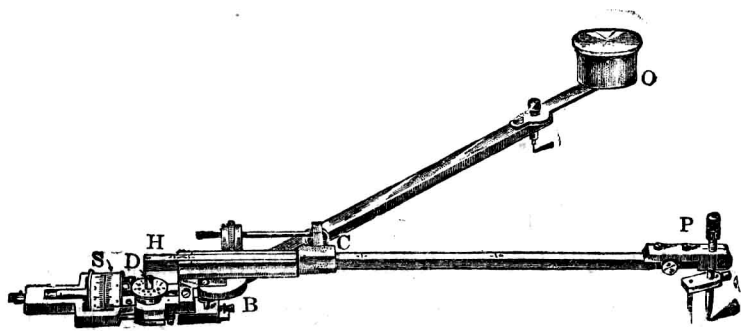


第八十圖

另有一種計算面積之簡法，係用面積計。假如橫斷面之形式過於不規則，應用公式計算；過於煩難，則以採用此種器械較為便利。

### 74 面積計

面積計乃一種計算面積最靈巧之機械，其構造共有數種。其中最通用之一種稱為安斯萊定極面積計，其構造有如第八十一圖。



第八十一圖



BO 及 HP 爲兩臂，BO 稱爲極臂，HP 稱爲描臂。極臂之長度有一定。在 O 端有一針尖，用以固着於圖紙之上；其上並有一壓具，以爲鎮壓之用，可以任意取下。B 端聯結於一縱軸 C，描臂 HP 即繞此縱軸自由旋轉於週圍。描臂之長度 CP 可以任意伸縮，以符合圖形所用之比例尺。在 P 端有一描針，即用以沿圖上所欲測之面積輪廓轉動，臂後有一測輪 S，上有刻線，按百分數刻分，並有遊標輪軸與 HP 臂平行，另以螺輪聯於記盤 D，測輪每轉動一週，等方記盤轉動一道刻線。計算面積，即根據測輪及記盤上之記數，而此種記數之單位，又依 CP 臂之長度而定。

綜觀以上所述，是面積計共支持於三點：固定點 O，轉動點 P 及測輪之周圍。當轉動點沿所求面積之輪廓轉動時，測輪即在紙上隨之旋轉，有時滑溜，有時滾轉。如在紙上滑溜，則測輪無記數可言。測輪最初記數，及繞圖形之輪廓轉動一週後記數之差，即表示所求之面積。

茲且述應用面積計之方法於下：

(一)先將描臂之長度較準，使適合於圖形所用之比例尺：通常在臂上刻有若干道縱線，上面記有相當面積之單位，符合於圖形所用之比例尺。例如  $\frac{4\text{M}}{1:1000}$ ，即謂，如用公尺制，圖形係用千分之一之比例尺，將描臂上之止動及微動螺絲環吻合於此道縱線時，測輪每轉動千分之一週轉，即等於 4 平方公尺之面積。另有在描臂上按照普通之尺度，刻分若干道線，由廠家預先求得刻線與面積之單位

比率，列成一表，或按平方英寸，或按平方公分。例如表上列有

| 比例尺    | 臂上讀數  | 所得面積比率          |
|--------|-------|-----------------|
| 1:500  | 265.3 | $2\text{m}^2$   |
| 1:4000 | 208.6 | $100\text{m}^2$ |

意即如用公尺制，圖形之比例尺用五百分之一，將臂上之遊標放在 265.3 之讀數上，於是測輪每轉動千分之一迴轉，即等於 2 平方公尺。應用時，先查此表，而後將臂上之遊標 0 點，吻合於適當之縱線，較準妥當，即將止動螺絲扭緊。

(二) 將極臂之針尖放在面積之輪廓以外任一點上，惟須使描臂之尖端能繞輪廓轉動一週而無困難。

(三) 將描臂之描針放在面積之輪廓上任一點，以某一明確之點為最適宜。例如三角形或多邊形之隅，否則在此起點做一記號，俾將來仍可回至原點。

(四) 觀讀測輪上之遊標讀數，以將測輪轉到 0 點為最宜，以免計算之勞。

(五) 使描針沿面積之輪廓，順時針向緩緩轉動一週，仍歸至原點，轉動時切不可使描針出乎輪廓之外。

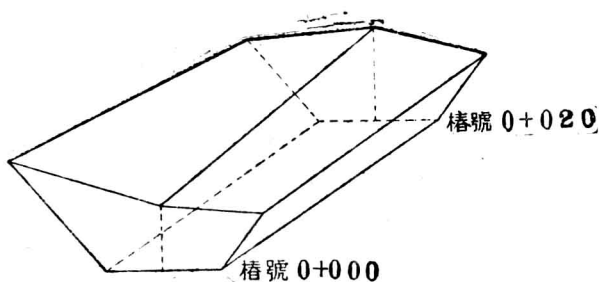
(六) 再觀讀測輪上之讀數，以此讀數減去前次之讀數，得實在讀數，再以所記之面積比率相乘，即得所求之面積。

無論橫斷面之形式如何，無論計算面積之方法如何，凡面積算得之後，土方數量，或體積  $V$ ，之計算，多依以下之方法：——

I. 平均面積。 II. 擬壩公式。 茲分述於後：

I. 平均面積。

如第八十二圖。



第八二圖

命  $A_0$  = 樁號 0+000 之橫斷面面積，以平方公尺計

$A_1$  = 樁號 0+020 之橫斷面面積

$l$  = 由樁號 0+000 至樁號 0+020 一段之長度（  
於 20 公尺）

$V$  = 由樁號 0+000 至樁號 0+020 一段之土方數

於是  $V = \frac{A_0 + A_1}{2} \times l$  (立方公尺).....(9)

或  $V = \frac{A_0 l}{2} + \frac{A_1 l}{2}$

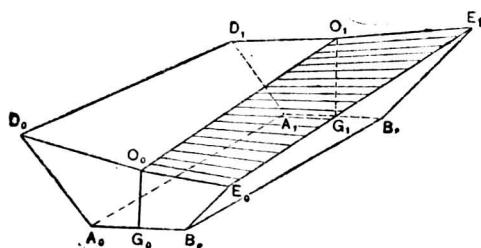
由此公式觀之，可得到一種假設，即

體積  $V$  乃兩個稜形體所組成，其基面一為  $A_0$ ，一為  $A_1$ ，其高度皆為  $\frac{1}{2}$

惟此種公式，只能認為係一種近似值，並不十分準確，但因其方法簡單，故多為一般人所通用。如欲求一比較準確之方法，則以用擬壩公式為宜。

### II. 擬壩公式

所謂擬壩者，乃是一立體形，其兩端為兩個形式不相同，而邊數相等之平行面，其週圍即為此等相當邊線所結合而成之面積，如第八十三圖。此種面積或為一平面，或並非一平面而為一種捲邊之



第八三圖

面，一視各該相當邊線是否平行而定，例如圖中之  $D_0O_0$  與  $D_1O_1$  兩邊線相平行，於是  $D_0O_0D_1O_1$  為一平面；但  $O_0E_0$  並不與  $O_1E_1$  平行，於是  $O_0E_0O_1E_1$  即非一平面。

任一擬壩皆可分解為稜形體，稜錐體，或楔形體，其高度即等於兩端兩平行面間之垂直距離。

命  $A_0$  及  $A_1$  = 兩端兩平行面之面積

$l$  = 擬壩長度，或兩平行面間之垂直距離

$V$  = 擬壩之體積

於是擬壩之公式將為

$$V = (A_0 + 4A_m + A_1) \frac{l}{6}$$

證明之道如下：——

假設命  $B$  = 下一平行面之面積（稜形體，稜錐體，或楔形體之基面）

$b$  = 上一平行面之面積

$m$  = 與上下兩面相平行之中央面之面積

$a$  = 稜形體，稜錐體，或楔形體之高度

$S$  = 稜形體，稜錐體，或楔形體之體積

於是，上一面之面積  $b$ ，在各形體中，將為

|     |     |     |
|-----|-----|-----|
| 稜形體 | 稜錐體 | 楔形體 |
|-----|-----|-----|

|         |         |         |
|---------|---------|---------|
| $b = B$ | $b = 0$ | $b = 0$ |
|---------|---------|---------|

中央面之面積  $m$  將為

|     |     |     |
|-----|-----|-----|
| 稜形體 | 稜錐體 | 楔形體 |
|-----|-----|-----|

|         |                   |                   |
|---------|-------------------|-------------------|
| $m = B$ | $m = \frac{B}{4}$ | $m = \frac{B}{2}$ |
|---------|-------------------|-------------------|

體積  $S$  將為

稜形體， $S = aB = \frac{a}{6} \times 6B = \frac{a}{6} (B + 4B + B)$

$$= \frac{a}{6}(B + 4m + b)$$

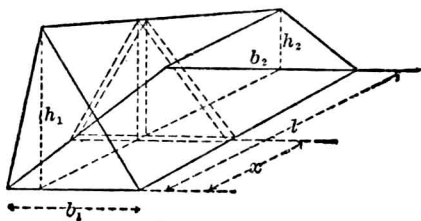
$$\begin{aligned} \text{稜錐體, } S &= \frac{aB}{3} = \frac{a}{6} \times 2B = \frac{a}{6} \left( B + \frac{4B}{4} + 0 \right) \\ &= \frac{a}{6}(B + 4m + b) \end{aligned}$$

$$\begin{aligned} \text{楔形體, } S &= \frac{aB}{2} = \frac{a}{6} \times 3B = \frac{a}{6} \left( B + \frac{4B}{2} + 0 \right) \\ &= \frac{a}{6}(B + 4m + b) \end{aligned}$$

因擬壩乃是稜形體，稜錐體，及楔形體所組成，故以上之公式，可同樣用之於擬壩，並可寫為普通之式

$$V = (A_0 + 4A_m + A_1) \frac{l}{6} \dots\dots\dots (95)$$

公式 (95) 亦可用積分法求之如下。命第八十四圖表示一種三角形擬壩，其兩端為兩個三角形，其面互成平行。但因兩三角形之相當角並不相等，故擬壩中至少有兩個面積必成捲邊形。



第 八 四 圖

假若於擬壩中距一端  $x$  之遠處任取一點，作一切面，與基面相平行，則該切面之面積將為

$$A_x = \frac{1}{2} b_x h_x = \frac{1}{2} \left[ b_1 + (b_2 - b_1) \frac{x}{l} \right] \left[ h_1 + (h_2 - h_1) \frac{x}{l} \right].$$

再就該切面之左近取極微之距離  $dx$ ，則此一極小段之體積將為

$$A_x dx.$$

於是擬壩之總體積將為

$$\begin{aligned} \int_0^l A_x dx &= \int_0^l \frac{1}{2} \left[ b_1 + (b_2 - b_1) \frac{x}{l} \right] \left[ h_1 + (h_2 - h_1) \frac{x}{l} \right] dx \\ &= \frac{1}{2} \left[ b_1 h_1 x + (b_2 - b_1) h_1 \frac{x^2}{2l} + b_1 (h_2 - h_1) \frac{x^2}{2l} \right. \\ &\quad \left. + (b_2 - b_1) (h_2 - h_1) \frac{x^3}{3l^2} \right]_0^l \\ &= \frac{1}{2} \left\{ b_1 h_1 l + \left[ (b_2 - b_1) h_1 + b_1 (h_2 - h_1) \right] \frac{l}{2} \right. \\ &\quad \left. + (b_2 - b_1) (h_2 - h_1) \frac{l}{3} \right\} \\ &= \frac{1}{2} \left[ \frac{1}{3} b_1 h_1 + \frac{1}{6} b_1 h_2 + \frac{1}{6} b_2 h_1 + \frac{1}{3} b_2 h_2 \right] \\ &= \frac{1}{6} \left[ \frac{1}{2} b_1 h_1 + \frac{1}{2} b_1 (h_1 + h_2) + \frac{1}{2} b_2 (h_1 + h_2) + \frac{1}{2} b_2 l \right] \\ &= \frac{1}{6} \left[ \frac{1}{2} b_1 h_1 + 4 \left( \frac{1}{2} \cdot \frac{b_1 + b_2}{2} \cdot \frac{h_1 + h_2}{2} \right) + \frac{1}{2} b_2 h_2 \right] \\ &= \frac{1}{6} [A_1 + 4A_m + A_2] \end{aligned}$$

(注意：  $A_m$  並非  $A_1$  與  $A_2$  之平均面積，雖有時相差並無幾。)

以上之證明，與  $b_1$ ,  $b_2$ ,  $h_1$  及  $h_2$  之值，無論其為相對或絕對，皆毫無關係。例如  $h_2$  可等於零，於是第二基面即化為一線，而擬壩亦成為一楔形體；或  $b_2$  及  $h_2$  皆等於零，於是第二基面即化為一點，而擬壩亦成為一稜錐體矣。

應用以上之公式，固可求得任何擬壩之體積，但若兩端之橫斷面形式複雜，欲計算中央面之面積  $A_m$  之真值，將為一極煩難之工作。故通常多不用擬壩公式，而只用彼較為簡單之平均面積法。

如用平均面積法，並可有一較為準確之補救，即於求得之值外，加一「擬壩更正數」

命  $V_e$  = 用平均面積法求得之體積

$V_p$  = 用擬壩公式求得之體積

於是  $C = V_e - V_p =$  擬壩更正數

$$\text{在第八十四圖中, } V_e = \frac{1}{2} \left( \frac{1}{2} b_1 h_1 + \frac{1}{2} b_2 h_2 \right)$$

$$= \frac{1}{12} (3b_1 h_1 + 3b_2 h_2)$$

$$V_p = \frac{1}{12} (2b_1 h_1 + 2b_2 h_2 + b_1 h_2 + b_2 h_1)$$

$$\text{於是 } C = V_e - V_p = \frac{1}{12} (b_1 h_1 + b_2 h_2 - b_1 h_2 - b_2 h_1)$$

$$= \frac{1}{12} (b_2 - b_1) (h_2 - h_1) \dots\dots\dots (96)$$



此爲擬壩更正數之基本公式。

但擬壩公式亦不能稱爲十分準確，其精度須視測量之精度而定，故測量時務使測得之橫斷面形極近實在之地面形。在普通情形下，橫斷面測量多按中線之整樁進行（即每隔 20 公尺之樁），但遇有中間地勢變化過甚之處，必須多設加樁，多求若干橫斷面。

### 76 橫斷面簿及土方計算表

第八十五圖表示一種橫斷面簿之記載方式，其左面一頁，第一欄表示樁號之所在。第二欄表示原地面之高度；第三欄表示路基之高度，此兩欄之數值，皆可於縱斷面圖中求得之。第二第三兩欄相減，則得應填之高度，或應挖之深度，此即爲第四欄中間一行所表示之數。實測橫斷面之記載，有如第四欄所示，其意義已於定線測量中述明，故不再贅。其右面一頁，第一，二，三，三欄皆表示挖土之面積，並註明地質爲硬石，軟石，抑爲土質。第四欄表示填土之面積。至於挖土或填土之面積計算，則用前面所述之公式或簡法。

讀者應注意簿中所記樁號  $0+076$ ，其中心高適等於 0，意即在此一點之地面適與路基相交。蓋路線所經之處，必常爲崎嶇不平，絕不能使路基常在地面之上，或常在地面之下，易言之，即有一部分應爲填土，另有一部分應爲挖土，而在此填土與挖土變化之點，即爲原地面與路基相交之點、其中心樁之高度適等於 0。此一點可於縱斷面圖上直接求得之，即坡度線與縱斷面相交之點是也。

| 樁號    | 地面高    | 路基高    | 橫斷面   | 挖  |    |    | 土  |    | 填土 | 附記 |
|-------|--------|--------|---|----|----|----|----|----|----|----|
|       |        |        |   | 硬石 | 軟石 | 土質 | 土質 | 土質 |    |    |
| 0+120 | 99.02  | 101.20 | $\frac{18.4}{-0.76} \quad \frac{-2.18}{-3.88} \quad \frac{10.4}{-3.88}$   |    |    |    |    |    |    |    |
| 0+104 | 100.27 | 101.04 | $\frac{22.1}{-1.01} \quad \frac{-0.77}{-2.62} \quad \frac{23.0}{-2.62}$   |    |    |    |    |    |    |    |
| 0+100 | 100.36 | 101.00 | $\frac{19.3}{-0.83} \quad \frac{-0.64}{-1.26} \quad \frac{11.4}{-1.26}$   |    |    |    |    |    |    |    |
| 0+080 | 100.45 | 100.80 | $\frac{12.6}{-0.75} \quad \frac{-0.5}{-1.86} \quad \frac{14.3}{-1.86}$  |    |    |    |    |    |    |    |
| 0+076 | 00.76  | 100.76 | $\frac{10.0}{-0.32} \quad \frac{0.00}{+0.40} \quad \frac{9.2}{+0.40}$   |    |    |    |    |    |    |    |
| 0+060 | 102.00 | 100.60 | $\frac{14.4}{+3.23} \quad \frac{+1.40}{+0.00} \quad \frac{12.2}{0.00}$  |    |    |    |    |    |    |    |
| 0+040 | 101.51 | 100.40 | $\frac{10.8}{+2.22} \quad \frac{+1.11}{+0.43} \quad \frac{12.5}{+0.43}$   |    |    |    |    |    |    |    |
| 0+020 | 101.77 | 100.20 | $\frac{16.7}{+0.42} \quad \frac{4.8}{+2.76} \quad \frac{+1.57}{+0.77} \quad \frac{4.6}{+1.19} \quad \frac{13.8}{+1.19}$ |    |    |    |    |    |    |    |
| 0+000 | 100.92 | 100.00 | $\frac{18.2}{+0.84} \quad \frac{4.8}{-2.78} \quad \frac{+0.92}{+1.33} \quad \frac{4.7}{+3.69} \quad \frac{18.6}{+3.69}$ |    |    |    |    |    |    |    |

## 土方表

樁號由 2+320 至 2+600 由 至

第 3 公里

中華民國 22 年 12 月 日

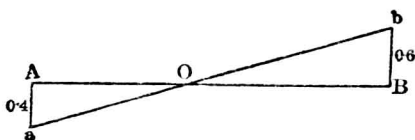
| 樁號                 | 填高挖深 |      | 面積    |       | 平均面積  |       | 距離   | 體積      |         | 附註 |
|--------------------|------|------|-------|-------|-------|-------|------|---------|---------|----|
|                    | 土度   | 土度   | 填(+)  | 挖(-)  | 填(+)  | 挖(-)  |      | 填(+)    | 挖(-)    |    |
| 2+320              | 1.20 |      | 11.87 |       |       |       |      |         |         |    |
| 2+340              | 0.86 |      | 9.62  |       | 11.74 |       | 20   | 234.80  |         |    |
| 2+360              | 0.40 |      | 5.44  |       | 7.53  |       | 20   | 150.60  |         |    |
| 2+368              | 0    | 0    | 0.00  | 0.00  | 2.72  |       | 8    | 21.76   |         |    |
| 2+380              |      | 0.60 |       | 6.83  |       | 3.41  | 12   |         | 40.92   |    |
| 2+400              |      | 1.50 |       | 10.25 |       | 8.54  | 20   |         | 170.80  |    |
| 2+420              |      | 2.73 |       | 16.48 |       | 13.37 | 20   |         | 267.40  |    |
| 2+440              |      | 1.24 |       | 9.94  |       | 13.21 | 20   |         | 264.20  |    |
| 2+460              |      | 0.75 |       | 7.26  |       | 8.60  | 20   |         | 172.00  |    |
| 2+480              |      | 1.19 |       | 12.43 |       | 9.84  | 20   |         | 196.80  |    |
| 2+500              |      | 1.82 |       | 11.46 |       | 13.95 | 20   |         | 279.00  |    |
| 2+515 <sup>4</sup> | 0    | 0    | 0.00  | 0.00  |       | 7.73  | 15.4 |         | 119.04  |    |
| 2+520              | 0.54 |      | 3.28  |       | 1.64  |       | 4.6  | 7.54    |         |    |
| 2+540              | 1.03 |      | 8.76  |       | 6.02  |       | 20   | 120.40  |         |    |
| 2+560              | 1.27 |      | 9.34  |       | 9.05  |       | 20   | 181.00  |         |    |
| 2+572              | 2.43 |      | 18.64 |       | 13.99 |       | 12   | 167.88  |         |    |
| 2+576              | 2.56 |      | 20.31 |       | 19.47 |       | 4    | 77.88   |         |    |
| 2+580              | 1.31 |      | 13.77 |       | 17.04 |       | 4    | 68.16   |         |    |
| 2+594              | 0.02 |      | 2.02  |       | 7.90  |       | 14   | 110.60  |         |    |
| 2+600              | 1.73 |      | 8.93  |       | 5.48  |       | 6    | 32.88   |         |    |
|                    |      |      |       |       |       |       |      | 1173.50 | 1510.16 |    |

計算人.....覆核人.....審定人

在圖上求得此點，測量橫斷面時並須測得該點之橫斷面。如在本例中之樁號 0+076。但依一般慣例，此種交點事先並不須求得，只於計算土方數量時，就兩鄰近樁號之填土高與挖土深之比例推得之，其橫斷面則完全假設為零。如本篇所附土方表中之樁號 2+368 及 2+515.4

在土方表中，樁號 2+360 為土 0.40 公尺，樁號 2+380 為挖土 0.60 公尺。則在此兩樁號之間，必有一填土與挖土變化之點，試用圖以求之。命直線 AB 等於 20 公尺（第八十六圖），作 Aa 及 Bb 兩垂線。命 Aa=0.40 公尺，Bb=0.60 公尺，連結 ab，使與 AB 相交於 O。於是在 AOb, BOB 兩相似三角形中，ab 為原地面，AB 為坡度線

$$AO:OB::Aa:Bb::4:6$$



第八六圖

AO 將等於 8 公尺，OB 將等於 12 公尺。故 O 點之樁號應為 2+368。於是將此樁號插在 2+360 及 2+380 兩樁號之間，並假設其橫斷面等於零。

本節所附土方表 乃一般鐵路測量中所通用，其中平均面積係

就上下兩樁之面積取其平均值，體積則係以上下兩樁之距離乘平均面積。

## 77 取土坑

填土所需之土，通常多取自路基兩旁界限以內之地中，此種取土之處，稱為取土坑。鐵路計算土方，多依實測所得填土及挖土之橫斷面，如以上所述之法。但有時填土之數量，亦有從取土坑中以計算者。用此種方法時，須先將取土坑分成若干正方形，長方形或三角形，就原有地面上，求得各隅之高度；及取土完畢之後，再將各隅求得其新高度。按照此種方法，取土坑即被分成一羣垂直稜體，其橫斷面為正方形，長方形，或三角形。不過此種稜形體之頂面多為截形，於是取土坑亦分為截形三稜體，及截形四稜體（正方形或長方形），其高度則為前後兩次所測高度之差：

第一次在原有地面上者，

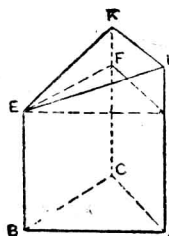
第二次在取土後新地面上者。

茲且將計算取土坑之法解述於下。

(一) 截形三稜體。如第八十七圖

命  $ABCKHE$  為一截形三稜體，其底面

$ABC$  為一直角斷面，頂面  $KHE$  為一截形。



第八七圖

命  $V$  = 稜形體之體積

$A$  = 斷面  $EFD$  之面積

$h_1$  = 高度 AH

$h_2$  = 高度 BE

$h_3$  = 高度 CK

$a$  = 三角形 EFD 中由 E 至 FD 之高度

$S_1$  = 稜形體 ABCFDE 之體積

$S_u$  = 錐稜體 FDEHK 之體積

於是  $S_1 = A \times AD = A \times \frac{3AD}{3} = A \times \frac{AD+BE+CF}{3}$

$$S_u = \text{面積 DFKH} \times \frac{a}{3}$$

$$= \frac{KF+HD}{2} \times FD \times \frac{a}{3}$$

$$= \frac{KF+HD}{3} \times FD \times \frac{a}{2}$$

$$= \frac{KF+HD}{3} \times A$$

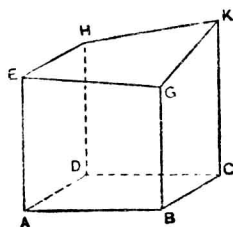
$$V = S_1 + S_u = A \left( \frac{AD+BE+CF}{3} + \frac{KF+HD}{3} \right)$$

$$= A \left[ \frac{(AD+HD) + BE + (CF+KF)}{3} \right]$$

$$= A \left( \frac{h_1 + h_2 + h_3}{3} \right) \dots\dots\dots(97)$$

(二) 截形四稜體(長方形或正方形)。如第八十八圖。

命 ABCDHEGK 爲一截形四稜體，其底面 ABCD 爲一直角斷面，頂面 HEGK 爲一截形。



第八八圖

命  $V$  = 稜形體之體積

$A$  = 斷面 ABCD 之面積

$h_1$  = 高度 AE

$h_2$  = 高度 BG

$h_3$  = 高度 KC

$h_4$  = 高度 HD

$b$  = AD = BC

$a$  = AB = DC

於是用平均面積法

$$V = \frac{AEHD + BGKC}{2} \times a$$

$$= \frac{b \frac{h_1 + h_4}{2} + b \frac{h_2 + h_3}{2}}{2} \times a$$

$$= ab \frac{h_1 + h_2 + h_3 + h_4}{4}$$

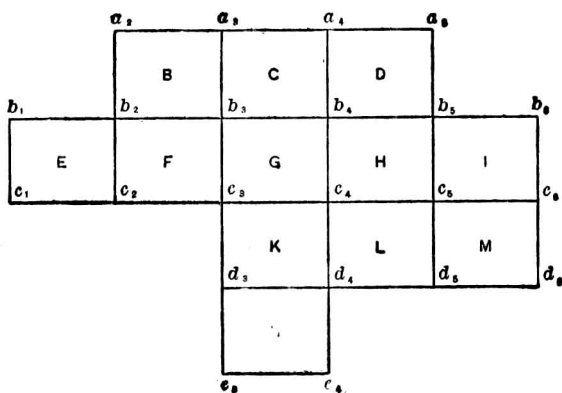
$$= A \frac{h_1 + h_2 + h_3 + h_4}{4} \dots \dots \dots (1)$$

(三) 集合稜形體。

假若取土坑爲多數稜形體所積成，其底面相等，則計算時不

將其一一分開，可按以下之公式，只作一次總計算。

如第八十九圖 在稜形體 B 中，依公式 (98) 得



第 八 九

$$V_B = A \frac{a_2 + a_3 + b_3 + b_2}{4}$$

其中  $V_B$  = 稜形體 B 之體積

$a_2, a_3, b_3, b_2$  = 各垂直邊之高度

同樣，在稜形體 C 中，

$$V_C = A \frac{a_3 + a_4 + b_4 + b_3}{4}$$

.....

由以上兩式觀之，將見計算集合稜形體之體積時，凡垂直邊為一個稜形體所獨有者，如圖中之  $a_2, a_5, b_1, b_6$ ，將只加入一次；



凡為兩個稜形體所共有者，如  $a_3, a_4$ ，將加入兩次；凡為三個稜形體所共有者，如  $b_2, b_5, c_3$ ，將加入三次；凡為四個稜形體所共有者，如  $b_3, b_4, c_4, c_5$ ，將加入四次。

命  $A$  = 此等稜形體之公有底面之面積

$t_1$  = 所有屬一個稜形體所獨有之垂直邊之和

$t_2$  = 所有屬二個稜形體所共有之垂直邊之和

$t_3$  = 所有屬三個稜形體所共有之垂直邊之和

$t_4$  = 所有屬四個稜形體所共有之垂直邊之和

於是集合稜形體之總體積

$$V_t = A \frac{t_1 + 2t_2 + 3t_3 + 4t_4}{4} \dots\dots\dots (99)$$

## 78 沉 落 土

凡新填之土，其體積必日見收縮，俗稱沉落，須經過相當時日之後，內外凝結十分堅固，而後方不致再有沉落之現象。其所以到此沉落之原因，則非常複雜，大概言之，可分以下數項：

(1) 在取土坑中之土本是十分堅密，取出之後，堆置在路線之上，乃成鬆土。日久之後，上層之土壓搾下層之土，於是體積逐漸縮收。

(2) 因路線之上常有工人來往，將所填之土逐漸壓緊。

(3) 如用輭溼之土，則堆置之後常易向兩旁攤開。

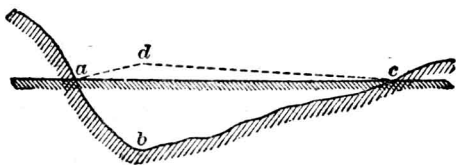
(4) 遇有池塘沼澤之地，則填土後，在水中之基脚，每易向兩旁坍出若干之遠，致上面所填之土逐漸沉落。

至於沉落深淺之程度，則須依以下數種情形而定：

(1) 土質——因各種土質之不同，故其致成沉落之情形亦不同。

(2) 填土之方法——用人工挑送者與用斗車推送者，所得之結果各不相同；每層土用夯打實者與並不用夯者結果又不同。

(3) 高度——土之沉落與填土之高度成比例，填土愈高者沉落愈深。第九十圖表示某一點  $b$ ，因斷面地形之不同，故填土亦應成不同之高度。虛線  $abc$  即表示路基應填之形勢。



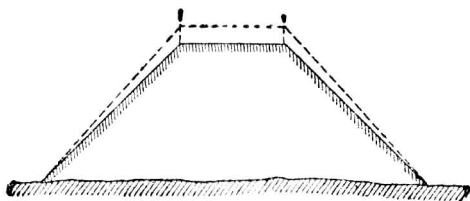
第九十圖

(4) 時間——新填之土，須經過長久時期，方能沉落至最終之體積，時間愈久，則沉落愈深，大概言之，須經過一二年之久，及數次大雨之後，方能成一堅實路基。

凡土由取土坑中取出，鬆堆在路線之上，其體積必較原有體積為大。此超出之數量，亦須依土質而定。若將石塊打碎之後，再行堆置，其體積將較原有者大過 60% 至 80% 之多。軟土將較原有

體積大過 20% 至 25%。惟軟土在初挖出時，雖極力擴張其體積，但日久之後，仍將極力縮收，而石則不然。

因填土有沉落之現象，故所做土方常須較計劃之高度超出若干成，如第九十一圖中虛線所示。此一部分之土方即稱為「沉落



第九一圖

土」。圖中所示之虛線，對於基脚並不加寬，因基脚並不縮收也。故沉落可謂完全為一種垂直之動作。至於應超出之成數，例如在一公尺以內者應為若干成；由一公尺至……公尺者應為若干成；超過十公尺者應為若干成，各鐵路各有其規定，此處姑不多贅。

由土中新取出之材料，其體積膨脹之係數，據一般實驗所得大約有如下表：

|       |   |     |
|-------|---|-----|
| 鵝卵石或沙 | 約 | 8%  |
| 黏土    |   | 10% |
| 肥土    |   | 12% |
| 鬆土    |   | 15% |

由以上之係數，可化成以下之表。

| 材 料    | 做成 1000 立方公尺之土方所需之數量 | 取出後量算得之 1000 立方公尺可做成之土方數量 |
|--------|----------------------|---------------------------|
| 鵝卵石或沙  | 1087 立方公尺            | 920 立方公尺                  |
| 黏 土    | 1111                 | 900                       |
| 肥 土    | 1136                 | 880                       |
| 鬆 土    | 1176                 | 850                       |
| 石 (大塊) | 714                  | 1400                      |
| 石 (小塊) | 625                  | 1600                      |
|        | 按取出後量算得之數量           |                           |

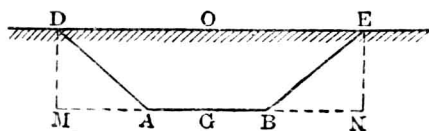
## 第九章 設置邊樁

### 79 邊樁之重要

修築路基，必先設置兩種樁：中線樁及邊樁，有此兩種樁，而在施工時方有所根據。在填挖並無之地點，邊樁固不成問題，因可在規定之路基寬度為準則。惟在填土或挖土之處，兩旁必有路坡，其與原有地面相交之點，如第七十一及七十二兩圖中之  $c$  及  $d$ ，自為邊樁所在之點。如路線雖有中樁而無邊樁，則工人修築路坡，并無所適從，任意填挖。及路基既成之後，兩旁路坡是否已達到規定之坡度，已無從查考。在包工人每樂於將坡度做小，減少土方，而在路局一方面，將不免受偷工減料之損失，且坡度不足，將來常須力以修整，亦係一種耗費。如有邊樁之制限，則凡填挖未及邊樁者，自認為工程尚未達到圓滿之程度，可責令包工人加工補足也。

### 80 邊樁之位置

邊樁之位置，須視填土之高度或挖土之深度，坡度角  $\beta$ ，及兩旁地勢之情形而定。如地勢甚為平



第九二圖

坦，橫斷面係假設為水平，則計算邊樁之位置，猶屬甚易。如第九二圖，

命  $b = AB =$  橫斷面之路基寬度

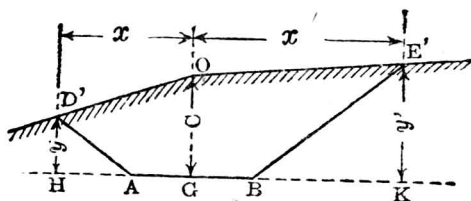
$c = OG =$  中心高

$s = \frac{BN}{EN} = \frac{AM}{DM} =$  兩旁之路坡率

$d = OD = OE =$  邊樁與中樁之距離

於是  $d = GB + BN = \frac{1}{2} b + s \times EN = \frac{1}{2} b + sc$

其中  $b, s,$  及  $c$  皆為已知之數，故  $d$  之值甚易求得。於是邊之設置並非難事。惟若遇有橫斷面非成水平時，則邊樁位置之計乃成一較為複雜之問題矣。如第九十三圖。



第九三圖

命  $b = AB =$  路基寬度

$c = OG =$  中心高(填或挖)

$s =$  路坡率

$y = D'H =$  左邊樁(距路基)之高度

$y' = E'K =$  右邊樁(距路基)之高度

$x = HG =$  左邊樁與中樁之距離

$x' = GK =$  右邊樁與中樁之距離

$$\text{於是 } x = GA + AH = \frac{1}{2}b + s \times D'H = \frac{1}{2}b + sy \quad \dots(100)$$

$$x' = GB + BK = \frac{1}{2}b + s \times E'K = \frac{1}{2}b + sy' \quad \dots(101)$$

在上述公式中,  $y$  及  $y'$  均為未知之數, 故  $x$  及  $x'$  亦均為未知之值。惟由圖上觀之, 將見

$$y < c, \quad y' > c$$

$$\text{故 } x < \frac{1}{2}b + sc, \quad x' > \frac{1}{2}b + sc。$$

### §1 邊樁之設置

在作橫斷面測量時,  $OE$  及  $OD'$  兩線之坡度率, 已由  $E, D$  兩點之觀測而求得, 故  $E', D'$  兩點之位置, 似可於橫斷面圖上直接求得之。但橫斷面測量, 亦不過係一種近似之工作, 地面實在之情形, 是否確如所測之橫斷面, 仍不免成爲問題。故欲求精準之結果, 則邊樁之設置, 仍須實地求得  $y, y'$  及相當之  $x, x'$  之值。

普通在實地設置邊樁, 多用一種「逐步接近法」, 有如下述。

既已求得中樁應填之高度或應挖之深度  $c$ , 卽以此爲根據, 大約估算路坡將與地面相交於何點, 求得  $y$  之適當值, 於是計算

$$x = \frac{1}{2}b + sy$$

按此算得之距離，用鍊尺實地測量之，將水平尺立在求得之點上，觀測水平尺之讀數。如由此讀數算得之填土高度或挖土深度，能使  $y$  之值適符量得之距離，則所測之點即確為所求之點。否則惟有重新觀測，求得一更為接近之點。每次均觀測  $y$ ，計算  $x$ ，直待由水平尺上所測得之讀數代入公式中之後，適能求得一距離，與實地量得之數恰相符合。於是就此點釘以木樁，並於樁上註明填挖之數。同樣再求得  $y'$ ， $x'$ ，使實地量得之距離，適能與

$$x' = \frac{1}{2}b + sy'$$

之值相符合。

## 82 例題

茲且舉例於下。

假若某一樁號應填高 3.20 公尺 ( $c=3.20$ )。今由水平儀中觀測該點之讀數為 1.90 公尺，如第九十四圖，是望遠鏡之視線在路基之下

$$3.20 - 1.90 = 1.30 \text{ 公尺。}$$

$$\text{又 } s=1.5:1, \quad b=6 \text{ 公尺。}$$

於是若該橫斷面為一水平面，則

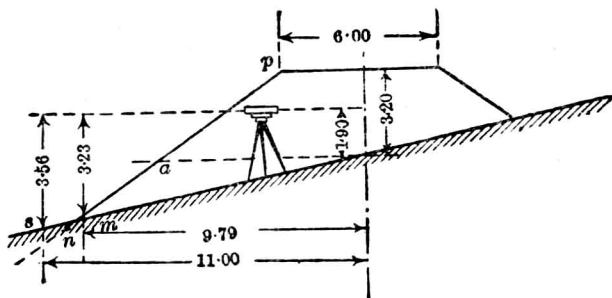
$$x = \frac{1}{2} \times 6.00 + 1.5 \times 3.20 = 7.80 \text{ 公尺}$$



即為邊樁之所在(圖中之 a 點),但由實際之觀測,在此距離之地面,其讀數實為 2.54 而非 1.90 (較低 0.64 公尺)。故若按公式 (100) 計算,則此點與中樁之距離,實不止上述之

$$7.80 \text{ 再加 } 1.5 \times 0.64 \text{ (坡度率} \times \text{較低數)} = 8.76 \text{ 公尺}$$

應更加入因地面之傾斜以致額外伸出之距離。今故作第一次之試驗。將水平尺立在 11 公尺之距離(圖中之 s 點),觀其讀數,得 3.56 公尺。



第九四圖

$$3.56 + 1.30 = 4.86$$

為該點在路基下之讀數。但在路坡 pn 線上之 (n) 點,其深度在路基下 4.86 公尺者,其與中樁之距離為

$$x = \frac{1}{2} \times 6.00 + 1.5 \times 4.86 = 10.29 \text{ 公尺.}$$

而在地面上之 (s) 點,其距離則為 11 公尺。故所求之點 (m) 應較近中樁。於是再作第二次之試驗,將水平尺立在 9.80 公尺之距離,得讀數 3.23 公尺 即較路基低  $3.23 + 1.30 = 4.53$  公尺 (=y)。於

是相當於此數之距離應為

$$x = \frac{1}{2} \times 6.00 + 1.5 \times 4.53 = 9.79 \text{ 公尺。}$$

與實際測量之數相差只有 1 公分。因地勢之變化原不甚規則，欲求一十分符合之數極為不易，故所求之 s 點，其深度 = 4.53，距離 = 9.800 即可認為適當之點，不必更事苛求。

上述之法，驟觀之似不合乎科學，不易推敲，但如練習有素，則試驗每不致超過一二次以上，即可求得一適宜之數值，固一甚為簡便可用之法也。

## 第十章 工程預算

### 83 預算之分類

工程預算之編製，亦為測量隊重要任務之一，實即測量隊最終之工作也。測量完竣之後，必立即設定策畫，編製預算，而後工程實施方有標準。

編製工程預算，必先對於各項工程之建設，鐵路經濟之原理，當地之工料價值，運輸情形，有充分之研究，而後方能從事。

按照鐵道部規定鐵路資本支出分類則例，編製預算，應按資本支出之分類，列為總務費，籌辦費，路基築造，路線保衛，橋工，隧道，車站，房屋，軌道，車輛，……等項。其分類之法如下：

資-1. 總務費 此項包含鐵路工程局工程，機務，車務，電務，會計，材料，警務，衛生各部之辦公室，房屋，及薪水公費等而言。

資-2. 籌辦費 包含測勘費，測量儀器，及設備品等費而言。

資-3. 購地 包含購地，遷墳，賠償及各種意外費用而言。

資-4 路基築造 包含填土，挖土，開鑿石方，及建築護土牆等項工程費用而言。

資-5. 隧道

資-6. 橋工 包含橋梁,涵洞,水管,橋基,橋座,橋墩等項工程費用而言。

資-7. 路線保衛 包含柵欄,圍牆,籬笆,界石,標誌等費用。

資-8. 電報及電話

資-9. 軌道 包含鋼軌及附件,枕木,道碴等費而言。

資-10. 號誌及轉轍器 包含各種轍叉,護軌岔道,特別軌,以及其他轉轍材料,及號誌機件,聯鎖設備,電氣路簽等費而言。

資-11. 車站及房屋 包含總局房屋及其附屬品,車站房屋及其附屬品,倉庫,員司宿舍,工人住所等費而言。

資-12. 總機器廠 包含構造及修理車輛之大工廠,發動機,水塔,及其他同性質之房廠,以及各種機器,重大器具,為總機所需者。

資-13. 特別機廠

資-14. 機件之設備

資-15. 車輛

資-16. 維持費

資-17. 船塢船港船埠

資-18. 浮水設備品

以上各項費用，或按測量所得之結果而分別計算，或按預料之情形及以往之經驗而加以估算。本章即欲依上述分類之方法，舉一詳例於後。

## 84 舉例

假欲建築某一鐵路幹線，長 60 公里。路基寬 6 公尺。鋼軌用每公尺 43 公斤。中間共設四站，計二等站二個，三等站二個。

今先按測量所得之結果，依次將各項工程分列於下：

|    |      |          |            |    |    |
|----|------|----------|------------|----|----|
| 土方 | }    | 挖土       | 387214 公方  |    |    |
|    |      | 填土       | 4783452 公方 |    |    |
|    |      | 挖鬆石      | 1724 公方    |    |    |
|    |      | 挖硬石      | 53192 公方   |    |    |
| 隧道 | (石山) | 320 公尺   |            |    |    |
|    |      |          |            | 跨度 | 座數 |
| 橋梁 | }    | 上承鋼桁橋    | 30 公尺      |    | 4  |
|    |      | 下承鋼桁橋    | 60         |    | 1  |
|    |      | 上承鋼鈹橋    | 15         |    | 2  |
|    |      |          |            | 跨度 | 座數 |
| 涵洞 | }    | 箱式 石砌    | 1 公尺       |    | 18 |
|    |      |          | 2          |    | 21 |
|    |      | 拱式 鋼筋混凝土 | 2.5        |    | 5  |
|    |      |          | 3          |    | 2  |

|    |       |   |         |      |          |
|----|-------|---|---------|------|----------|
| 水管 | 水泥混凝土 | } | 徑 45 公分 | 19 座 | 長 381 公尺 |
|    |       |   | 徑 60 公分 | 14 座 | 長 263 公尺 |

以上為依照定測所繪各平面圖及斷面圖推算設計而得。茲再依此數量編為概算。

資-4 路基築造

A. 土 方

1. 挖土 387214 公方

按照當地之工價,以每公方需洋 0.22 元計算,應為

$$387214 \times 0.22 = \$ 85187.08$$

2. 填土 4783452 公方

以每公方需洋 0.22 元計算,應為

$$4783452 \times 0.22 = \$ 1052359.44$$

3. 挖鬆石 1724 公方

以每公方需洋 0.60 元計算,應為

$$1724 \times 0.60 = \$ 1034.40$$

4. 挖硬石 53192 公方

以每公方需洋 1.10 元計算,應為

$$53192 \times 1.10 = \$ 58511.20$$

合計土方需洋  $85187.08 + 1052359.44 + 1034.40 + 58511.20$

$$= \$ 1197092.12$$

B. 護 土 牆

用普通塊石砌造，1:3 水泥漿鉤縫，共計 2408 公方。

單 價

|         |         |           |            |
|---------|---------|-----------|------------|
| 塊石      | 1 公方    | @ \$ 9.00 | = \$ 9.00  |
| 水泥      | 0.80 桶  | @ 12.00   | = 9.60     |
| 沙子      | 0.25 公方 | @ 3.50    | = 0.88     |
| 石工      | 1 個     | @ 0.60    | = 0.60     |
| 小工      | 3 個     | @ 0.40    | = 1.20     |
| 合計每公方需洋 |         |           | = \$ 21.28 |

總 價

|      |                  |               |
|------|------------------|---------------|
| 砌塊石  | 2408 × 21.28     | = \$ 51242.24 |
| 挖基脚  | 124 公方 @ \$ 1.20 | = \$ 148.80   |
| 合計需洋 |                  | = \$ 51391.04 |

總計路基築造需洋  $1197092.12 + 51391.04$   
= \$ 1248483.16

資-5 隧 道

用水泥混凝土砌拱，長 320 公尺。

每公尺長度所需材料數量

|         |       |       |          |
|---------|-------|-------|----------|
| 砌拱      | 1:2:4 | 水泥混凝土 | 3.83 公方  |
| 砌牆      | 1:3:6 | 水泥混凝土 | 4.55 公方  |
| 砌地面及洩水溝 | 1:3:6 | 水泥混凝土 | 1.32 公方  |
| 開洞      | 石方    |       | 44.40 公方 |

|            |       |                    |             |
|------------|-------|--------------------|-------------|
| 建設木架       |       | 2.36 公方            |             |
| <u>單 價</u> |       |                    |             |
| 打水泥混凝土     | 1:2:4 | 3.83 公方 @ \$ 51.00 | = \$ 195.33 |
| 打水泥混凝土     | 1:3:6 | 5.87 公方 @ \$ 35.00 | = 205.45    |
| 開洞         |       | 44.40 公方 @ \$ 3.60 | = 159.84    |
| 建設木架       |       | 2.36 公方 @ \$ 88.00 | = 207.68    |
| 砌洞口及避車處    |       |                    | = 40.00     |
|            |       | 合 計                | = \$ 808.30 |

姑按每公尺 810 元計算

|                 |              |      |           |
|-----------------|--------------|------|-----------|
| <u>總 價</u>      |              |      |           |
| 320 公尺          | @ \$ 810.00  | = \$ | 259200.00 |
| 總計 <u>隧道</u> 需洋 | \$ 259200.00 |      |           |

資-6 橋 工

A 橋梁

|                           |        |            |             |
|---------------------------|--------|------------|-------------|
| <u>單 價</u>                |        |            |             |
| 1. 鋼鐵                     |        |            |             |
| 構造鋼每噸市價                   |        | = \$       | 304.50      |
| 裝設橋梁包含安架在內                |        | = \$       | 40.00       |
|                           |        | 合計每噸需洋     | = \$ 344.50 |
| 2. 水泥混凝土 1:2:4 成分, 每立方公尺需 |        |            |             |
| 水泥                        | 2.12 桶 | @ \$ 12.00 | = \$ 25.44  |



|         |          |   |      |   |          |
|---------|----------|---|------|---|----------|
| 沙子      | 0.45 公方  | @ | 3.50 | = | 1.58     |
| 石子      | 0.90 公方  | @ | 6.00 | = | 5.40     |
| 松板 2" 厚 | 5.00 平公尺 | @ | 1.80 | = | 9.00     |
| 雜木      |          |   |      | = | 3.50     |
| 木工      | 3 個      | @ | 0.60 | = | 1.80     |
| 小工      | 5 個      | @ | 0.40 | = | 2.00     |
| 雜費      |          |   |      | = | 1.00     |
| 合計每公方需洋 |          |   |      | = | \$ 49.72 |

3 水泥混凝土 1:3:6 成分, 每立方公尺需

|         |                  |      |       |   |          |
|---------|------------------|------|-------|---|----------|
| 水泥      | 1.45 桶           | @ \$ | 12.00 | = | \$ 17.40 |
| 沙子      | 0.46 公方          | @    | 3.50  | = | 1.61     |
| 石子      | 0.93 公方          | @    | 6.00  | = | 5.58     |
| 松板 2" 厚 | 3.30 平公尺         | @    | 1.80  | = | 5.94     |
| 雜木      |                  |      |       | = | \$ 1.00  |
| 木工      | $1\frac{1}{2}$ 個 | @    | 0.60  | = | 0.90     |
| 小工      | 3 個              | @    | 0.40  | = | 1.20     |
| 雜費      |                  |      |       | = | 0.80     |
| 合計每公方需洋 |                  |      |       | = | \$ 34.43 |

4. 砌石拱或砌面石, 1:2 水泥漿鈎縫, 每立方公尺需

|       |         |      |       |   |          |
|-------|---------|------|-------|---|----------|
| 拱石或面石 | 1.00 公方 | @ \$ | 20.00 | = | \$ 20.00 |
| 水泥    | 0.85 桶  | @    | 12.00 | = | 10.20    |

|             |         |   |      |   |            |
|-------------|---------|---|------|---|------------|
| 沙子          | 0.18 公方 | @ | 3.50 | = | 0.63       |
| 建設木架 (工料在內) |         |   |      |   | 5.00       |
| 瓦工          | 1 個     | @ | 0.60 | = | 0.60       |
| 小工          | 3 個     | @ | 0.40 | = | 1.20       |
| 合計每公方需洋     |         |   |      |   | = \$ 37.63 |

5. 普通石工, 1:3 水泥漿鉤縫, 每立方公尺需

|         |         |      |       |      |            |
|---------|---------|------|-------|------|------------|
| 普通塊石    | 1.00 公方 | @ \$ | 9.00  | = \$ | 9.00       |
| 水泥      | 0.80 桶  | @    | 12.00 | =    | 9.60       |
| 沙子      | 0.25 公方 | @    | 3.50  | =    | 0.88       |
| 瓦工      | 1 個     | @    | 0.60  | =    | 0.60       |
| 小工      | 3 個     | @    | 0.40  | =    | 1.20       |
| 合計每公方需洋 |         |      |       |      | = \$ 21.28 |

6. 堆疊石 每立方公尺需

|         |                  |      |      |      |           |
|---------|------------------|------|------|------|-----------|
| 疊石 包含運費 | 1.25 公方          | @ \$ | 3.00 | = \$ | 3.75      |
| 瓦工      | $\frac{1}{2}$ 個  | @    | 0.60 | =    | 0.30      |
| 小工      | $1\frac{1}{2}$ 個 | @    | 0.40 | =    | 0.60      |
| 合計每公方需洋 |                  |      |      |      | = \$ 4.65 |

7. 雜項

|      |              |    |            |
|------|--------------|----|------------|
| 橋梁枕木 | 25×25×300 美松 | 每根 | = \$ 14.00 |
|------|--------------|----|------------|

(每根市價美金 2.98 元, 又美金一元合洋 4.70 元)

|     |          |     |           |
|-----|----------|-----|-----------|
| 護輪木 | 15×10 美松 | 每公尺 | = \$ 1.34 |
|-----|----------|-----|-----------|

(每公尺按美金 0.28 元計算)

|      |    |            |
|------|----|------------|
| 帶鉤螺絲 | 每個 | = \$ 0.3   |
| 竹節鋼  | 每噸 | = \$ 150.0 |

總價

## 1. 橋身

|       | 跨 度   | 座 數 | 鋼料總噸數     |
|-------|-------|-----|-----------|
| 上承鋼桁橋 | 30 公尺 | 4   | 278.00    |
| 下承鋼桁橋 | 60 公尺 | 1   | 224.00    |
| 上承鋼板橋 | 15 公尺 | 2   | 34.00     |
|       |       |     | <hr/>     |
|       |       |     | = 536.00噸 |

合計需洋  $536 \times 344.50 = \$ 184652.00$

## 2. 橋座及橋墩

|             |         |            |                      |
|-------------|---------|------------|----------------------|
| 1:2:4 水泥混凝土 | 28 公方   | @ \$ 49.72 | = \$ 1392.16         |
| 1:3:6 水泥混凝土 | 1240 公方 | @ 34.43    | = 42693.20           |
| 砌面石         | 737 公方  | @ 37.63    | = 27733.31           |
| 砌塊石         | 4016 公方 | @ 21.28    | = 85460.48           |
| 堆蠻石         | 572 公方  | @ 4.65     | = 2659.80            |
| 挖基脚         | 644 公方  | @ 1.20     | = 772.80             |
|             |         | 合計需洋       | <hr/> = \$ 160711.75 |

## 3. 雜項

|      |       |         |              |
|------|-------|---------|--------------|
| 橋梁枕木 | 370 根 | @ 14.00 | = \$ 5180.00 |
|------|-------|---------|--------------|

|      |          |        |         |
|------|----------|--------|---------|
| 護輪木  | 420 公尺 @ | 1.34 = | 562.80  |
| 帶鉤螺絲 | 740 個 @  | 0.35 = | 259.00  |
| 雜費   |          | 非 =    | 3000.00 |
|      |          |        | 9001.80 |
|      | 合計需洋     | = \$   | 9001.80 |

總計橋梁需洋  $184652.00 + 160711.75 + 9001.80$   
 $= \$ 354365.55$

### B. 涵 洞

#### 1. 數量

|          | 跨 度  | 座 數 |
|----------|------|-----|
| 箱式石砌     | 1 公尺 | 18  |
| 及拱式鋼筋混凝土 | 2    | 21  |
|          | 2.5  | 5   |
|          | 3    | 2   |

#### 2. 單價

按照「橋梁」項下所開之單價計算

#### 3. 總價

|             |           |            |             |
|-------------|-----------|------------|-------------|
| 1:2:4 水泥混凝土 | 1489 公方 @ | \$ 49.72 = | \$ 74033.08 |
| 1:3:6 水泥混凝土 | 3214 公方 @ | 34.43 =    | 110658.02   |
| 鋼筋          | 108 英噸 @  | 150.00 =   | 16200.00    |
| 砌拱石         | 526 公方 @  | 37.63 =    | 19793.38    |
| 砌塊石         | 6381 公方 @ | 21.28 =    | 135808.96   |
| 堆蠻石         | 514 公方 @  | 4.65 =     | 2390.10     |

挖基腳 726 公方 @ 1.20 = 871.20

合計涵洞需洋 = \$ 359754.74

### C. 水管

#### 1. 數量

|       |        |      |          |
|-------|--------|------|----------|
| 水泥混凝土 | 徑45 公分 | 19 座 | 長 381 公尺 |
|       | 徑60 公分 | 14 座 | 長 263 公尺 |

#### 2. 單價

|         | 水管每公尺   | 基礎每公尺<br>1:3 石灰漿砌 | 兩端護牆每座<br>基腳在內 |
|---------|---------|-------------------|----------------|
| 徑 45 公分 | \$ 9.20 | \$ 5.00           | \$ 89.00       |
| 徑 60 公分 | 9.85    | 5.50              | 118.00         |

#### 3. 總價

|         |        |            |              |
|---------|--------|------------|--------------|
| 45 公分水管 | 381 公尺 | @ \$ 14.20 | = \$ 5410.20 |
| 又護 牆    | 19 座   | @ 89.00    | = 1691.00    |
| 60 公分水管 | 263 公尺 | @ 15.35    | = 4037.05    |
| 又護 牆    | 14 座   | @ 118.00   | = 1652.00    |

合計水管需洋 = \$ 12790.25

總計橋工需洋 354365.55 + 359754.74 + 12790.25

= \$ 726910.54

### 資-7 路線保衛

#### A 交路

|    |                |             |
|----|----------------|-------------|
| 總數 | .....          | 8 處         |
| 總長 | .....          | 46 公尺       |
| 單價 | 路基及鋪路面每公尺..... | \$ 9.00     |
| 總價 | 46 × 9.00      | = \$ 414.00 |

B. 界石

|    |                      |              |
|----|----------------------|--------------|
| 總數 | 每公里以 70 塊計算, 60 × 70 | = 4200 塊     |
| 單價 | 每塊.....              | \$ 1.50      |
| 總價 | 4200 × 1.50          | = \$ 6300.00 |

C. 公里碑

|    |                 |             |
|----|-----------------|-------------|
| 總數 | 每公里以 1 塊計算..... | 60 塊        |
| 單價 | 每塊.....         | \$ 4.00     |
| 總價 | 60 × 4.00       | = \$ 240.00 |

D. 鳴氣牌

|    |                   |             |
|----|-------------------|-------------|
| 總數 | 每公里平均以 1 塊計算..... | 60 塊        |
| 單價 | 每塊.....           | \$ 4.00     |
| 總價 | 60 × 4.00         | = \$ 240.00 |

E. 坡度牌

|    |                   |             |
|----|-------------------|-------------|
| 總數 | 每公里平均以 1 塊計算..... | 60 塊        |
| 單價 | 每塊.....           | \$ 4.00     |
| 總價 | 60 × 4.00         | = \$ 240.00 |

總計路線保衛需洋  $414.00 + 6300.00 + 240.00$   
 $+ 240.00 + 240.00 = \$ 7434.00$

### 資-8 電報及電話

#### 1. 單價

按每公里每一單線計算

|            |       |           |             |
|------------|-------|-----------|-------------|
| 電桿 杉木      | 14 根  | @ \$ 2.50 | = \$ 35.00  |
| 8 號鐵線      | 2.2 捆 | @ 16.00   | = 35.20     |
| 磁頭         | 14 個  | @ 1.50    | = 21.00     |
| 大工         | 2 個   | @ 2.00    | = 4.00      |
| 小工         | 40 個  | @ 0.50    | = 20.00     |
| 雜項         |       |           | = 5.00      |
| 運費         |       |           | = 10.00     |
| 合計每公里每單線需洋 |       |           | = \$ 130.20 |

#### 2. 總價

電報及電話線  $2 \times 60$  公里 @ \$ 130.20 = \$ 15624.00

#### 3. 電報機及電話機

|     |     |             |              |
|-----|-----|-------------|--------------|
| 電報機 | 4 架 | @ \$ 500.00 | = \$ 2000.00 |
| 電話機 | 7 架 | @ \$ 150.00 | = 1050.00    |
| 合計  |     |             | = \$ 3050.00 |

總計電報及電話需洋  $15624.00 + 3050.00 = \$ 18674.00$

### 資-9 軌道

A. 鋼軌

1. 本線

用 12 公尺長 每公尺 43 公斤之鋼軌

單線,每公里需鋼軌  $\frac{1000 \times 2}{12} = 166.67$  根

或  $1000 \times 2 \times 43 = 86000$  公斤

60 公里 需鋼軌  $60 \times 86000 = 5160000$  公斤

外加 5% 意外損耗  $= 258000$  公斤

合計  $= 5418000$  公斤

或  $= 5418$  噸

2. 站內分線

二等站二個,每個長 3500 公尺  $= 7000$  公尺

三等站二個,每個長 1000 公尺  $= 2000$  公尺

合計  $= 9000$  公尺

用 10 公尺長每公尺 30 公斤鋼軌,應需鋼軌

$9000 \times 30 = 270000$  公斤

或  $= 270$  噸

3. 總量及總價

本線及分線合需鋼軌  $5418 + 270 = 5688$  噸

每噸市價按 140.00 元計算

總計 鋼軌需洋  $5688 \times 140.00 = \$ 796320.00$

B. 鋼軌附件



## 1. 魚尾鈹

每公里用 168 對, 每對重 28.13 公斤

69 公里需  $69 \times 168 \times 28.13$  = 326083 公斤

外加 5% 意外損耗 = 16304 公斤

合計 = 342387 公斤

或 342.387 噸

## 2. 魚尾螺絲

每公里需 672 個, 每個重 0.623 公斤

69 公里需  $69 \times 672 \times 0.623$  = 28887 公斤

外加 10% 意外損耗 = 2888 公斤

合計 = 31775 公斤

或 31.775 噸

## 3. 狗頭釘

每公里需 6672 個, 每個重 0.354 公斤

69 公里需  $69 \times 6672 \times 0.354$  = 162970 公斤

外加 10% 意外損耗 = 16297

合計 = 179267 公斤

或 179.267 噸

## 總價

魚尾鈹 342.387 噸 @ \$ 170.00 = \$ 58205.79

魚尾螺絲 31.775 噸 @ \$ 260.00 = 8261.50

|     |           |             |   |              |
|-----|-----------|-------------|---|--------------|
| 狗頭釘 | 179 267 噸 | @ \$ 300.00 | = | 53780.10     |
|     |           |             |   | <hr/>        |
|     | 總計鋼軌附件需洋  |             | = | \$ 120247.39 |

C. 枕木

美松木,每公里用 1668 根

|            |                  |   |          |
|------------|------------------|---|----------|
| 69 公里需     | $69 \times 1668$ | = | 115092 根 |
| 外加 5% 意外損耗 |                  | = | 5754 根   |
|            |                  |   | <hr/>    |
|            | 合計               | = | 120846 根 |

每根市價按美金 1.20 元計算,又美金一元合洋 4.70 元

|    |                      |   |              |
|----|----------------------|---|--------------|
| 每根 |                      | = | \$ 5.64      |
| 總價 | $120846 \times 5.64$ | = | \$ 681571.44 |

D. 道渣

|                |          |
|----------------|----------|
| 深度: 由軌枕下至路基面定為 | 26 公分    |
| 由道渣面至軌枕下定為     | 15 公分    |
|                | <hr/>    |
|                | 合計=41 公分 |

寬度: 定為 3.40 公尺

|         |                               |   |          |
|---------|-------------------------------|---|----------|
| 每公里應需道渣 | $3.40 \times .41 \times 1000$ | = | 1394 公方  |
| 69 公里應需 | $69 \times 1394$              | = | 96186 公方 |

單價 每公方按 \$ 2.50 計算

|    |                     |   |              |
|----|---------------------|---|--------------|
| 總價 | $96186 \times 2.50$ | = | \$ 240465.00 |
|----|---------------------|---|--------------|

E. 鋪設費

1. 鋪軌

|             |                                      |      |            |
|-------------|--------------------------------------|------|------------|
| 每公里鋪鋼軌 84 對 | @ \$ 3.00                            | = \$ | 252.00     |
| 2. 鋪道碴及起道撥道 |                                      |      |            |
| 每節鋼軌需工人 6 名 | @ \$ 0.50                            |      |            |
| 每公里應需       | $84 \times 6 \times 0.50$            | = \$ | 252.00     |
| 3 總價        |                                      |      |            |
| 每公里合計應需     | \$ 504.00                            |      |            |
| 69 公里應需     | $69 \times 504.00$                   | = \$ | 34776.00   |
| 總計軌道需洋      | $796320.00 + 120247.39$              |      |            |
|             | $+ 681571.44 + 240465.00 + 34776.00$ |      |            |
|             |                                      | = \$ | 1873379.83 |

### 資-10 號誌及轉轍器

#### 1. 轉轍器(轍叉在內)

10 號轉轍器, 43 公斤鋼軌上用, 共計 12 付,

每付市價按 \$ 720.00 計算

合計需洋  $12 \times 720.00$  = \$ 8640.00

8 號轉轍器, 30 公斤鋼軌上用, 共計 24 付,

每付市價按 \$ 650.00 計算

合計需洋  $24 \times 650.00$  = \$ 15600.00

總計轉轍器需洋 \$ 24240.00

#### 2. 號誌

8 付遠距號誌 @ \$ 800.00 = \$ 6400.00

|         |             |      |          |
|---------|-------------|------|----------|
| 8 付進站號誌 | @ \$ 800.00 | = \$ | 6400.00  |
|         | 合計          | = \$ | 12800.00 |

3. 分道臺

|        |             |      |        |
|--------|-------------|------|--------|
| 4 座分道臺 | @ \$ 200.00 | = \$ | 800.00 |
|--------|-------------|------|--------|

|            |                              |      |          |
|------------|------------------------------|------|----------|
| 總計號誌及轉轍器需洋 | 24240.00 + 12800.00 + 800.00 |      |          |
|            |                              | = \$ | 37840.00 |

資-11 車站及房屋

A. 車站

|                    |   |          |
|--------------------|---|----------|
| I. 1. 二等車站 2 個每個面積 | = | 380 平方公尺 |
|--------------------|---|----------|

每平方公尺建築費需洋 \$ 30.00

|                      |      |          |
|----------------------|------|----------|
| 合計應需 2 × 380 × 30.00 | = \$ | 22800.00 |
|----------------------|------|----------|

2. 月臺 4 座, 每座長 240 公尺; 貨物站臺 2 座, 每座長 100 公尺, 合計長 1160 公尺

每公尺按 \$ 6.60 計算

|                |      |         |
|----------------|------|---------|
| 應需 1160 × 6.60 | = \$ | 7656.00 |
|----------------|------|---------|

|                        |      |         |
|------------------------|------|---------|
| 3. 圍欄 100 公尺 @ \$ 2.50 | = \$ | 3500.00 |
|------------------------|------|---------|

|                      |      |        |
|----------------------|------|--------|
| 4. 柵門 4 道 @ \$ 40.00 | = \$ | 160.00 |
|----------------------|------|--------|

5. 貨物倉庫 2 座計 800 平方公尺

每平方公尺按 \$ 20.00 計算

|                |      |          |
|----------------|------|----------|
| 應需 800 × 20.00 | = \$ | 16000.00 |
|----------------|------|----------|

|                     |   |          |
|---------------------|---|----------|
| II. 1. 三等站 2 個 每個面積 | = | 240 平方公尺 |
|---------------------|---|----------|

每平方公尺按 \$ 27.00 計算

合計應需  $2 \times 240 \times 27.00 = \$ 12960.00$

2. 月臺 4 座, 每座長 240 公尺

每公尺按 \$ 6.60 計算

應需  $960 \times 6.60 = \$ 6336.00$

3. 圍欄 1000 公尺 @ \$ 2.50 = \$ 2500.00

4. 柵門 4 道 @ \$ 40.00 = \$ 160.00

合計車站需洋 \$ 72072.00

### B. 房屋

I. 工務員司宿舍 4 所 共計面積 640 平方公尺

II. 車務員司宿舍 10 所 共計面積 1060 平方公尺

III. 機務員司宿舍 3 所 共計面積 500 平方公尺

合計面積 2200 平方公尺, 每方按 \$ 20.00 計算

應為  $2200 \times 20.00 = \$ 44000.00$

IV. 工務車務及機務段辦公室 3 所 共計面積 1200 平方公尺

每方按 \$ 24.00 計算

應為  $1200 \times 24.00 = \$ 28800.00$

V. 警務段及派出所 4 所 共計面積 700 平方公尺

每方按 \$ 18.00 計算

應為  $700 \times 18.00 = \$ 12600.00$

VI. 工人住所 = \$ 12000.00

合計房屋需洋 \$ 97400.00

總計車站與房屋需洋 \$ 169472.00

資-12 總機器廠

A. 機車房及旋橋

1. 機車房 1 座 計面積 720 平方公尺

每方按 \$ 27.00 計算

應為  $720 \times 27.00 = \$ 19440.00$

2. 灰坑 2 座 計長 60 公尺

每公尺建築費按 \$ 40.00 計算

應為  $60 \times 40.00 = \$ 2400.00$

3. 25 公尺旋橋 1 座 = \$ 28000.00

4. 旋橋基礎：1:3:6 水泥混凝土 400 公方

每方按 \$ 35.00 計算

應為  $400 \times 35.00 = \$ 14000.00$

又 60 磅鋼軌 9 噸，每噸按 \$ 140.00 計算

應為  $9 \times 140.00 = \$ 1260.00$

合計機車房與旋橋需洋 \$ 65100.00

B. 水塔

I. 1. 水櫃 1 個，高 3.6 公尺，直徑 4.2 公尺，容量 53000 公升，

總計水櫃及鋼架需鋼 11.7 噸，每噸按 \$ 304.50 計算

應為  $11.7 \times 304.50 = \$ 3562.65$

|    |                       |                   |              |
|----|-----------------------|-------------------|--------------|
| 2. | 1:3:6 水泥混凝土基礎 = 50 公方 | @ \$ 35.00        |              |
|    | 應為                    | $50 \times 35.00$ | = \$ 1750.00 |
| 3. | 4-馬力抽水機 1 架           |                   | = \$ 1300.00 |
| 4. | 蓄水池及水井                |                   | = \$ 3000.00 |
| 5. | 機器房 1 座               |                   | = \$ 600.00  |
| 6. | 水鶴 2 個                | @ \$ 150.00       | = \$ 300.00  |
| 7. | 6" 水管 150 公尺          | @ \$ 7.00         | = \$ 1050.00 |
|    | 合計需洋                  | \$ 11562.65       |              |

II. 1. 水櫃 1 個, 高 3.6 公尺, 直徑 6 公尺, 容量 106000 升, 總計水櫃及鋼架需鋼 20 噸

@ 304.50 = \$ 6090.00

|    |                       |                   |              |
|----|-----------------------|-------------------|--------------|
| 2. | 1:3:6 水泥混凝土基礎 = 60 公方 | @ \$ 35.00        |              |
|    | 應為                    | $60 \times 35.00$ | = \$ 2100.00 |
| 3. | 7-馬力抽水機 1 架           |                   | = \$ 2100.00 |
| 4. | 蓄水池及水井                |                   | = \$ 4200.00 |
| 5. | 機器房 1 座               |                   | = \$ 900.00  |
| 6. | 水鶴 2 個                | @ \$ 150.00       | = \$ 300.00  |
| 7. | 6" 水管 800 公尺          | @ \$ 7.00         | = \$ 5600.00 |
|    | 合計需洋                  | \$ 21290.00       |              |

### c. 煤臺及灰坑

1. 煤臺 2 座, 用鋼筋混凝土砌造, 共計面積 240 平方公尺

每方按 \$ 20.00 計算,

應為  $240 \times 20.00 = \$ 4800.00$

2. 站內灰坑 4 個 共長 60 公尺 @ \$ 40.00

= \$ 2400.00

合計煤臺與灰坑需洋 \$ 7200.00

總計總機器廠需洋 \$ 105152.65

資-3 購地

A. 購地

山地計佔總面積之 40%

未墾地計佔總面積之 20%

已墾地計佔總面積之 40%

以上地畝平均按每畝 \$ 20.00 計算

地幅平均按寬 60 公尺計算

69 公里應需  $69000 \times 60 = 4140000$  平方公尺

= 6740 畝

共計需洋  $6740 \times 20.00 = \$ 134800.00$

B. 遷屋及遷墳

1. 遷屋 共計 500 平方公尺 @ \$ 5.00 = \$ 2500.00

2. 遷墳 共計 400 個 @ \$ 2.00 = \$ 800.00

合計 = \$ 3300.00

總計購地需洋 \$ 138100.00



資-14 機件之設備

機件之設備約計爲 \$ 50000.00

資-15 車輛

|            |      |           |      |                 |
|------------|------|-----------|------|-----------------|
| 1. 機車 6 輛  | @ \$ | 140000.00 | = \$ | 840000.00       |
| 2. 客車 16 輛 | @ \$ | 30000.00  | = \$ | 480000.00       |
| 3. 貨車 40 輛 | @ \$ | 6000.00   | = \$ | 240000.00       |
| 4. 守車 8 輛  | @ \$ | 12000.00  | = \$ | 96000.00        |
| <u>合計</u>  |      |           |      | = \$ 1656000.00 |

總計車輛需洋 \$ 1656000.00

(按各項車輛之價值上下相差甚巨,今姑各取其平均值計算)

資-2 籌辦費

籌辦費約計爲建築費用總數之 1.5 % = \$ 87300.00

資-1 總務費

總務費約計爲建築費用總數之 8 % = \$ 465600.00

## 結 論

今將上列各項建築費總結之,共得大洋 6843546.18 元

## 工程預算書

|      |        |            |
|------|--------|------------|
| 資-1  | 總務費    | 465600.00  |
| 資-2  | 籌辦費    | 87300.00   |
| 資-3  | 購地     | 138100.00  |
| 資-4  | 路基築造   | 1248483.16 |
| 資-5  | 隧道     | 259200.00  |
| 資-6  | 橋工     | 726910.54  |
| 資-7  | 路線保衛   | 7434.00    |
| 資-8  | 電報及電話  | 18674.00   |
| 資-9  | 軌道     | 1873379.83 |
| 資-10 | 號誌及轉轍器 | 37840.00   |
| 資-11 | 車站及房屋  | 169472.00  |
| 資-12 | 總機器廠   | 105152.65  |
| 資-13 | 特別機廠   | ——         |
| 資-14 | 機件之設備  | 50000 00   |
| 資-15 | 車輛     | 1656000.00 |
| 資-16 | 維持費    | ——         |
| 資-17 | 船塢船港船埠 | ——         |
| 資-18 | 浮水設備品  | ——         |

合共 \$ 6843546.18

以 60 公里平分之,計每公里需建築費洋 114000 元

## 書 寫 遊 野 工

|         |         |       |
|---------|---------|-------|
| 0000504 | 管 寫 器   | 1-1   |
| 0000513 | 管 寫 器   | 1-1   |
| 0000531 | 曲 調     | 1-1   |
| 0000549 | 畫 樂 隊 器 | 4-1   |
| 0000557 | 畫 器     | 3-1   |
| 0000567 | 工 器     | 1-1   |
| 0000577 | 管 樂 器 類 | 7-1   |
| 0000581 | 管 樂 器 類 | 8-1   |
| 0000582 | 管 樂 器   | 9-1   |
| 0000583 | 器 樂 類   | 10-1  |
| 0000584 | 制 風 器   | 11-1  |
| 0000585 | 樂 器 類   | 12-1  |
| 0000586 | 樂 器 類   | 13-1  |
| 0000587 | 樂 器 類   | 14-1  |
| 0000588 | 樂 器 類   | 15-1  |
| 0000589 | 樂 器 類   | 16-1  |
| 0000590 | 樂 器 類   | 17-1  |
| 0000591 | 樂 器 類   | 18-1  |
| 0000592 | 樂 器 類   | 19-1  |
| 0000593 | 樂 器 類   | 20-1  |
| 0000594 | 樂 器 類   | 21-1  |
| 0000595 | 樂 器 類   | 22-1  |
| 0000596 | 樂 器 類   | 23-1  |
| 0000597 | 樂 器 類   | 24-1  |
| 0000598 | 樂 器 類   | 25-1  |
| 0000599 | 樂 器 類   | 26-1  |
| 0000600 | 樂 器 類   | 27-1  |
| 0000601 | 樂 器 類   | 28-1  |
| 0000602 | 樂 器 類   | 29-1  |
| 0000603 | 樂 器 類   | 30-1  |
| 0000604 | 樂 器 類   | 31-1  |
| 0000605 | 樂 器 類   | 32-1  |
| 0000606 | 樂 器 類   | 33-1  |
| 0000607 | 樂 器 類   | 34-1  |
| 0000608 | 樂 器 類   | 35-1  |
| 0000609 | 樂 器 類   | 36-1  |
| 0000610 | 樂 器 類   | 37-1  |
| 0000611 | 樂 器 類   | 38-1  |
| 0000612 | 樂 器 類   | 39-1  |
| 0000613 | 樂 器 類   | 40-1  |
| 0000614 | 樂 器 類   | 41-1  |
| 0000615 | 樂 器 類   | 42-1  |
| 0000616 | 樂 器 類   | 43-1  |
| 0000617 | 樂 器 類   | 44-1  |
| 0000618 | 樂 器 類   | 45-1  |
| 0000619 | 樂 器 類   | 46-1  |
| 0000620 | 樂 器 類   | 47-1  |
| 0000621 | 樂 器 類   | 48-1  |
| 0000622 | 樂 器 類   | 49-1  |
| 0000623 | 樂 器 類   | 50-1  |
| 0000624 | 樂 器 類   | 51-1  |
| 0000625 | 樂 器 類   | 52-1  |
| 0000626 | 樂 器 類   | 53-1  |
| 0000627 | 樂 器 類   | 54-1  |
| 0000628 | 樂 器 類   | 55-1  |
| 0000629 | 樂 器 類   | 56-1  |
| 0000630 | 樂 器 類   | 57-1  |
| 0000631 | 樂 器 類   | 58-1  |
| 0000632 | 樂 器 類   | 59-1  |
| 0000633 | 樂 器 類   | 60-1  |
| 0000634 | 樂 器 類   | 61-1  |
| 0000635 | 樂 器 類   | 62-1  |
| 0000636 | 樂 器 類   | 63-1  |
| 0000637 | 樂 器 類   | 64-1  |
| 0000638 | 樂 器 類   | 65-1  |
| 0000639 | 樂 器 類   | 66-1  |
| 0000640 | 樂 器 類   | 67-1  |
| 0000641 | 樂 器 類   | 68-1  |
| 0000642 | 樂 器 類   | 69-1  |
| 0000643 | 樂 器 類   | 70-1  |
| 0000644 | 樂 器 類   | 71-1  |
| 0000645 | 樂 器 類   | 72-1  |
| 0000646 | 樂 器 類   | 73-1  |
| 0000647 | 樂 器 類   | 74-1  |
| 0000648 | 樂 器 類   | 75-1  |
| 0000649 | 樂 器 類   | 76-1  |
| 0000650 | 樂 器 類   | 77-1  |
| 0000651 | 樂 器 類   | 78-1  |
| 0000652 | 樂 器 類   | 79-1  |
| 0000653 | 樂 器 類   | 80-1  |
| 0000654 | 樂 器 類   | 81-1  |
| 0000655 | 樂 器 類   | 82-1  |
| 0000656 | 樂 器 類   | 83-1  |
| 0000657 | 樂 器 類   | 84-1  |
| 0000658 | 樂 器 類   | 85-1  |
| 0000659 | 樂 器 類   | 86-1  |
| 0000660 | 樂 器 類   | 87-1  |
| 0000661 | 樂 器 類   | 88-1  |
| 0000662 | 樂 器 類   | 89-1  |
| 0000663 | 樂 器 類   | 90-1  |
| 0000664 | 樂 器 類   | 91-1  |
| 0000665 | 樂 器 類   | 92-1  |
| 0000666 | 樂 器 類   | 93-1  |
| 0000667 | 樂 器 類   | 94-1  |
| 0000668 | 樂 器 類   | 95-1  |
| 0000669 | 樂 器 類   | 96-1  |
| 0000670 | 樂 器 類   | 97-1  |
| 0000671 | 樂 器 類   | 98-1  |
| 0000672 | 樂 器 類   | 99-1  |
| 0000673 | 樂 器 類   | 100-1 |

0000674 樂 器 類 共 合

0000675 樂 器 類 共 合 00 11

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第一表 水銀氣壓表化為標準溫度(32°F)之更正數

| 溫度<br>°<br>法氏 | 英寸    |       |       |       |       |       |       |       |       |       |       |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|               | 26.0  | 26.5  | 27.0  | 27.5  | 28.0  | 28.5  | 29.0  | 29.5  | 30.0  | 30.5  | 31.0  |
| 45            | -.039 | -.039 | -.040 | -.041 | -.042 | -.042 | -.043 | -.044 | -.045 | -.045 | -.046 |
| 46            | .041  | .042  | .043  | .043  | .044  | .045  | .046  | .046  | .047  | .048  | .049  |
| 47            | .043  | .044  | .045  | .046  | .047  | .048  | .048  | .049  | .050  | .051  | .052  |
| 48            | .046  | .047  | .047  | .048  | .049  | .050  | .051  | .052  | .053  | .053  | .054  |
| 49            | .048  | .049  | .050  | .051  | .052  | .052  | .054  | .054  | .055  | .056  | .057  |
| 50            | .050  | .051  | .052  | .053  | .054  | .055  | .056  | .057  | .058  | .059  | .060  |
| 51            | .053  | .054  | .055  | .056  | .057  | .058  | .059  | .060  | .061  | .062  | .063  |
| 52            | .055  | .056  | .057  | .058  | .059  | .060  | .061  | .062  | .064  | .065  | .066  |
| 53            | .057  | .058  | .060  | .061  | .062  | .063  | .064  | .065  | .066  | .067  | .068  |
| 54            | .060  | .061  | .062  | .063  | .064  | .065  | .067  | .068  | .069  | .070  | .071  |
| 55            | .062  | .063  | .064  | .065  | .066  | .068  | .069  | .070  | .071  | .073  | .074  |
| 56            | .064  | .065  | .067  | .068  | .069  | .070  | .072  | .073  | .074  | .075  | .077  |
| 57            | .067  | .068  | .069  | .070  | .072  | .073  | .075  | .076  | .077  | .078  | .080  |
| 58            | .069  | .070  | .071  | .073  | .074  | .076  | .077  | .078  | .080  | .081  | .082  |
| 59            | .072  | .073  | .074  | .075  | .077  | .078  | .080  | .081  | .083  | .084  | .085  |
| 60            | .074  | .076  | .077  | .078  | .079  | .081  | .082  | .084  | .085  | .086  | .088  |
| 61            | .076  | .077  | .079  | .080  | .082  | .083  | .085  | .086  | .088  | .089  | .091  |
| 62            | .079  | .080  | .082  | .083  | .085  | .086  | .088  | .089  | .091  | .092  | .094  |
| 63            | .081  | .082  | .084  | .085  | .087  | .088  | .090  | .091  | .093  | .095  | .096  |
| 64            | .083  | .085  | .086  | .088  | .090  | .091  | .093  | .094  | .096  | .097  | .099  |
| 65            | .086  | .087  | .089  | .090  | .092  | .093  | .095  | .097  | .099  | .100  | .102  |
| 66            | .088  | .089  | .091  | .093  | .095  | .096  | .098  | .099  | .101  | .103  | .105  |
| 67            | .090  | .092  | .094  | .095  | .097  | .099  | .101  | .102  | .104  | .106  | .108  |
| 68            | .093  | .094  | .096  | .098  | .100  | .101  | .103  | .105  | .107  | .108  | .110  |
| 69            | .095  | .097  | .099  | .100  | .102  | .104  | .106  | .107  | .110  | .111  | .113  |
| 70            | .097  | .099  | .101  | .103  | .105  | .106  | .109  | .110  | .112  | .114  | .116  |
| 71            | .100  | .101  | .103  | .105  | .107  | .109  | .111  | .113  | .115  | .117  | .119  |
| 72            | .102  | .104  | .106  | .108  | .110  | .112  | .114  | .116  | .118  | .120  | .122  |
| 73            | .104  | .106  | .108  | .110  | .112  | .114  | .116  | .118  | .120  | .122  | .124  |
| 74            | .107  | .109  | .111  | .113  | .115  | .117  | .119  | .121  | .123  | .125  | .127  |
| 75            | .109  | .111  | .113  | .115  | .117  | .119  | .122  | .124  | .126  | .128  | .130  |
| 76            | .111  | .113  | .116  | .118  | .120  | .122  | .124  | .126  | .128  | .130  | .133  |
| 77            | .114  | .116  | .118  | .120  | .122  | .124  | .127  | .129  | .131  | .133  | .136  |
| 78            | .116  | .118  | .120  | .122  | .125  | .127  | .129  | .131  | .134  | .136  | .138  |
| 79            | .118  | .120  | .123  | .125  | .127  | .129  | .132  | .134  | .137  | .139  | .141  |
| 80            | .121  | .123  | .125  | .127  | .130  | .132  | .135  | .137  | .139  | .141  | .144  |
| 81            | .123  | .125  | .128  | .130  | .132  | .134  | .137  | .139  | .142  | .144  | .147  |
| 82            | .125  | .128  | .130  | .132  | .135  | .137  | .140  | .142  | .145  | .147  | .149  |
| 83            | .128  | .130  | .133  | .135  | .138  | .140  | .142  | .145  | .147  | .149  | .152  |
| 84            | .130  | .132  | .135  | .138  | .140  | .142  | .145  | .147  | .150  | .152  | .155  |
| 85            | .132  | .134  | .137  | .140  | .143  | .145  | .148  | .150  | .153  | .155  | .158  |
| 86            | .135  | .137  | .140  | .142  | .145  | .148  | .150  | .153  | .155  | .158  | .161  |
| 87            | .137  | .139  | .142  | .144  | .148  | .150  | .153  | .155  | .158  | .161  | .163  |
| 88            | .139  | .142  | .145  | .147  | .150  | .152  | .155  | .158  | .161  | .163  | .166  |
| 89            | .142  | .144  | .147  | .150  | .153  | .155  | .158  | .161  | .164  | .166  | .169  |
| 90            | .144  | .147  | .150  | .153  | .155  | .158  | .161  | .164  | .168  | .169  | .172  |
| 91            | .146  | .149  | .152  | .155  | .158  | .160  | .163  | .166  | .169  | .172  | .175  |

第二表 氣壓高度表

| B    |        | A     |    | 等于.01<br>寸之差數 |       | B     |    | A    |       | 等于.01<br>寸之差數 |    |
|------|--------|-------|----|---------------|-------|-------|----|------|-------|---------------|----|
| 英寸   | 英尺     | 英寸    | 英尺 | 英寸            | 英尺    | 英寸    | 英尺 | 英寸   | 英尺    | 英寸            | 英尺 |
| 20.0 | 11.047 |       |    | 23.7          | 6.423 |       |    | 27.4 | 2.470 |               |    |
| 20.1 | 10.911 | -13.6 |    | 23.8          | 6.308 | -11.5 |    | 27.5 | 2.371 | -9.9          |    |
| 20.2 | 10.776 | 13.5  |    | 23.9          | 6.194 | 11.4  |    | 27.6 | 2.272 | 9.9           |    |
| 20.3 | 10.642 | 13.4  |    | 24.0          | 6.080 | 11.4  |    | 27.7 | 2.173 | 9.9           |    |
| 20.4 | 10.508 | 13.4  |    | 24.1          | 5.967 | 11.3  |    | 27.8 | 2.075 | 9.8           |    |
| 20.5 | 10.375 | 13.3  |    | 24.2          | 5.854 | 11.3  |    | 27.9 | 1.977 | 9.8           |    |
| 20.6 | 10.242 | 13.3  |    | 24.3          | 5.741 | 11.3  |    | 28.0 | 1.880 | 9.7           |    |
| 20.7 | 10.110 | 13.2  |    | 24.4          | 5.629 | 11.2  |    | 28.1 | 1.783 | 9.7           |    |
| 20.8 | 9.979  | 13.1  |    | 24.5          | 5.518 | 11.1  |    | 28.2 | 1.686 | 9.7           |    |
| 20.9 | 9.848  | 13.1  |    | 24.6          | 5.407 | 11.1  |    | 28.3 | 1.589 | 9.6           |    |
| 21.0 | 9.718  | 13.0  |    | 24.7          | 5.296 | 11.1  |    | 28.4 | 1.493 | 9.6           |    |
| 21.1 | 9.589  | 12.9  |    | 24.8          | 5.186 | 11.0  |    | 28.5 | 1.397 | 9.5           |    |
| 21.2 | 9.460  | 12.9  |    | 24.9          | 5.077 | 10.9  |    | 28.6 | 1.302 | 9.5           |    |
| 21.3 | 9.332  | 12.8  |    | 25.0          | 4.968 | 10.9  |    | 28.7 | 1.207 | 9.5           |    |
| 21.4 | 9.204  | 12.8  |    | 25.1          | 4.859 | 10.9  |    | 28.8 | 1.112 | 9.5           |    |
| 21.5 | 9.077  | 12.7  |    | 25.2          | 4.751 | 10.8  |    | 28.9 | 1.018 | 9.4           |    |
| 21.6 | 8.951  | 12.6  |    | 25.3          | 4.643 | 10.8  |    | 29.0 | 924   | 9.4           |    |
| 21.7 | 8.825  | 12.6  |    | 25.4          | 4.535 | 10.8  |    | 29.1 | 830   | 9.4           |    |
| 21.8 | 8.700  | 12.5  |    | 25.5          | 4.428 | 10.7  |    | 29.2 | 736   | 9.4           |    |
| 21.9 | 8.575  | 12.5  |    | 25.6          | 4.321 | 10.7  |    | 29.3 | 643   | 9.3           |    |
| 22.0 | 8.451  | 12.4  |    | 25.7          | 4.215 | 10.6  |    | 29.4 | 550   | 9.3           |    |
| 22.1 | 8.327  | 12.4  |    | 25.8          | 4.109 | 10.6  |    | 29.5 | 458   | 9.2           |    |
| 22.2 | 8.204  | 12.3  |    | 25.9          | 4.004 | 10.5  |    | 29.6 | 366   | 9.2           |    |
| 22.3 | 8.082  | 12.2  |    | 26.0          | 3.899 | 10.5  |    | 29.7 | 274   | 9.2           |    |
| 22.4 | 7.960  | 12.2  |    | 26.1          | 3.794 | 10.4  |    | 29.8 | 182   | 9.1           |    |
| 22.5 | 7.838  | 12.1  |    | 26.2          | 3.690 | 10.4  |    | 29.9 | 91    | 9.1           |    |
| 22.6 | 7.717  | 12.0  |    | 26.3          | 3.586 | 10.4  |    | 30.0 | 0     | 9.1           |    |
| 22.7 | 7.597  | 12.0  |    | 26.4          | 3.483 | 10.3  |    | 30.1 | -91   | 9.0           |    |
| 22.8 | 7.477  | 12.0  |    | 26.5          | 3.380 | 10.3  |    | 30.2 | 181   | 9.0           |    |
| 22.9 | 7.358  | 11.9  |    | 26.6          | 3.277 | 10.3  |    | 30.3 | 271   | 9.0           |    |
| 23.0 | 7.239  | 11.9  |    | 26.7          | 3.175 | 10.2  |    | 30.4 | 361   | 9.0           |    |
| 23.1 | 7.121  | 11.8  |    | 26.8          | 3.073 | 10.2  |    | 30.5 | 451   | 8.9           |    |
| 23.2 | 7.004  | 11.7  |    | 26.9          | 2.972 | 10.1  |    | 30.6 | 540   | 8.9           |    |
| 23.3 | 6.887  | 11.7  |    | 27.0          | 2.871 | 10.1  |    | 30.7 | 629   | 8.8           |    |
| 23.4 | 6.770  | 11.7  |    | 27.1          | 2.770 | 10.1  |    | 30.8 | 717   | 8.8           |    |
| 23.5 | 6.554  | 11.6  |    | 27.2          | 2.670 | 10.0  |    | 30.9 | 805   | 8.8           |    |
| 23.6 | 6.538  | 11.6  |    | 27.8          | 2.570 | 10.0  |    | 31.0 | -893  | -8.8          |    |
| 23.7 | 6.423  | -11.5 |    | 27.4          | 2.470 | -10.0 |    |      |       |               |    |

第三表 氣溫更正係數表

| $t+t'$ | $C$    | 等于1°<br>之差數 | $t+t'$ | $C$    | 等于1°<br>之差數 | $t+t'$ | $C$    | 等于1°<br>之差數 |
|--------|--------|-------------|--------|--------|-------------|--------|--------|-------------|
| 0°     | -.1024 | 10.9        | 60°    | -.0380 | 10.7        | 120°   | +.0262 | 10.6        |
| 10     | .0915  | 10.9        | 70     | -.0273 | 10.7        | 130    | .0368  | 10.4        |
| 20     | .0806  | 10.8        | 80     | -.0166 | 10.8        | 140    | .0472  | 10.3        |
| 30     | .0698  | 10.6        | 90     | -.0058 | 10.7        | 150    | .0575  | 10.2        |
| 40     | .0592  | 10.6        | 100    | +.0043 | 10.7        | 160    | .0677  | 10.2        |
| 50     | .0486  | 10.6        | 110    | -.0156 | 10.6        | 170    | .0779  | 10.0        |
| 60     | -.0380 |             | 120    | +.0262 |             | 180    | +.0879 |             |



第四表 視距改算表

高度差

| 分數 | 0°   | 1°   | 2°   | 3°   | 4°   | 5°    | 6°    | 7°    | 8°    | 9°    |
|----|------|------|------|------|------|-------|-------|-------|-------|-------|
| 0  | 0.00 | 1.74 | 3.49 | 5.23 | 6.96 | 8.68  | 10.40 | 12.10 | 13.78 | 15.45 |
| 2  | 0.06 | 1.80 | 3.55 | 5.28 | 7.02 | 8.74  | 10.45 | 12.15 | 13.84 | 15.51 |
| 4  | 0.12 | 1.86 | 3.60 | 5.34 | 7.07 | 8.80  | 10.51 | 12.21 | 13.89 | 15.56 |
| 6  | 0.17 | 1.92 | 3.66 | 5.40 | 7.13 | 8.85  | 10.57 | 12.26 | 13.95 | 15.62 |
| 8  | 0.23 | 1.98 | 3.72 | 5.46 | 7.19 | 8.91  | 10.62 | 12.32 | 14.01 | 15.67 |
| 10 | 0.29 | 2.04 | 3.78 | 5.52 | 7.25 | 8.97  | 10.68 | 12.38 | 14.06 | 15.73 |
| 12 | 0.35 | 2.09 | 3.84 | 5.57 | 7.30 | 9.03  | 10.74 | 12.43 | 14.12 | 15.78 |
| 14 | 0.41 | 2.15 | 3.90 | 5.63 | 7.36 | 9.08  | 10.79 | 12.49 | 14.17 | 15.84 |
| 16 | 0.47 | 2.21 | 3.95 | 5.69 | 7.42 | 9.14  | 10.85 | 12.55 | 14.23 | 15.89 |
| 18 | 0.52 | 2.27 | 4.01 | 5.75 | 7.48 | 9.20  | 10.91 | 12.60 | 14.28 | 15.95 |
| 20 | 0.58 | 2.33 | 4.07 | 5.80 | 7.53 | 9.25  | 10.96 | 12.66 | 14.34 | 16.00 |
| 22 | 0.64 | 2.38 | 4.13 | 5.86 | 7.59 | 9.31  | 11.02 | 12.72 | 14.40 | 16.06 |
| 24 | 0.70 | 2.44 | 4.18 | 5.92 | 7.65 | 9.37  | 11.08 | 12.77 | 14.45 | 16.11 |
| 26 | 0.76 | 2.50 | 4.24 | 5.98 | 7.71 | 9.43  | 11.13 | 12.83 | 14.51 | 16.17 |
| 28 | 0.81 | 2.56 | 4.30 | 6.04 | 7.76 | 9.48  | 11.19 | 12.88 | 14.56 | 16.22 |
| 30 | 0.87 | 2.62 | 4.36 | 6.09 | 7.82 | 9.54  | 11.25 | 12.94 | 14.62 | 16.28 |
| 32 | 0.93 | 2.67 | 4.42 | 6.15 | 7.88 | 9.60  | 11.30 | 13.00 | 14.67 | 16.33 |
| 34 | 0.99 | 2.73 | 4.48 | 6.21 | 7.94 | 9.65  | 11.36 | 13.05 | 14.73 | 16.39 |
| 36 | 1.05 | 2.79 | 4.53 | 6.27 | 7.99 | 9.71  | 11.42 | 13.11 | 14.79 | 16.44 |
| 38 | 1.11 | 2.85 | 4.59 | 6.33 | 8.05 | 9.77  | 11.47 | 13.17 | 14.84 | 16.50 |
| 40 | 1.16 | 2.91 | 4.65 | 6.38 | 8.11 | 9.83  | 11.53 | 13.22 | 14.90 | 16.55 |
| 42 | 1.22 | 2.97 | 4.71 | 6.44 | 8.17 | 9.88  | 11.59 | 13.28 | 14.95 | 16.61 |
| 44 | 1.28 | 3.02 | 4.76 | 6.50 | 8.22 | 9.94  | 11.64 | 13.33 | 15.01 | 16.66 |
| 46 | 1.34 | 3.08 | 4.82 | 6.56 | 8.28 | 10.00 | 11.70 | 13.39 | 15.06 | 16.72 |
| 48 | 1.40 | 3.14 | 4.88 | 6.61 | 8.34 | 10.05 | 11.76 | 13.45 | 15.12 | 16.77 |
| 50 | 1.45 | 3.20 | 4.94 | 6.67 | 8.40 | 10.11 | 11.81 | 13.50 | 15.17 | 16.83 |
| 52 | 1.51 | 3.26 | 4.99 | 6.73 | 8.45 | 10.17 | 11.87 | 13.56 | 15.23 | 16.88 |
| 54 | 1.57 | 3.31 | 5.05 | 6.79 | 8.51 | 10.22 | 11.93 | 13.61 | 15.28 | 16.94 |
| 56 | 1.63 | 3.37 | 5.11 | 6.84 | 8.57 | 10.28 | 11.98 | 13.67 | 15.34 | 16.99 |
| 58 | 1.69 | 3.43 | 5.17 | 6.90 | 8.63 | 10.34 | 12.04 | 13.73 | 15.40 | 17.05 |
| 60 | 1.74 | 3.49 | 5.23 | 6.96 | 8.68 | 10.40 | 12.10 | 13.78 | 15.45 | 17.10 |

水平距離更正數

| 垂直距離 | 0°  | 1°  | 2°  | 3°  | 4°  | 5°  | 6°   | 7°   | 8°   | 9°   |
|------|-----|-----|-----|-----|-----|-----|------|------|------|------|
| 100  | 0.0 | 0.0 | 0.1 | 0.3 | 0.5 | 0.8 | 1.1  | 1.5  | 1.9  | 2.5  |
| 200  | 0.0 | 0.1 | 0.2 | 0.5 | 1.0 | 1.5 | 2.2  | 3.0  | 3.9  | 4.9  |
| 300  | 0.0 | 0.1 | 0.4 | 0.8 | 1.5 | 2.3 | 3.3  | 4.5  | 5.8  | 7.4  |
| 400  | 0.0 | 0.1 | 0.5 | 1.1 | 2.0 | 3.0 | 4.4  | 6.0  | 7.8  | 9.8  |
| 500  | 0.0 | 0.2 | 0.6 | 1.4 | 2.5 | 3.8 | 5.5  | 7.5  | 9.7  | 12.3 |
| 600  | 0.0 | 0.2 | 0.7 | 1.6 | 2.9 | 4.6 | 6.5  | 8.9  | 11.6 | 14.7 |
| 700  | 0.0 | 0.2 | 0.8 | 1.9 | 3.4 | 5.3 | 7.6  | 10.4 | 13.6 | 17.2 |
| 800  | 0.0 | 0.2 | 1.0 | 2.2 | 3.9 | 6.1 | 8.7  | 11.9 | 15.5 | 19.6 |
| 900  | 0.0 | 0.3 | 1.1 | 2.4 | 4.4 | 6.8 | 9.8  | 13.4 | 17.5 | 22.1 |
| 1000 | 0.0 | 0.3 | 1.2 | 2.7 | 4.9 | 7.6 | 10.9 | 14.9 | 19.4 | 24.5 |

## 高度差

| 分數 | 10°   | 11°   | 12°   | 13°   | 14°   | 15°   | 16°   | 17°   | 18°   | 19°   |
|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0  | 17.10 | 18.73 | 20.34 | 21.92 | 23.47 | 25.00 | 26.50 | 27.96 | 29.39 | 30.78 |
| 2  | 17.16 | 18.78 | 20.39 | 21.97 | 23.52 | 25.05 | 26.55 | 28.01 | 29.44 | 30.83 |
| 4  | 17.21 | 18.84 | 20.44 | 22.02 | 23.58 | 25.10 | 26.59 | 28.06 | 29.48 | 30.87 |
| 6  | 17.26 | 18.89 | 20.50 | 22.08 | 23.63 | 25.15 | 26.64 | 28.10 | 29.53 | 30.92 |
| 8  | 17.32 | 18.95 | 20.55 | 22.13 | 23.68 | 25.20 | 26.69 | 28.15 | 29.58 | 30.97 |
| 10 | 17.37 | 19.00 | 20.60 | 22.18 | 23.73 | 25.25 | 26.74 | 28.20 | 29.62 | 31.01 |
| 12 | 17.43 | 19.05 | 20.66 | 22.23 | 23.78 | 25.30 | 26.79 | 28.25 | 29.67 | 31.06 |
| 14 | 17.48 | 19.11 | 20.71 | 22.28 | 23.83 | 25.35 | 26.84 | 28.30 | 29.72 | 31.10 |
| 16 | 17.54 | 19.16 | 20.76 | 22.34 | 23.88 | 25.40 | 26.89 | 28.34 | 29.76 | 31.15 |
| 18 | 17.59 | 19.21 | 20.81 | 22.39 | 23.93 | 25.45 | 26.94 | 28.39 | 29.81 | 31.19 |
| 20 | 17.65 | 19.27 | 20.87 | 22.44 | 23.99 | 25.50 | 26.99 | 28.44 | 29.86 | 31.24 |
| 22 | 17.70 | 19.32 | 20.92 | 22.49 | 24.04 | 25.55 | 27.04 | 28.49 | 29.90 | 31.28 |
| 24 | 17.76 | 19.38 | 20.97 | 22.54 | 24.09 | 25.60 | 27.09 | 28.54 | 29.95 | 31.33 |
| 26 | 17.81 | 19.43 | 21.03 | 22.60 | 24.14 | 25.65 | 27.13 | 28.58 | 30.00 | 31.38 |
| 28 | 17.86 | 19.48 | 21.08 | 22.65 | 24.19 | 25.70 | 27.18 | 28.63 | 30.04 | 31.42 |
| 30 | 17.92 | 19.54 | 21.13 | 22.70 | 24.24 | 25.75 | 27.23 | 28.68 | 30.09 | 31.47 |
| 32 | 17.97 | 19.59 | 21.18 | 22.75 | 24.29 | 25.80 | 27.28 | 28.73 | 30.14 | 31.51 |
| 34 | 18.03 | 19.64 | 21.24 | 22.80 | 24.34 | 25.85 | 27.33 | 28.77 | 30.19 | 31.56 |
| 36 | 18.08 | 19.70 | 21.29 | 22.85 | 24.39 | 25.90 | 27.38 | 28.82 | 30.23 | 31.60 |
| 38 | 18.14 | 19.75 | 21.34 | 22.91 | 24.44 | 25.95 | 27.43 | 28.87 | 30.28 | 31.65 |
| 40 | 18.19 | 19.80 | 21.39 | 22.96 | 24.49 | 26.00 | 27.48 | 28.92 | 30.32 | 31.69 |
| 42 | 18.24 | 19.86 | 21.45 | 23.01 | 24.55 | 26.05 | 27.52 | 28.96 | 30.37 | 31.74 |
| 44 | 18.30 | 19.91 | 21.50 | 23.06 | 24.60 | 26.10 | 27.57 | 29.01 | 30.41 | 31.78 |
| 46 | 18.35 | 19.96 | 21.55 | 23.11 | 24.65 | 26.15 | 27.62 | 29.06 | 30.46 | 31.83 |
| 48 | 18.41 | 20.02 | 21.60 | 23.16 | 24.70 | 26.20 | 27.67 | 29.11 | 30.51 | 31.87 |
| 50 | 18.46 | 20.07 | 21.66 | 23.22 | 24.75 | 26.25 | 27.72 | 29.15 | 30.55 | 31.92 |
| 52 | 18.51 | 20.12 | 21.71 | 23.27 | 24.80 | 26.30 | 27.77 | 29.20 | 30.60 | 31.96 |
| 54 | 18.57 | 20.18 | 21.76 | 23.32 | 24.85 | 26.35 | 27.81 | 29.25 | 30.65 | 32.01 |
| 56 | 18.62 | 20.23 | 21.81 | 23.37 | 24.90 | 26.40 | 27.86 | 29.30 | 30.69 | 32.05 |
| 58 | 18.68 | 20.28 | 21.87 | 23.42 | 24.95 | 26.45 | 27.91 | 29.34 | 30.74 | 32.09 |
| 60 | 18.73 | 20.34 | 21.92 | 23.47 | 25.00 | 26.50 | 27.96 | 29.39 | 30.78 | 32.14 |

## 水平距離更正數

| 距離   | 10°  | 11°  | 12°  | 13°  | 14°  | 15°  | 16°  | 17°  | 18°  | 19°   |
|------|------|------|------|------|------|------|------|------|------|-------|
| 100  | 3.0  | 3.6  | 4.3  | 5.1  | 5.9  | 6.7  | 7.6  | 8.5  | 9.5  | 10.6  |
| 200  | 6.0  | 7.3  | 8.6  | 10.1 | 11.7 | 13.4 | 15.2 | 17.1 | 19.1 | 21.2  |
| 300  | 9.1  | 10.9 | 13.0 | 15.2 | 17.6 | 20.1 | 22.8 | 25.6 | 28.6 | 31.8  |
| 400  | 12.1 | 14.6 | 17.3 | 20.2 | 23.4 | 26.8 | 30.4 | 34.2 | 38.2 | 42.4  |
| 500  | 15.1 | 18.2 | 21.0 | 25.3 | 29.3 | 33.5 | 38.0 | 42.7 | 47.7 | 53.0  |
| 600  | 18.1 | 21.8 | 25.9 | 30.4 | 35.1 | 40.2 | 45.6 | 51.3 | 57.3 | 63.6  |
| 700  | 21.1 | 25.5 | 30.2 | 35.4 | 41.0 | 46.9 | 53.2 | 59.8 | 66.8 | 74.2  |
| 800  | 24.2 | 29.1 | 34.6 | 40.5 | 46.8 | 53.6 | 60.8 | 68.4 | 76.4 | 84.8  |
| 900  | 27.2 | 32.8 | 38.0 | 45.5 | 52.7 | 60.3 | 68.4 | 76.9 | 85.9 | 95.4  |
| 1000 | 30.2 | 36.4 | 43.2 | 50.6 | 58.5 | 67.0 | 76.0 | 85.5 | 95.5 | 106.0 |

第五表 曲線之曲度及半徑表

| D.    | R.     |         | D.   | R.     |        | D.   | R.     |        |
|-------|--------|---------|------|--------|--------|------|--------|--------|
|       | 公尺數    | 英尺數     |      | 公尺數    | 英尺數    |      | 公尺數    | 英尺數    |
| 0°10' | 6875.5 | 22557.4 | 1°0' | 1145.9 | 3759.5 | 2°0' | 572.99 | 1879.9 |
| 12    | 5729.6 | 18864.5 | 2    | 1109.0 | 3638.4 | 2    | 563.59 | 1849.0 |
| 14    | 4911.1 | 16112.5 | 4    | 1074.3 | 3524.6 | 4    | 554.51 | 1819.2 |
| 16    | 4297.2 | 14098.4 | 6    | 1041.8 | 3418.0 | 6    | 545.70 | 1790.3 |
| 18    | 3819.7 | 12531.8 | 8    | 1011.1 | 3317.2 | 8    | 537.18 | 1762.4 |
| 20    | 3437.8 | 11278.8 | 10   | 982.23 | 3222.5 | 10   | 528.92 | 1735.3 |
| 22    | 3125.2 | 10253.3 | 12   | 954.95 | 3133.1 | 12   | 520.90 | 1709.0 |
| 24    | 2864.8 | 9398.9  | 14   | 929.14 | 3048.3 | 14   | 513.13 | 1683.5 |
| 26    | 2644.4 | 8675.8  | 16   | 904.69 | 2968.1 | 16   | 505.58 | 1658.7 |
| 28    | 2455.5 | 8056.1  | 18   | 881.49 | 2892.0 | 18   | 498.26 | 1634.7 |
| 30    | 2291.8 | 7519.0  | 20   | 859.46 | 2819.7 | 20   | 491.14 | 1611.3 |
| 32    | 2148.6 | 7049.2  | 22   | 838.49 | 2750.9 | 22   | 484.22 | 1588.8 |
| 34    | 2022.2 | 6634.5  | 24   | 818.53 | 2685.5 | 24   | 477.50 | 1566.6 |
| 36    | 1909.9 | 6266.1  | 26   | 799.50 | 2623.0 | 26   | 470.96 | 1545.1 |
| 38    | 1809.3 | 5936.0  | 28   | 781.33 | 2563.4 | 28   | 464.60 | 1524.3 |
| 40    | 1718.9 | 5639.4  | 30   | 763.97 | 2506.5 | 30   | 458.40 | 1503.9 |
| 42    | 1637.0 | 5370.7  | 32   | 747.36 | 2452.0 | 32   | 452.37 | 1484.1 |
| 44    | 1562.6 | 5126.6  | 34   | 731.46 | 2399.8 | 34   | 446.50 | 1464.9 |
| 46    | 1494.7 | 4903.9  | 36   | 716.22 | 2349.8 | 36   | 440.78 | 1446.1 |
| 48    | 1432.4 | 4699.5  | 38   | 701.60 | 2301.8 | 38   | 435.20 | 1427.8 |
| 50    | 1375.1 | 4511.5  | 40   | 687.57 | 2255.8 | 40   | 429.76 | 1410.0 |
| 52    | 1322.2 | 4337.9  | 42   | 674.09 | 2211.6 | 42   | 424.45 | 1392.5 |
| 54    | 1273.3 | 4177.5  | 44   | 661.13 | 2169.1 | 44   | 419.28 | 1375.6 |
| 56    | 1227.8 | 4028.2  | 46   | 648.66 | 2128.1 | 46   | 414.23 | 1359.0 |
| 58    | 1185.4 | 3889.1  | 48   | 636.65 | 2088.7 | 48   | 409.30 | 1342.8 |
|       |        |         | 50   | 625.07 | 2050.7 | 50   | 404.48 | 1327.0 |
|       |        |         | 52   | 613.91 | 2014.1 | 52   | 399.78 | 1311.6 |
|       |        |         | 54   | 603.14 | 1978.8 | 54   | 395.19 | 1296.5 |
|       |        |         | 56   | 592.74 | 1944.7 | 56   | 390.70 | 1281.8 |
|       |        |         | 58   | 582.70 | 1911.7 | 58   | 386.31 | 1267.4 |

| D.   | R.     |        | D.   | R.     |       | D.   | R.     |       |
|------|--------|--------|------|--------|-------|------|--------|-------|
|      | 公尺數    | 英尺數    |      | 公尺數    | 英尺數   |      | 公尺數    | 英尺數   |
| 3°0' | 382.02 | 1253.3 | 4°0' | 286.54 | 940.1 | 5°0' | 229.26 | 752.2 |
| 2    | 377.82 | 1239.5 | 2    | 284.17 | 932.3 | 2    | 227.74 | 747.2 |
| 4    | 373.71 | 1226.1 | 4    | 281.84 | 924.7 | 4    | 226.24 | 742.3 |
| 6    | 369.70 | 1212.9 | 6    | 279.55 | 917.1 | 6    | 224.76 | 737.4 |
| 8    | 365.76 | 1200.0 | 8    | 277.30 | 909.8 | 8    | 223.30 | 732.6 |
| 10   | 361.91 | 1187.4 | 10   | 275.08 | 902.5 | 10   | 221.87 | 727.9 |
| 12   | 358.15 | 1175.0 | 12   | 272.90 | 895.3 | 12   | 220.44 | 723.2 |
| 14   | 354.45 | 1162.9 | 14   | 270.75 | 888.3 | 14   | 219.04 | 718.6 |
| 16   | 350.84 | 1151.0 | 16   | 268.64 | 881.4 | 16   | 217.66 | 714.1 |
| 18   | 347.30 | 1139.4 | 18   | 266.55 | 874.5 | 18   | 216.29 | 709.6 |
| 20   | 343.82 | 1128.0 | 20   | 264.51 | 867.8 | 20   | 214.94 | 705.2 |
| 22   | 340.42 | 1116.9 | 22   | 262.49 | 861.2 | 22   | 213.60 | 700.8 |
| 24   | 337.08 | 1105.9 | 24   | 260.50 | 854.6 | 24   | 212.29 | 696.5 |
| 26   | 333.81 | 1095.2 | 26   | 258.54 | 848.2 | 26   | 210.98 | 692.2 |
| 28   | 330.60 | 1084.6 | 28   | 256.61 | 841.9 | 28   | 209.70 | 688.0 |
| 30   | 327.46 | 1074.3 | 30   | 254.71 | 835.7 | 30   | 208.43 | 683.8 |
| 32   | 324.37 | 1064.2 | 32   | 252.84 | 829.5 | 32   | 207.17 | 679.7 |
| 34   | 321.34 | 1054.3 | 34   | 251.00 | 823.5 | 34   | 205.93 | 675.6 |
| 36   | 318.36 | 1044.5 | 36   | 249.18 | 817.5 | 36   | 204.71 | 671.6 |
| 38   | 315.44 | 1034.9 | 38   | 247.36 | 811.6 | 38   | 203.50 | 667.7 |
| 40   | 312.58 | 1025.5 | 40   | 245.62 | 805.8 | 40   | 202.30 | 663.7 |
| 42   | 309.76 | 1016.3 | 42   | 243.88 | 800.1 | 42   | 201.12 | 659.8 |
| 44   | 307.00 | 1007.2 | 44   | 242.16 | 794.5 | 44   | 199.95 | 656.0 |
| 46   | 304.28 | 998.3  | 46   | 240.47 | 788.9 | 46   | 198.80 | 652.2 |
| 48   | 301.61 | 989.5  | 48   | 238.80 | 783.5 | 48   | 197.66 | 648.5 |
| 50   | 298.99 | 980.9  | 50   | 237.16 | 778.1 | 50   | 196.53 | 644.8 |
| 52   | 296.41 | 972.5  | 52   | 235.53 | 772.7 | 52   | 195.41 | 641.1 |
| 54   | 293.88 | 964.2  | 54   | 233.93 | 767.5 | 54   | 194.31 | 637.5 |
| 56   | 291.39 | 956.0  | 56   | 232.35 | 762.3 | 56   | 193.22 | 633.9 |
| 58   | 288.94 | 948.0  | 58   | 230.79 | 757.2 | 58   | 192.14 | 630.4 |

| D.   | R.     |       | D.   | R.     |       | D.   | R.     |       |
|------|--------|-------|------|--------|-------|------|--------|-------|
|      | 公尺數    | 英尺數   |      | 公尺數    | 英尺數   |      | 公尺數    | 英尺數   |
| 6°0' | 191.07 | 626.9 | 7°0' | 163.80 | 537.4 | 8°0' | 143.36 | 470.3 |
| 2    | 190.02 | 623.4 | 2    | 163.03 | 534.9 | 2    | 142.76 | 468.4 |
| 4    | 188.98 | 620.0 | 4    | 162.26 | 532.3 | 4    | 142.17 | 466.4 |
| 6    | 187.94 | 616.6 | 6    | 161.50 | 529.8 | 6    | 141.59 | 464.5 |
| 8    | 186.92 | 613.3 | 8    | 160.75 | 527.4 | 8    | 141.01 | 462.6 |
| 10   | 185.91 | 609.9 | 10   | 160.00 | 524.9 | 10   | 140.44 | 460.8 |
| 12   | 184.92 | 606.7 | 12   | 159.26 | 522.5 | 12   | 139.87 | 458.9 |
| 14   | 183.93 | 603.4 | 14   | 158.53 | 520.1 | 14   | 139.30 | 457.0 |
| 16   | 182.95 | 600.2 | 16   | 157.80 | 517.7 | 16   | 138.74 | 455.2 |
| 18   | 181.98 | 597.0 | 18   | 157.08 | 515.3 | 18   | 138.18 | 453.3 |
| 20   | 181.03 | 593.9 | 20   | 156.37 | 513.0 | 20   | 137.63 | 451.5 |
| 22   | 180.08 | 590.8 | 22   | 155.66 | 510.7 | 22   | 137.08 | 449.7 |
| 24   | 179.14 | 587.7 | 24   | 154.96 | 508.4 | 24   | 136.54 | 448.0 |
| 26   | 178.22 | 584.7 | 26   | 154.27 | 506.1 | 26   | 136.00 | 446.2 |
| 28   | 177.30 | 581.7 | 28   | 153.58 | 503.9 | 28   | 135.47 | 444.4 |
| 30   | 176.39 | 578.7 | 30   | 152.90 | 501.6 | 30   | 134.94 | 442.7 |
| 32   | 175.49 | 575.8 | 32   | 152.22 | 499.4 | 32   | 134.41 | 441.0 |
| 34   | 174.60 | 572.8 | 34   | 151.55 | 497.2 | 34   | 133.89 | 439.3 |
| 36   | 173.72 | 569.9 | 36   | 150.89 | 495.0 | 36   | 133.37 | 437.6 |
| 38   | 172.85 | 567.1 | 38   | 150.23 | 492.9 | 38   | 132.86 | 435.9 |
| 40   | 171.98 | 564.2 | 40   | 149.58 | 490.7 | 40   | 132.35 | 434.2 |
| 42   | 171.15 | 561.5 | 42   | 148.93 | 488.6 | 42   | 131.84 | 432.5 |
| 44   | 170.28 | 558.7 | 44   | 148.29 | 486.5 | 44   | 131.34 | 430.9 |
| 46   | 169.45 | 555.9 | 46   | 147.66 | 484.5 | 46   | 130.84 | 429.3 |
| 48   | 168.62 | 553.2 | 48   | 147.03 | 482.4 | 48   | 130.35 | 427.7 |
| 50   | 167.79 | 550.5 | 50   | 146.40 | 480.3 | 50   | 129.85 | 426.0 |
| 52   | 166.98 | 547.8 | 52   | 145.78 | 478.3 | 52   | 129.37 | 424.4 |
| 54   | 166.18 | 545.2 | 54   | 145.17 | 476.3 | 54   | 128.86 | 422.8 |
| 56   | 165.38 | 542.6 | 56   | 144.56 | 474.3 | 56   | 128.40 | 421.3 |
| 58   | 164.59 | 540.0 | 58   | 143.95 | 472.3 | 58   | 127.93 | 419.7 |

第六表 曲線之半徑及曲度表

| R   |    |    |    | R    |   |    |    |
|-----|----|----|----|------|---|----|----|
| D   |    |    |    | D    |   |    |    |
| 公尺  | 0  | '  | "  | 公尺   | 0 | '  | "  |
| 60  | 19 | 5  | 54 | 510  | 2 | 14 | 48 |
| 70  | 16 | 22 | 12 | 520  | 2 | 12 | 14 |
| 80  | 14 | 19 | 26 | 530  | 2 | 9  | 44 |
| 90  | 12 | 43 | 56 | 540  | 2 | 7  | 20 |
| 100 | 11 | 27 | 32 | 550  | 2 | 5  | 0  |
| 110 | 10 | 25 | 2  | 560  | 2 | 2  | 46 |
| 120 | 9  | 32 | 56 | 570  | 2 | 0  | 38 |
| 130 | 8  | 48 | 52 | 580  | 1 | 58 | 32 |
| 140 | 8  | 11 | 6  | 590  | 1 | 56 | 32 |
| 150 | 7  | 38 | 22 | 600  | 1 | 54 | 36 |
| 160 | 7  | 9  | 42 | 610  | 1 | 52 | 44 |
| 170 | 6  | 44 | 26 | 620  | 1 | 50 | 54 |
| 180 | 6  | 21 | 58 | 630  | 1 | 49 | 8  |
| 190 | 6  | 1  | 52 | 640  | 1 | 47 | 26 |
| 200 | 5  | 43 | 46 | 650  | 1 | 45 | 46 |
| 210 | 5  | 27 | 24 | 660  | 1 | 44 | 10 |
| 220 | 5  | 12 | 30 | 670  | 1 | 42 | 36 |
| 230 | 4  | 58 | 56 | 680  | 1 | 41 | 6  |
| 240 | 4  | 46 | 28 | 690  | 1 | 39 | 38 |
| 250 | 4  | 35 | 2  | 700  | 1 | 38 | 12 |
| 260 | 4  | 24 | 26 | 710  | 1 | 36 | 50 |
| 270 | 4  | 14 | 38 | 720  | 1 | 35 | 28 |
| 280 | 4  | 5  | 34 | 730  | 1 | 34 | 10 |
| 290 | 3  | 57 | 6  | 740  | 1 | 32 | 54 |
| 300 | 3  | 49 | 10 | 750  | 1 | 31 | 40 |
| 310 | 3  | 41 | 48 | 800  | 1 | 25 | 56 |
| 320 | 3  | 34 | 52 | 850  | 1 | 20 | 54 |
| 330 | 3  | 28 | 20 | 900  | 1 | 16 | 24 |
| 340 | 3  | 22 | 14 | 950  | 1 | 12 | 22 |
| 350 | 3  | 16 | 26 | 1000 | 1 | 8  | 44 |
| 360 | 3  | 10 | 58 | 1100 | 1 | 2  | 28 |
| 370 | 3  | 5  | 50 | 1200 | 0 | 57 | 18 |
| 380 | 3  | 0  | 56 | 1300 | 0 | 52 | 52 |
| 390 | 2  | 56 | 18 | 1400 | 0 | 49 | 6  |
| 400 | 2  | 51 | 54 | 1500 | 0 | 45 | 50 |
| 410 | 2  | 47 | 42 | 1600 | 0 | 42 | 58 |
| 420 | 2  | 43 | 42 | 1700 | 0 | 40 | 26 |
| 430 | 2  | 39 | 54 | 1800 | 0 | 38 | 12 |
| 440 | 2  | 36 | 16 | 1900 | 0 | 36 | 12 |
| 450 | 2  | 22 | 48 | 2000 | 0 | 34 | 22 |
| 460 | 2  | 29 | 28 | 2400 | 0 | 28 | 36 |
| 470 | 2  | 26 | 18 | 2500 | 0 | 27 | 30 |
| 480 | 2  | 23 | 14 | 3000 | 0 | 22 | 56 |
| 490 | 2  | 20 | 18 | 3500 | 0 | 19 | 38 |
| 500 | 2  | 17 | 30 | 4000 | 0 | 17 | 12 |

第七表 曲線半徑及其對數表(英尺制)

| 曲度<br>D. | 半徑<br>R.  | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  |
|----------|-----------|----------|----------|----------|----------|----------|----------|----------|
| 0° 0'    | ∞         | ∞        | 1° 0'    | 5729.65  | 3.758128 | 2° 0'    | 2864.93  | 3.457115 |
| 1        | 343774.68 | 5.536274 | 1        | 5635.72  | .750950  | 1        | 2841.26  | .453511  |
| 2        | 171887.34 | .235244  | 2        | 5544.83  | .743888  | 2        | 2817.97  | .449937  |
| 3        | 114591.56 | .059153  | 3        | 5456.82  | .736939  | 3        | 2795.06  | .446392  |
| 4        | 85943.67  | 4.934214 | 4        | 5371.59  | .730100  | 4        | 2772.53  | .442876  |
| 5        | 68754.94  | 4.837304 | 5        | 5288.92  | 3.723367 | 5        | 2750.35  | 3.439388 |
| 6        | 57295.79  | .758123  | 6        | 5208.79  | .716737  | 6        | 2728.52  | .435928  |
| 7        | 49110.68  | .691176  | 7        | 5131.05  | .710206  | 7        | 2707.04  | .432495  |
| 8        | 42971.84  | .633184  | 8        | 5055.59  | .703772  | 8        | 2685.89  | .429089  |
| 9        | 38197.20  | .582031  | 9        | 4982.33  | .697432  | 9        | 2665.08  | .425710  |
| 10       | 34377.48  | 4.536274 | 10       | 4911.15  | 3.691183 | 10       | 2644.58  | 3.422356 |
| 11       | 31252.26  | .494881  | 11       | 4841.98  | .685023  | 11       | 2624.39  | .419029  |
| 12       | 28647.90  | .457093  | 12       | 4774.74  | .678949  | 12       | 2604.51  | .415727  |
| 13       | 26444.22  | .422331  | 13       | 4709.33  | .672959  | 13       | 2584.93  | .412449  |
| 14       | 24555.35  | .390146  | 14       | 4645.69  | .667051  | 14       | 2565.65  | .409197  |
| 15       | 22918.33  | 4.360183 | 15       | 4583.75  | 3.661221 | 15       | 2546.64  | 3.405968 |
| 16       | 21485.94  | .332154  | 16       | 4523.44  | .665469  | 16       | 2527.92  | .402763  |
| 17       | 20222.06  | .305825  | 17       | 4464.70  | .649792  | 17       | 2509.47  | .399582  |
| 18       | 19098.61  | .281002  | 18       | 4407.46  | .644189  | 18       | 2491.29  | .396424  |
| 19       | 18093.43  | .257521  | 19       | 4351.67  | .638656  | 19       | 2473.37  | .393289  |
| 20       | 17188.76  | 4.235244 | 20       | 4297.28  | 3.633194 | 20       | 2455.70  | 3.390176 |
| 21       | 16370.25  | .214055  | 21       | 4244.23  | .627799  | 21       | 2438.29  | .387085  |
| 22       | 15626.15  | .193852  | 22       | 4192.47  | .622470  | 22       | 2421.12  | .384016  |
| 23       | 14946.75  | .174547  | 23       | 4141.96  | .617206  | 23       | 2404.19  | .380969  |
| 24       | 14323.97  | .156064  | 24       | 4092.66  | .612005  | 24       | 2387.50  | .377943  |
| 25       | 13751.02  | 4.138335 | 25       | 4044.51  | 3.606866 | 25       | 2371.04  | 3.374938 |
| 26       | 13222.13  | .121302  | 26       | 3997.48  | .601787  | 26       | 2354.80  | .371954  |
| 27       | 12732.43  | .104911  | 27       | 3951.54  | .596766  | 27       | 2338.78  | .368990  |
| 28       | 12277.70  | .089117  | 28       | 3906.64  | .591803  | 28       | 2322.98  | .366046  |
| 29       | 11854.33  | .073877  | 29       | 3862.74  | .586896  | 29       | 2307.39  | .363122  |
| 30       | 11459.19  | 4.059154 | 30       | 3819.83  | 3.582044 | 30       | 2292.01  | 3.360217 |
| 31       | 11089.54  | .049194  | 31       | 3777.85  | .577245  | 31       | 2276.84  | .357332  |
| 32       | 10743.00  | .031125  | 32       | 3736.79  | .572499  | 32       | 2261.86  | .354466  |
| 33       | 10417.45  | .017762  | 33       | 3696.61  | .567804  | 33       | 2247.08  | .351618  |
| 34       | 10111.06  | .004797  | 34       | 3657.29  | .563160  | 34       | 2232.49  | .348789  |
| 35       | 9822.18   | 3.992208 | 35       | 3618.80  | 3.558564 | 35       | 2218.09  | 3.345979 |
| 36       | 9549.34   | .979973  | 36       | 3581.10  | .554017  | 36       | 2203.87  | .343187  |
| 37       | 9291.25   | .968072  | 37       | 3544.19  | .549517  | 37       | 2189.84  | .340412  |
| 38       | 9046.75   | .956494  | 38       | 3508.02  | .545063  | 38       | 2175.98  | .337655  |
| 39       | 8814.78   | .945212  | 39       | 3472.59  | .540654  | 39       | 2162.30  | .334915  |
| 40       | 8594.42   | 3.934216 | 40       | 3437.87  | 3.536289 | 40       | 2148.79  | 3.332193 |
| 41       | 8384.80   | .923493  | 41       | 3403.83  | .531968  | 41       | 2135.44  | .329488  |
| 42       | 8185.16   | .913027  | 42       | 3370.46  | .527690  | 42       | 2122.26  | .326799  |
| 43       | 7994.81   | .902808  | 43       | 3337.74  | .523453  | 43       | 2109.24  | .324127  |
| 44       | 7813.11   | .892824  | 44       | 3305.65  | .519257  | 44       | 2096.39  | .321471  |
| 45       | 7639.49   | 3.863064 | 45       | 3274.17  | 3.515101 | 45       | 2083.68  | 3.318832 |
| 46       | 7473.42   | .873519  | 46       | 3243.29  | .510985  | 46       | 2071.13  | .316208  |
| 47       | 7314.41   | .864179  | 47       | 3212.98  | .506908  | 47       | 2058.73  | .313600  |
| 48       | 7162.03   | .855036  | 48       | 3183.23  | .502868  | 48       | 2046.48  | .311008  |
| 49       | 7015.87   | .846081  | 49       | 3154.03  | .498866  | 49       | 2034.37  | .308431  |
| 50       | 6875.55   | 3.837308 | 50       | 3125.36  | 3.494900 | 50       | 2022.41  | 3.305869 |
| 51       | 6740.74   | .828708  | 51       | 3097.20  | .490970  | 51       | 2010.59  | .303323  |
| 52       | 6611.12   | .820275  | 52       | 3069.55  | .487075  | 52       | 1998.90  | .300791  |
| 53       | 6486.38   | .812002  | 53       | 3042.39  | .483215  | 53       | 1987.35  | .298274  |
| 54       | 6366.26   | .803885  | 54       | 3015.71  | .479389  | 54       | 1975.93  | .295771  |
| 55       | 6250.51   | 3.795916 | 55       | 2989.48  | 3.475596 | 55       | 1964.64  | 3.293283 |
| 56       | 6138.90   | .788091  | 56       | 2963.72  | .471836  | 56       | 1953.48  | .290809  |
| 57       | 6031.20   | .780404  | 57       | 2938.39  | .468109  | 57       | 1942.44  | .288349  |
| 58       | 5927.22   | .772851  | 58       | 2913.49  | .464413  | 58       | 1931.53  | .285902  |
| 59       | 5826.76   | .765427  | 59       | 2889.01  | .460749  | 59       | 1920.75  | .283470  |
| 60       | 5729.65   | 3.758128 | 60       | 2864.93  | 3.457115 | 60       | 1910.08  | 3.281051 |

| 曲度<br>D. | 半徑<br>R. | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 3° 0'    | 1910.08  | 3.281051 | 4° 0'    | 1432.69  | 3.156151 | 5° 0'    | 1146.28  | 3.059290 |
| 1        | 1899.53  | .278645  | 1        | 1426.74  | .154346  | 1        | 1142.47  | .057846  |
| 2        | 1889.09  | .276253  | 2        | 1420.85  | .152548  | 2        | 1138.69  | .056497  |
| 3        | 1878.77  | .273874  | 3        | 1415.01  | .150758  | 3        | 1134.94  | .055172  |
| 4        | 1868.56  | .271508  | 4        | 1409.21  | .148975  | 4        | 1131.21  | .053842  |
| 5        | 1858.47  | .269155  | 5        | 1403.46  | .147200  | 5        | 1127.50  | .052516  |
| 6        | 1848.48  | .266814  | 6        | 1397.76  | .145431  | 6        | 1123.82  | .050696  |
| 7        | 1838.59  | .264486  | 7        | 1392.10  | .143670  | 7        | 1120.16  | .049280  |
| 8        | 1828.82  | .262170  | 8        | 1386.49  | .141916  | 8        | 1116.52  | .047868  |
| 9        | 1819.14  | .259867  | 9        | 1380.92  | .140169  | 9        | 1112.91  | .046462  |
| 10       | 1809.57  | 3.257576 | 10       | 1375.40  | 3.138430 | 10       | 1109.33  | 3.045059 |
| 11       | 1800.10  | .255296  | 11       | 1369.92  | .136697  | 11       | 1105.76  | .043662  |
| 12       | 1790.73  | .253029  | 12       | 1364.49  | .134971  | 12       | 1102.22  | .042268  |
| 13       | 1781.45  | .250774  | 13       | 1359.10  | .133251  | 13       | 1098.70  | .040880  |
| 14       | 1772.27  | .248530  | 14       | 1353.75  | .131539  | 14       | 1095.20  | .039495  |
| 15       | 1763.18  | 3.246297 | 15       | 1348.45  | 3.129833 | 15       | 1091.73  | 3.038115 |
| 16       | 1754.19  | .244077  | 16       | 1343.18  | .128134  | 16       | 1088.28  | .036740  |
| 17       | 1745.29  | .241897  | 17       | 1337.96  | .126442  | 17       | 1084.85  | .035368  |
| 18       | 1736.48  | .239669  | 18       | 1332.77  | .124756  | 18       | 1081.44  | .034002  |
| 19       | 1727.75  | .237481  | 19       | 1327.63  | .123077  | 19       | 1078.05  | .032639  |
| 20       | 1719.12  | 3.235305 | 20       | 1322.53  | 3.121404 | 20       | 1074.68  | 3.031281 |
| 21       | 1710.57  | .233140  | 21       | 1317.46  | .119738  | 21       | 1071.34  | .029927  |
| 22       | 1702.10  | .230985  | 22       | 1312.43  | .118078  | 22       | 1068.01  | .028577  |
| 23       | 1693.72  | .228841  | 23       | 1307.45  | .116424  | 23       | 1064.71  | .027231  |
| 24       | 1685.42  | .226707  | 24       | 1302.50  | .114777  | 24       | 1061.43  | .025890  |
| 25       | 1677.20  | 3.224584 | 25       | 1297.58  | 3.113136 | 25       | 1058.16  | 3.024552 |
| 26       | 1669.06  | .222472  | 26       | 1292.71  | .111501  | 26       | 1054.92  | .023219  |
| 27       | 1661.00  | .220369  | 27       | 1287.87  | .109872  | 27       | 1051.70  | .021890  |
| 28       | 1653.02  | .218277  | 28       | 1283.07  | .108249  | 28       | 1048.49  | .020565  |
| 29       | 1645.11  | .216194  | 29       | 1278.30  | .106632  | 29       | 1045.31  | .019244  |
| 30       | 1637.28  | 3.214122 | 30       | 1273.57  | 3.105022 | 30       | 1042.14  | 3.017927 |
| 31       | 1629.52  | .212060  | 31       | 1268.87  | .103417  | 31       | 1039.00  | .016614  |
| 32       | 1621.84  | .210007  | 32       | 1264.21  | .101818  | 32       | 1035.87  | .015305  |
| 33       | 1614.22  | .207964  | 33       | 1259.58  | .100225  | 33       | 1032.76  | .013999  |
| 34       | 1606.68  | .205930  | 34       | 1254.98  | .098638  | 34       | 1029.67  | .012698  |
| 35       | 1599.21  | 3.203906 | 35       | 1250.42  | 3.097057 | 35       | 1026.60  | 3.011401 |
| 36       | 1591.81  | .201892  | 36       | 1245.89  | .095481  | 36       | 1023.55  | .010107  |
| 37       | 1584.48  | .199886  | 37       | 1241.40  | .093912  | 37       | 1020.51  | .008818  |
| 38       | 1577.21  | .197890  | 38       | 1236.94  | .092347  | 38       | 1017.49  | .007532  |
| 39       | 1570.01  | .195903  | 39       | 1232.51  | .090789  | 39       | 1014.50  | .006250  |
| 40       | 1562.88  | 3.193925 | 40       | 1228.11  | 3.089236 | 40       | 1011.51  | 3.004972 |
| 41       | 1555.81  | .191956  | 41       | 1223.74  | .087688  | 41       | 1008.55  | .003698  |
| 42       | 1548.80  | .189996  | 42       | 1219.40  | .086147  | 42       | 1005.60  | .002427  |
| 43       | 1541.86  | .188045  | 43       | 1215.09  | .084610  | 43       | 1002.67  | .001160  |
| 44       | 1534.98  | .186103  | 44       | 1210.82  | .083079  | 44       | 999.76   | 2.999897 |
| 45       | 1528.16  | 3.184169 | 45       | 1206.57  | 3.081553 | 45       | 996.87   | 2.998637 |
| 46       | 1521.40  | .182244  | 46       | 1202.36  | .080033  | 46       | 993.99   | .997381  |
| 47       | 1514.70  | .180327  | 47       | 1198.17  | .078518  | 47       | 991.13   | .996129  |
| 48       | 1508.06  | .178419  | 48       | 1194.01  | .077008  | 48       | 988.28   | .994880  |
| 49       | 1501.48  | .176519  | 49       | 1189.88  | .075504  | 49       | 985.45   | .993635  |
| 50       | 1494.95  | 3.174627 | 50       | 1185.78  | 3.074005 | 50       | 982.64   | 2.992393 |
| 51       | 1488.48  | .172744  | 51       | 1181.71  | .072511  | 51       | 979.84   | .991155  |
| 52       | 1482.07  | .170868  | 52       | 1177.66  | .071022  | 52       | 977.06   | .989921  |
| 53       | 1475.71  | .169001  | 53       | 1173.65  | .069538  | 53       | 974.29   | .988690  |
| 54       | 1469.41  | .167142  | 54       | 1169.66  | .068059  | 54       | 971.54   | .987463  |
| 55       | 1463.16  | 3.165291 | 55       | 1165.70  | 3.066585 | 55       | 968.81   | 2.986239 |
| 56       | 1456.96  | .163447  | 56       | 1161.76  | .065116  | 56       | 966.09   | .985018  |
| 57       | 1450.81  | .161612  | 57       | 1157.85  | .063653  | 57       | 963.39   | .983801  |
| 58       | 1444.72  | .159784  | 58       | 1153.97  | .062194  | 58       | 960.70   | .982587  |
| 59       | 1438.68  | .157963  | 59       | 1150.11  | .060740  | 59       | 958.02   | .981377  |
| 60       | 1432.69  | 3.156151 | 60       | 1146.28  | 3.059290 | 60       | 955.37   | 2.980170 |



| 曲度<br>D. | 半徑<br>R. | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 6° 0'    | 955.37   | 2.980179 | 7° 0'    | 819.02   | 2.913295 | 8° 0'    | 716.78   | 2.855385 |
| 1        | 952.72   | .978966  | 1        | 817.08   | .912203  | 1        | 715.29   | .854483  |
| 2        | 950.09   | .977766  | 2        | 815.14   | .911234  | 2        | 713.81   | .853583  |
| 3        | 947.48   | .976569  | 3        | 813.22   | .910298  | 3        | 712.33   | .852684  |
| 4        | 944.88   | .975375  | 4        | 811.30   | .909183  | 4        | 710.87   | .851787  |
| 5        | 942.29   | 2.974185 | 5        | 809.40   | 2.908162 | 5        | 709.40   | 2.850892 |
| 6        | 939.72   | .972998  | 6        | 807.50   | .907142  | 6        | 707.94   | .849999  |
| 7        | 937.16   | .971814  | 7        | 805.61   | .906125  | 7        | 706.49   | .849108  |
| 8        | 934.62   | .970633  | 8        | 803.73   | .905111  | 8        | 705.05   | .848219  |
| 9        | 932.09   | .969456  | 9        | 801.86   | .904098  | 9        | 703.61   | .847331  |
| 10       | 929.57   | 2.968282 | 10       | 800.00   | 2.903089 | 10       | 702.18   | 2.846446 |
| 11       | 927.07   | .967111  | 11       | 798.14   | .902081  | 11       | 700.75   | .845562  |
| 12       | 924.58   | .965943  | 12       | 796.30   | .901076  | 12       | 699.33   | .844679  |
| 13       | 922.10   | .964778  | 13       | 794.46   | .900073  | 13       | 697.91   | .843799  |
| 14       | 919.64   | .963616  | 14       | 792.63   | .899073  | 14       | 696.50   | .842921  |
| 15       | 917.19   | 2.962458 | 15       | 790.81   | 2.898074 | 15       | 695.09   | 2.842044 |
| 16       | 914.75   | .961303  | 16       | 789.00   | .897079  | 16       | 693.70   | .841169  |
| 17       | 912.33   | .960150  | 17       | 787.20   | .896085  | 17       | 692.30   | .840296  |
| 18       | 909.92   | .959001  | 18       | 785.40   | .895094  | 18       | 690.91   | .839424  |
| 19       | 907.52   | .957855  | 19       | 783.62   | .894104  | 19       | 689.53   | .838555  |
| 20       | 905.13   | 2.956711 | 20       | 781.84   | 2.893118 | 20       | 688.16   | 2.837687 |
| 21       | 902.76   | .955571  | 21       | 780.07   | .892133  | 21       | 686.78   | .836821  |
| 22       | 900.40   | .954434  | 22       | 778.31   | .891151  | 22       | 685.42   | .835956  |
| 23       | 898.05   | .953300  | 23       | 776.55   | .890171  | 23       | 684.06   | .835093  |
| 24       | 895.71   | .952168  | 24       | 774.81   | .889193  | 24       | 682.70   | .834232  |
| 25       | 893.39   | 2.951040 | 25       | 773.07   | 2.888217 | 25       | 681.35   | 2.833373 |
| 26       | 891.08   | .949915  | 26       | 771.34   | .887244  | 26       | 680.01   | .832515  |
| 27       | 888.78   | .948792  | 27       | 769.61   | .886272  | 27       | 678.67   | .831660  |
| 28       | 886.49   | .947673  | 28       | 767.90   | .885302  | 28       | 677.34   | .830805  |
| 29       | 884.21   | .946556  | 29       | 766.19   | .884336  | 29       | 676.01   | .829953  |
| 30       | 881.95   | 2.945442 | 30       | 764.49   | 2.883371 | 30       | 674.69   | 2.829102 |
| 31       | 879.69   | .944331  | 31       | 762.80   | .882409  | 31       | 673.37   | .828253  |
| 32       | 877.45   | .943223  | 32       | 761.11   | .881448  | 32       | 672.06   | .827405  |
| 33       | 875.22   | .942118  | 33       | 759.43   | .880490  | 33       | 670.75   | .826560  |
| 34       | 873.00   | .941015  | 34       | 757.76   | .879534  | 34       | 669.45   | .825715  |
| 35       | 870.79   | 2.939916 | 35       | 756.10   | 2.878580 | 35       | 668.15   | 2.824873 |
| 36       | 868.60   | .938819  | 36       | 754.44   | .877627  | 36       | 666.86   | .824032  |
| 37       | 866.41   | .937725  | 37       | 752.80   | .876678  | 37       | 665.57   | .823193  |
| 38       | 864.24   | .936633  | 38       | 751.16   | .875730  | 38       | 664.29   | .822355  |
| 39       | 862.07   | .935545  | 39       | 749.52   | .874784  | 39       | 663.01   | .821519  |
| 40       | 859.92   | 2.934459 | 40       | 747.89   | 2.873840 | 40       | 661.74   | 2.820685 |
| 41       | 857.78   | .933376  | 41       | 746.27   | .872898  | 41       | 660.47   | .819852  |
| 42       | 855.65   | .932295  | 42       | 744.66   | .871959  | 42       | 659.21   | .819021  |
| 43       | 853.53   | .931218  | 43       | 743.06   | .871021  | 43       | 657.95   | .818191  |
| 44       | 851.42   | .930142  | 44       | 741.46   | .870086  | 44       | 656.69   | .817363  |
| 45       | 849.32   | 2.929070 | 45       | 739.87   | 2.869152 | 45       | 655.45   | 2.816537 |
| 46       | 847.23   | .928000  | 46       | 738.28   | .868221  | 46       | 654.20   | .815712  |
| 47       | 845.15   | .926933  | 47       | 736.70   | .867291  | 47       | 652.96   | .814889  |
| 48       | 843.08   | .925869  | 48       | 735.13   | .866363  | 48       | 651.73   | .814067  |
| 49       | 841.02   | .924807  | 49       | 733.56   | .865438  | 49       | 650.50   | .813247  |
| 50       | 838.97   | 2.923747 | 50       | 732.01   | 2.864514 | 50       | 649.27   | 2.812428 |
| 51       | 836.93   | .922691  | 51       | 730.45   | .863593  | 51       | 648.05   | .811611  |
| 52       | 834.90   | .921637  | 52       | 728.91   | .862673  | 52       | 646.84   | .810796  |
| 53       | 832.88   | .920585  | 53       | 727.37   | .861755  | 53       | 645.63   | .809982  |
| 54       | 830.88   | .919536  | 54       | 725.84   | .860840  | 54       | 644.42   | .809169  |
| 55       | 828.88   | 2.918490 | 55       | 724.31   | 2.859926 | 55       | 643.22   | 2.808358 |
| 56       | 826.89   | .917446  | 56       | 722.79   | .859014  | 56       | 642.02   | .807549  |
| 57       | 824.91   | .916404  | 57       | 721.28   | .858104  | 57       | 640.83   | .806741  |
| 58       | 822.93   | .915365  | 58       | 719.77   | .857196  | 58       | 639.64   | .805935  |
| 59       | 820.97   | .914329  | 59       | 718.27   | .856290  | 59       | 638.45   | .805130  |
| 60       | 819.02   | 2.913295 | 60       | 716.78   | 2.855385 | 60       | 637.27   | 2.804327 |

| 曲度<br>D. | 半徑<br>R. | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 9° 0'    | 637.27   | 2.804327 | 11° 0'   | 521.67   | 2.717397 | 13° 0'   | 441.68   | 2.645111 |
| 2        | 634.93   | .802724  | 2        | 520.10   | .716087  | 2        | 440.56   | .644004  |
| 4        | 632.60   | .801128  | 4        | 518.54   | .714781  | 4        | 439.44   | .642899  |
| 6        | 630.29   | .799538  | 6        | 516.99   | .713479  | 6        | 438.33   | .641798  |
| 8        | 627.99   | .797953  | 8        | 515.44   | .712181  | 8        | 437.22   | .640699  |
| 10       | 625.71   | 2.796374 | 10       | 513.91   | 2.710887 | 10       | 436.12   | 2.639603 |
| 12       | 623.45   | .794801  | 12       | 512.38   | .709596  | 12       | 435.02   | .638510  |
| 14       | 621.20   | .793234  | 14       | 510.87   | .708310  | 14       | 433.93   | .637419  |
| 16       | 618.97   | .791673  | 16       | 509.36   | .707027  | 16       | 432.84   | .636331  |
| 18       | 616.76   | .790117  | 18       | 507.86   | .705748  | 18       | 431.76   | .635246  |
| 20       | 614.56   | 2.788566 | 20       | 506.38   | 2.704473 | 20       | 430.69   | 2.634164 |
| 22       | 612.38   | .787021  | 22       | 504.90   | .703202  | 22       | 429.62   | .633085  |
| 24       | 610.21   | .785482  | 24       | 503.42   | .701934  | 24       | 428.56   | .632008  |
| 26       | 608.06   | .783948  | 26       | 501.96   | .700671  | 26       | 427.50   | .630934  |
| 28       | 605.93   | .782420  | 28       | 500.51   | .699410  | 28       | 426.44   | .629863  |
| 30       | 603.80   | 2.780897 | 30       | 499.06   | 2.698154 | 30       | 425.40   | 2.628794 |
| 32       | 601.70   | .779379  | 32       | 497.62   | .696901  | 32       | 424.35   | .627728  |
| 34       | 599.61   | .777867  | 34       | 496.19   | .695652  | 34       | 423.32   | .626665  |
| 36       | 597.53   | .776360  | 36       | 494.77   | .694407  | 36       | 422.28   | .625604  |
| 38       | 595.47   | .774858  | 38       | 493.36   | .693165  | 38       | 421.26   | .624546  |
| 40       | 593.42   | 2.773361 | 40       | 491.96   | 2.691926 | 40       | 420.23   | 2.623490 |
| 42       | 591.38   | .771870  | 42       | 490.56   | .690692  | 42       | 419.22   | .622437  |
| 44       | 589.36   | .770383  | 44       | 489.17   | .689460  | 44       | 418.20   | .621387  |
| 46       | 587.36   | .768902  | 46       | 487.79   | .688233  | 46       | 417.19   | .620339  |
| 48       | 585.36   | .767426  | 48       | 486.42   | .687008  | 48       | 416.19   | .619294  |
| 50       | 583.38   | 2.765955 | 50       | 485.05   | 2.685788 | 50       | 415.19   | 2.618251 |
| 52       | 581.42   | .764489  | 52       | 483.69   | .684570  | 52       | 414.20   | .617211  |
| 54       | 579.46   | .763028  | 54       | 482.34   | .683357  | 54       | 413.21   | .616173  |
| 56       | 577.53   | .761572  | 56       | 481.00   | .682146  | 56       | 412.23   | .615138  |
| 58       | 575.60   | .760120  | 58       | 479.67   | .680939  | 58       | 411.25   | .614106  |
| 10° 0'   | 573.69   | 2.758674 | 12° 0'   | 478.34   | 2.679735 | 14° 0'   | 410.28   | 2.613076 |
| 2        | 571.78   | .757232  | 2        | 477.02   | .678535  | 2        | 409.31   | .612048  |
| 4        | 569.90   | .755796  | 4        | 475.71   | .677338  | 4        | 408.34   | .611023  |
| 6        | 568.02   | .754364  | 6        | 474.40   | .676145  | 6        | 407.38   | .610000  |
| 8        | 566.16   | .752937  | 8        | 473.10   | .674954  | 8        | 406.42   | .608980  |
| 10       | 564.31   | 2.751514 | 10       | 471.81   | 2.673767 | 10       | 405.47   | 2.607962 |
| 12       | 562.47   | .750096  | 12       | 470.53   | .672584  | 12       | 404.53   | .606946  |
| 14       | 560.64   | .748683  | 14       | 469.25   | .671403  | 14       | 403.58   | .605933  |
| 16       | 558.82   | .747274  | 16       | 467.98   | .670226  | 16       | 402.65   | .604923  |
| 18       | 557.02   | .745870  | 18       | 466.72   | .669052  | 18       | 401.71   | .603914  |
| 20       | 555.23   | 2.744471 | 20       | 465.46   | 2.667881 | 20       | 400.78   | 2.602908 |
| 22       | 553.45   | .743076  | 22       | 464.21   | .666713  | 22       | 399.86   | .601905  |
| 24       | 551.68   | .741686  | 24       | 462.96   | .665549  | 24       | 398.94   | .600904  |
| 26       | 549.92   | .740300  | 26       | 461.73   | .664388  | 26       | 398.02   | .600905  |
| 28       | 548.17   | .738918  | 28       | 460.50   | .663229  | 28       | 397.11   | .600908  |
| 30       | 546.44   | 2.737541 | 30       | 459.28   | 2.662074 | 30       | 396.20   | 2.599914 |
| 32       | 544.71   | .736169  | 32       | 458.06   | .660922  | 32       | 395.30   | .599922  |
| 34       | 543.00   | .734800  | 34       | 456.85   | .659773  | 34       | 394.40   | .599933  |
| 36       | 541.30   | .733436  | 36       | 455.65   | .658628  | 36       | 393.50   | .599945  |
| 38       | 539.61   | .732077  | 38       | 454.45   | .657485  | 38       | 392.61   | .599960  |
| 40       | 537.92   | 2.730721 | 40       | 453.26   | 2.656345 | 40       | 391.72   | 2.599978 |
| 42       | 536.25   | .729370  | 42       | 452.07   | .655208  | 42       | 390.84   | .599997  |
| 44       | 534.59   | .728023  | 44       | 450.89   | .654075  | 44       | 389.96   | .5991019 |
| 46       | 532.94   | .726681  | 46       | 449.72   | .652944  | 46       | 389.08   | .599043  |
| 48       | 531.30   | .725342  | 48       | 448.56   | .651816  | 48       | 388.21   | .599069  |
| 50       | 529.67   | 2.724008 | 50       | 447.40   | 2.650691 | 50       | 387.34   | 2.588097 |
| 52       | 528.05   | .722677  | 52       | 446.24   | .649570  | 52       | 386.48   | .587128  |
| 54       | 526.44   | .721351  | 54       | 445.09   | .648451  | 54       | 385.62   | .586161  |
| 56       | 524.84   | .720029  | 56       | 443.95   | .647335  | 56       | 384.77   | .585196  |
| 58       | 523.25   | .718711  | 58       | 442.81   | .646221  | 58       | 383.91   | .584233  |
| 60       | 521.67   | 2.717397 | 60       | 441.68   | 2.645111 | 60       | 383.06   | 2.583272 |

| 曲度<br>D. | 半徑<br>R. | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  | 曲度<br>D. | 半徑<br>R. | Log. R.  |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 15° 0'   | 383.06   | 2.583272 | 20° 0'   | 287.94   | 2.459300 | 30° 0'   | 193.19   | 2.285974 |
| 5        | 380.96   | 580880   | 10       | 285.58   | 455733   | 10       | 192.14   | 283623   |
| 15       | 378.88   | 578501   | 20       | 283.27   | 452195   | 20       | 191.11   | 281286   |
| 20       | 376.82   | 576135   | 30       | 280.99   | 448688   | 30       | 190.09   | 278963   |
| 25       | 374.79   | 573783   | 40       | 278.75   | 445209   | 40       | 189.08   | 276652   |
| 30       | 372.77   | 571443   | 50       | 276.54   | 441759   | 50       | 188.09   | 274355   |
| 35       | 370.78   | 2.569116 | 21° 0'   | 274.37   | 2.438337 | 31° 0'   | 187.10   | 2.272071 |
| 40       | 368.81   | 566802   | 10       | 272.23   | 434943   | 10       | 186.12   | 269800   |
| 45       | 366.86   | 564500   | 20       | 270.13   | 431575   | 20       | 185.16   | 267541   |
| 50       | 364.93   | 562210   | 30       | 268.06   | 428235   | 30       | 184.20   | 265295   |
| 55       | 363.02   | 559933   | 40       | 266.02   | 424921   | 40       | 183.26   | 263062   |
| 60       | 361.13   | 557668   | 50       | 264.02   | 421633   | 50       | 182.32   | 260841   |
| 16° 0'   | 359.26   | 2.555415 | 22° 0'   | 262.04   | 2.418371 | 32° 0'   | 181.40   | 2.258632 |
| 5        | 357.42   | 553173   | 10       | 260.10   | 415134   | 10       | 180.48   | 256435   |
| 15       | 355.59   | 550944   | 20       | 258.18   | 411922   | 20       | 179.58   | 254250   |
| 20       | 353.77   | 548726   | 30       | 256.29   | 408734   | 30       | 178.68   | 252077   |
| 25       | 351.98   | 546519   | 40       | 254.43   | 405571   | 40       | 177.79   | 249916   |
| 30       | 350.21   | 544324   | 50       | 252.60   | 402431   | 50       | 176.92   | 247766   |
| 35       | 348.45   | 2.542140 | 23° 0'   | 250.79   | 2.399315 | 33° 0'   | 176.05   | 2.245628 |
| 40       | 346.71   | 539968   | 10       | 249.01   | 396222   | 10       | 175.19   | 243501   |
| 45       | 344.99   | 537806   | 20       | 247.26   | 393151   | 20       | 174.34   | 241386   |
| 50       | 343.29   | 535655   | 30       | 245.53   | 390103   | 30       | 173.49   | 239282   |
| 55       | 341.60   | 533516   | 40       | 243.82   | 387077   | 40       | 172.66   | 237188   |
| 60       | 339.93   | 531386   | 50       | 242.14   | 384073   | 50       | 171.83   | 235106   |
| 17° 0'   | 338.27   | 2.529268 | 24° 0'   | 240.49   | 2.381091 | 34° 0'   | 171.02   | 2.233035 |
| 5        | 336.64   | 527160   | 10       | 238.85   | 378130   | 10       | 170.21   | 230974   |
| 15       | 335.01   | 525062   | 20       | 237.24   | 375190   | 20       | 169.40   | 228924   |
| 20       | 333.41   | 522975   | 30       | 235.65   | 372270   | 30       | 168.61   | 226884   |
| 25       | 331.82   | 520898   | 40       | 234.08   | 369371   | 40       | 167.82   | 224855   |
| 30       | 330.24   | 518831   | 50       | 232.54   | 366492   | 50       | 167.05   | 222837   |
| 35       | 328.68   | 2.516774 | 25° 0'   | 231.01   | 2.363633 | 35° 0'   | 166.28   | 2.220828 |
| 40       | 327.13   | 514727   | 10       | 229.51   | 360794   | 10       | 165.51   | 218830   |
| 45       | 325.60   | 512690   | 20       | 228.02   | 357974   | 20       | 164.76   | 216842   |
| 50       | 324.09   | 510662   | 30       | 226.55   | 355173   | 30       | 164.01   | 214863   |
| 55       | 322.59   | 508645   | 40       | 225.11   | 352391   | 40       | 163.27   | 212895   |
| 60       | 321.10   | 506636   | 50       | 223.68   | 349627   | 50       | 162.53   | 210937   |
| 18° 0'   | 319.62   | 2.504638 | 26° 0'   | 222.27   | 2.346882 | 36° 0'   | 161.80   | 2.208988 |
| 5        | 318.16   | 502648   | 10       | 220.88   | 344155   | 10       | 161.08   | 207048   |
| 15       | 316.71   | 500668   | 20       | 219.51   | 341446   | 20       | 160.37   | 205119   |
| 20       | 315.28   | 498697   | 30       | 218.15   | 338755   | 30       | 159.66   | 203198   |
| 25       | 313.86   | 496736   | 40       | 216.81   | 336081   | 40       | 158.96   | 201288   |
| 30       | 312.45   | 494783   | 50       | 215.49   | 333424   | 50       | 158.27   | 199386   |
| 35       | 311.06   | 2.492839 | 27° 0'   | 214.18   | 2.330785 | 37° 0'   | 157.58   | 2.197494 |
| 40       | 309.67   | 490904   | 10       | 212.89   | 328162   | 10       | 156.90   | 195510   |
| 45       | 308.30   | 488978   | 20       | 211.62   | 325556   | 20       | 156.22   | 193736   |
| 50       | 306.95   | 487061   | 30       | 210.36   | 322967   | 30       | 155.55   | 191871   |
| 55       | 305.60   | 485152   | 40       | 209.12   | 320393   | 40       | 154.89   | 190014   |
| 60       | 304.27   | 483252   | 50       | 207.89   | 317836   | 50       | 154.23   | 188167   |
| 19° 0'   | 302.94   | 2.481361 | 28° 0'   | 206.68   | 2.315295 | 38° 0'   | 153.58   | 2.186328 |
| 5        | 301.63   | 479478   | 10       | 205.48   | 312769   | 10       | 152.93   | 184498   |
| 15       | 300.33   | 477603   | 20       | 204.30   | 310259   | 20       | 152.29   | 182676   |
| 20       | 299.04   | 475736   | 30       | 203.13   | 307764   | 30       | 151.66   | 180863   |
| 25       | 297.77   | 473878   | 40       | 201.97   | 305285   | 40       | 151.03   | 179059   |
| 30       | 296.50   | 472028   | 50       | 200.83   | 302820   | 50       | 150.41   | 177263   |
| 35       | 295.25   | 2.470186 | 29° 0'   | 199.70   | 2.300370 | 39° 0'   | 149.79   | 2.175475 |
| 40       | 294.00   | 468352   | 10       | 198.58   | 297935   | 10       | 149.17   | 175495   |
| 45       | 292.77   | 466526   | 20       | 197.48   | 295515   | 20       | 148.57   | 173695   |
| 50       | 291.55   | 464708   | 30       | 196.38   | 293108   | 30       | 147.97   | 171924   |
| 55       | 290.33   | 462897   | 40       | 195.31   | 290716   | 40       | 147.37   | 168405   |
| 60       | 289.13   | 461095   | 50       | 194.24   | 288338   | 50       | 146.78   | 166658   |
| 60       | 287.94   | 2.459300 | 60       | 193.19   | 2.285974 | 60       | 146.19   | 2.164918 |

第八表 曲線函數表

曲線函數表

0°

| '  | L     | T     | E     | X     | Y     | ' |
|----|-------|-------|-------|-------|-------|---|
| 0  | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0 |
| 1  | 29    | 14    | 0     | 14    | 0     | 5 |
| 2  | 58    | 29    | 0     | 29    | 0     | 5 |
| 3  | 87    | 44    | 0     | 44    | 0     | 5 |
| 4  | 0.116 | 58    | 0     | 58    | 0     | 5 |
| 5  | 45    | 73    | 0     | 73    | 0     | 5 |
| 6  | 75    | 87    | 0     | 87    | 0     | 5 |
| 7  | 0.204 | 0.102 | 0     | 0.102 | 0     | 5 |
| 8  | 33    | 15    | 0     | 15    | 0     | 5 |
| 9  | 62    | 31    | 0     | 31    | 0     | 5 |
| 10 | 91    | 45    | 0     | 45    | 0     | 5 |
| 11 | 0.320 | 60    | 0     | 60    | 0     | 0 |
| 12 | 49    | 74    | 0     | 74    | 0     | 4 |
| 13 | 78    | 89    | 0     | 89    | 0     | 4 |
| 14 | 0.407 | 0.204 | 0     | 0.204 | 0     | 4 |
| 15 | 36    | 18    | 0     | 18    | 0     | 4 |
| 16 | 65    | 33    | 0     | 33    | 0     | 4 |
| 17 | 95    | 47    | 0     | 47    | 0     | 4 |
| 18 | 0.524 | 62    | 0     | 62    | 0     | 4 |
| 19 | 53    | 76    | 0     | 76    | 0     | 4 |
| 20 | 82    | 91    | 0     | 91    | 0     | 4 |
| 21 | 0.611 | 0.305 | 0     | 0.305 | 0     | 4 |
| 22 | 40    | 20    | 0     | 20    | 0     | 4 |
| 23 | 69    | 34    | 0.001 | 34    | 0.001 | 4 |
| 24 | 98    | 49    | 1     | 49    | 1     | 4 |
| 25 | 0.727 | 64    | 1     | 64    | 1     | 5 |
| 26 | 56    | 78    | 1     | 78    | 1     | 5 |
| 27 | 85    | 93    | 1     | 93    | 1     | 5 |
| 28 | 0.814 | 0.407 | 1     | 0.407 | 1     | 5 |
| 29 | 44    | 22    | 1     | 22    | 1     | 5 |
| 30 | 73    | 36    | 1     | 36    | 1     | 3 |
| 31 | 0.902 | 51    | 1     | 51    | 1     | 3 |
| 32 | 31    | 65    | 1     | 65    | 1     | 3 |
| 33 | 60    | 80    | 1     | 80    | 1     | 3 |
| 34 | 89    | 94    | 1     | 94    | 1     | 3 |
| 35 | 1.018 | 0.509 | 1     | 0.509 | 1     | 2 |
| 36 | 47    | 24    | 1     | 24    | 1     | 2 |
| 37 | 76    | 38    | 1     | 38    | 1     | 2 |
| 38 | 1.105 | 53    | 1     | 53    | 1     | 2 |
| 39 | 34    | 67    | 0.002 | 67    | 0.002 | 2 |
| 40 | 64    | 82    | 2     | 82    | 2     | 2 |
| 41 | 93    | 96    | 2     | 96    | 2     | 2 |
| 42 | 1.222 | 0.611 | 2     | 0.611 | 2     | 1 |
| 43 | 51    | 25    | 2     | 25    | 2     | 1 |
| 44 | 80    | 40    | 2     | 40    | 2     | 1 |
| 45 | 1.309 | 54    | 2     | 54    | 2     | 1 |
| 46 | 38    | 69    | 2     | 69    | 2     | 1 |
| 47 | 67    | 84    | 2     | 83    | 2     | 1 |
| 48 | 96    | 98    | 2     | 98    | 2     | 1 |
| 49 | 1.425 | 0.713 | 2     | 0.713 | 2     | 1 |
| 50 | 54    | 27    | 0.003 | 27    | 0.003 | 1 |
| 51 | 84    | 42    | 3     | 42    | 3     | 0 |
| 52 | 1.513 | 56    | 3     | 56    | 3     | 9 |
| 53 | 42    | 71    | 3     | 71    | 3     | 8 |
| 54 | 71    | 85    | 3     | 85    | 3     | 7 |
| 55 | 1.600 | 0.800 | 3     | 0.800 | 3     | 6 |
| 56 | 29    | 14    | 3     | 14    | 3     | 5 |
| 57 | 58    | 29    | 3     | 29    | 3     | 4 |
| 58 | 87    | 44    | 0.004 | 44    | 0.004 | 3 |
| 59 | 1.716 | 58    | 4     | 58    | 4     | 2 |
| 60 | 45    | 73    | 4     | 73    | 4     | 1 |

## 曲線函數表

|     | L     | T     | E     | X     | Y     |     |
|-----|-------|-------|-------|-------|-------|-----|
| 0 1 | 1.745 | 0.873 | 0.004 | 0.873 | 0.004 | 6 0 |
| 1 2 | 74    | 87    | 4     | 87    | 4     | 6 9 |
| 2 3 | 1.804 | 0.902 | 4     | 0.902 | 4     | 6 8 |
| 3 4 | 33    | 16    | 4     | 16    | 4     | 6 7 |
|     | 62    | 31    | 4     | 31    | 4     | 6 6 |
| 5 6 | 91    | 45    | 4     | 45    | 4     | 5 5 |
| 6 7 | 1.920 | 60    | 0.005 | 60    | 0.005 | 5 4 |
| 7 8 | 49    | 75    | 5     | 75    | 5     | 5 3 |
| 8 9 | 78    | 89    | 5     | 89    | 5     | 5 2 |
|     | 2.007 | 1.004 | 5     | 1.004 | 5     | 5 1 |
| 1 0 | 36    | 18    | 5     | 18    | 5     | 5 0 |
| 1 1 | 65    | 33    | 5     | 33    | 5     | 4 9 |
| 1 2 | 94    | 47    | 5     | 47    | 5     | 4 8 |
| 1 3 | 2.123 | 62    | 0.006 | 62    | 0.006 | 4 7 |
| 1 4 | 53    | 76    | 6     | 76    | 6     | 4 6 |
| 1 5 | 82    | 91    | 6     | 91    | 6     | 4 5 |
| 1 6 | 2.211 | 1.105 | 6     | 1.105 | 6     | 4 4 |
| 1 7 | 40    | 20    | 6     | 20    | 6     | 4 3 |
| 1 8 | 69    | 34    | 0.007 | 34    | 0.007 | 4 2 |
| 1 9 | 98    | 49    | 7     | 49    | 7     | 4 1 |
| 2 0 | 2.327 | 64    | 7     | 64    | 7     | 4 0 |
| 2 1 | 56    | 78    | 7     | 78    | 7     | 3 9 |
| 2 2 | 85    | 93    | 7     | 93    | 7     | 3 8 |
| 2 3 | 2.414 | 1.207 | 7     | 1.207 | 7     | 3 7 |
| 2 4 | 43    | 22    | 7     | 22    | 7     | 3 6 |
| 2 5 | 73    | 36    | 0.008 | 36    | 0.008 | 3 5 |
| 2 6 | 2.502 | 51    | 8     | 51    | 8     | 3 4 |
| 2 7 | 31    | 65    | 8     | 65    | 8     | 3 3 |
| 2 8 | 60    | 80    | 8     | 80    | 8     | 3 2 |
| 2 9 | 89    | 94    | 8     | 94    | 8     | 3 1 |
| 3 0 | 2.618 | 1.309 | 0.009 | 1.309 | 0.009 | 3 0 |
| 3 1 | 47    | 24    | 9     | 24    | 9     | 2 9 |
| 3 2 | 76    | 38    | 9     | 38    | 9     | 2 8 |
| 3 3 | 2.705 | 53    | 9     | 53    | 9     | 2 7 |
| 3 4 | 34    | 67    | 9     | 67    | 9     | 2 6 |
| 3 5 | 63    | 82    | 0.010 | 82    | 0.010 | 2 5 |
| 3 6 | 93    | 96    | 10    | 96    | 10    | 2 4 |
| 3 7 | 2.822 | 1.411 | 10    | 1.411 | 10    | 2 3 |
| 3 8 | 51    | 25    | 10    | 25    | 10    | 2 2 |
| 3 9 | 80    | 40    | 10    | 40    | 10    | 2 1 |
| 4 0 | 2.909 | 54    | 0.011 | 54    | 0.011 | 2 0 |
| 4 1 | 38    | 69    | 11    | 69    | 11    | 1 9 |
| 4 2 | 67    | 84    | 11    | 84    | 11    | 1 8 |
| 4 3 | 96    | 98    | 11    | 98    | 11    | 1 7 |
| 4 4 | 3.025 | 1.513 | 11    | 1.513 | 11    | 1 6 |
| 4 5 | 54    | 27    | 0.012 | 27    | 0.012 | 1 5 |
| 4 6 | 83    | 42    | 12    | 42    | 12    | 1 4 |
| 4 7 | 3.113 | 56    | 12    | 56    | 12    | 1 3 |
| 4 8 | 42    | 71    | 12    | 71    | 12    | 1 2 |
| 4 9 | 71    | 85    | 0.013 | 85    | 0.013 | 1 1 |
| 5 0 | 3.200 | 1.600 | 13    | 1.600 | 13    | 1 0 |
| 5 1 | 29    | 14    | 13    | 14    | 13    | 9 9 |
| 5 2 | 58    | 29    | 13    | 29    | 13    | 9 8 |
| 5 3 | 87    | 43    | 13    | 43    | 13    | 9 7 |
| 5 4 | 3.316 | 58    | 0.014 | 58    | 0.014 | 9 6 |
| 5 5 | 45    | 73    | 14    | 73    | 14    | 5 4 |
| 5 6 | 74    | 87    | 14    | 87    | 14    | 4 3 |
| 5 7 | 3.403 | 1.702 | 14    | 1.702 | 14    | 3 3 |
| 5 8 | 32    | 16    | 0.015 | 16    | 0.015 | 2 2 |
| 5 9 | 62    | 31    | 15    | 31    | 15    | 1 1 |
| 6 0 | 91    | 45    | 15    | 45    | 15    | 0 0 |

## 曲線函數表

| '   | L     | T     | E     | X     | Y     | '   |
|-----|-------|-------|-------|-------|-------|-----|
| 0 1 | 3.491 | 1.745 | 0.015 | 1.745 | 0.015 | 8 0 |
| 2   | 3.520 | 60    | 15    | 60    | 15    | 0 0 |
| 3   | 49    | 75    | 0.016 | 74    | 0.016 | 0 0 |
| 4   | 3.607 | 89    | 16    | 89    | 16    | 0 0 |
|     |       | 1.804 | 16    | 1.803 | 16    | 0 0 |
| 5   | 36    | 18    | 0.017 | 18    | 0.017 | 5 5 |
| 6   | 65    | 33    | 17    | 33    | 17    | 5 4 |
| 7   | 94    | 47    | 17    | 47    | 17    | 4 4 |
| 8   | 3.723 | 62    | 17    | 62    | 17    | 0 0 |
| 9   | 52    | 76    | 0.018 | 76    | 0.018 | 0 0 |
| 1 0 | 82    | 91    | 18    | 91    | 18    | 5 0 |
| 1 1 | 3.811 | 1.906 | 18    | 1.905 | 18    | 0 0 |
| 2   | 40    | 20    | 18    | 20    | 18    | 0 0 |
| 3   | 69    | 35    | 0.019 | 34    | 0.019 | 4 4 |
| 4   | 98    | 49    | 19    | 49    | 19    | 4 4 |
| 1 5 | 3.927 | 64    | 19    | 63    | 19    | 4 5 |
| 1 6 | 56    | 78    | 0.020 | 78    | 0.020 | 4 4 |
| 1 7 | 85    | 93    | 20    | 92    | 20    | 4 4 |
| 1 8 | 4.014 | 2.077 | 20    | 2.077 | 20    | 4 4 |
| 1 9 | 43    | 22    | 20    | 21    | 20    | 4 2 |
| 2 0 | 72    | 36    | 0.021 | 36    | 0.021 | 4 0 |
| 2 1 | 4.102 | 51    | 21    | 51    | 21    | 0 0 |
| 2 2 | 31    | 66    | 21    | 65    | 21    | 0 0 |
| 2 3 | 60    | 80    | 0.022 | 80    | 0.022 | 0 0 |
| 2 4 | 89    | 95    | 22    | 94    | 22    | 0 0 |
| 2 5 | 4.218 | 2.109 | 22    | 2.109 | 22    | 3 5 |
| 2 6 | 47    | 23    | 0.023 | 23    | 0.023 | 3 3 |
| 2 7 | 76    | 38    | 23    | 38    | 23    | 3 3 |
| 2 8 | 4.305 | 52    | 23    | 52    | 23    | 3 2 |
| 2 9 | 34    | 67    | 0.024 | 67    | 0.024 | 3 3 |
| 3 0 | 63    | 82    | 24    | 81    | 24    | 3 0 |
| 3 1 | 92    | 97    | 24    | 96    | 24    | 2 9 |
| 3 2 | 4.422 | 2.211 | 24    | 2.211 | 24    | 2 8 |
| 3 3 | 51    | 26    | 0.025 | 25    | 0.025 | 2 7 |
| 3 4 | 80    | 40    | 25    | 40    | 25    | 2 6 |
| 3 5 | 4.509 | 55    | 25    | 54    | 25    | 2 5 |
| 3 6 | 38    | 69    | 0.026 | 69    | 0.026 | 2 4 |
| 3 7 | 67    | 83    | 26    | 83    | 26    | 2 3 |
| 3 8 | 96    | 98    | 26    | 98    | 26    | 2 2 |
| 3 9 | 4.625 | 2.313 | 0.027 | 2.312 | 0.027 | 2 1 |
| 4 0 | 54    | 27    | 27    | 27    | 27    | 2 0 |
| 4 1 | 83    | 42    | 27    | 41    | 27    | 1 9 |
| 4 2 | 4.712 | 57    | 0.028 | 56    | 0.028 | 1 8 |
| 4 3 | 41    | 71    | 28    | 71    | 28    | 1 7 |
| 4 4 | 71    | 85    | 28    | 85    | 0.029 | 1 6 |
| 4 5 | 4.800 | 2.400 | 0.029 | 2.400 | 29    | 1 5 |
| 4 6 | 29    | 15    | 29    | 14    | 29    | 1 4 |
| 4 7 | 58    | 29    | 0.030 | 29    | 0.030 | 1 3 |
| 4 8 | 87    | 44    | 30    | 43    | 30    | 1 2 |
| 4 9 | 4.916 | 58    | 30    | 58    | 30    | 1 1 |
| 5 0 | 45    | 73    | 0.031 | 72    | 0.031 | 1 0 |
| 5 1 | 74    | 88    | 31    | 87    | 31    | 0 9 |
| 5 2 | 5.003 | 2.502 | 31    | 2.501 | 31    | 0 8 |
| 5 3 | 32    | 17    | 0.032 | 16    | 0.032 | 0 7 |
| 5 4 | 61    | 31    | 32    | 31    | 32    | 0 6 |
| 5 5 | 91    | 46    | 32    | 45    | 32    | 5 5 |
| 5 6 | 5.120 | 60    | 0.033 | 60    | 0.033 | 4 4 |
| 5 7 | 49    | 75    | 33    | 74    | 33    | 4 3 |
| 5 8 | 78    | 89    | 33    | 89    | 33    | 4 2 |
| 5 9 | 5.207 | 2.604 | 0.034 | 2.603 | 0.034 | 4 1 |
| 6 0 | 36    | 19    | 34    | 18    | 34    | 4 0 |

## 曲線函數表

| '  | L     | T     | E     | X     | Y     | '  |
|----|-------|-------|-------|-------|-------|----|
| 0  | 5.236 | 2.619 | 0.034 | 2.618 | 0.034 | 60 |
| 1  | 65    | 33    | 0.035 | 32    | 0.035 | 59 |
| 2  | 94    | 48    | 35    | 47    | 35    | 58 |
| 3  | 5.323 | 62    | 35    | 61    | 35    | 57 |
| 4  | 52    | 77    | 0.036 | 76    | 0.036 | 56 |
| 5  | 81    | 91    | 36    | 90    | 36    | 55 |
| 6  | 5.411 | 2.706 | 0.037 | 2.705 | 0.037 | 54 |
| 7  | 40    | 20    | 37    | 20    | 37    | 53 |
| 8  | 69    | 35    | 37    | 34    | 37    | 52 |
| 9  | 98    | 50    | 0.038 | 49    | 0.038 | 51 |
| 10 | 5.527 | 64    | 38    | 63    | 38    | 50 |
| 11 | 56    | 79    | 0.039 | 78    | 0.039 | 49 |
| 12 | 85    | 93    | 39    | 92    | 39    | 48 |
| 13 | 5.614 | 2.808 | 39    | 2.807 | 39    | 47 |
| 14 | 43    | 22    | 0.040 | 21    | 0.040 | 46 |
| 15 | 72    | 37    | 40    | 36    | 40    | 45 |
| 16 | 5.701 | 51    | 0.041 | 50    | 0.041 | 44 |
| 17 | 30    | 66    | 41    | 65    | 41    | 43 |
| 18 | 60    | 81    | 0.042 | 79    | 0.042 | 42 |
| 19 | 89    | 95    | 42    | 94    | 42    | 41 |
| 20 | 5.818 | 2.910 | 0.043 | 2.909 | 42    | 40 |
| 1  | 47    | 24    | 43    | 23    | 0.043 | 39 |
| 2  | 76    | 39    | 43    | 38    | 43    | 38 |
| 3  | 5.905 | 53    | 0.044 | 52    | 0.044 | 37 |
| 4  | 34    | 68    | 44    | 67    | 44    | 36 |
| 5  | 63    | 82    | 0.045 | 81    | 0.045 | 35 |
| 6  | 92    | 97    | 45    | 96    | 45    | 34 |
| 7  | 6.021 | 3.012 | 45    | 3.010 | 45    | 33 |
| 8  | 50    | 26    | 0.046 | 25    | 0.046 | 32 |
| 9  | 80    | 41    | 46    | 39    | 46    | 31 |
| 10 | 6.109 | 55    | 0.047 | 54    | 0.047 | 30 |
| 11 | 38    | 70    | 47    | 68    | 47    | 29 |
| 12 | 67    | 84    | 0.048 | 83    | 0.048 | 28 |
| 13 | 96    | 99    | 48    | 98    | 48    | 27 |
| 14 | 6.225 | 3.113 | 0.049 | 3.112 | 0.049 | 26 |
| 15 | 54    | 28    | 49    | 27    | 49    | 25 |
| 16 | 83    | 43    | 49    | 41    | 49    | 24 |
| 17 | 6.312 | 57    | 0.050 | 56    | 0.050 | 23 |
| 18 | 41    | 72    | 50    | 70    | 50    | 22 |
| 19 | 70    | 86    | 0.051 | 85    | 0.051 | 21 |
| 20 | 6.400 | 3.201 | 51    | 99    | 51    | 20 |
| 1  | 29    | 15    | 0.052 | 3.214 | 0.052 | 19 |
| 2  | 58    | 30    | 52    | 28    | 52    | 18 |
| 3  | 87    | 44    | 0.053 | 43    | 0.053 | 17 |
| 4  | 6.516 | 59    | 53    | 57    | 53    | 16 |
| 5  | 45    | 74    | 0.054 | 72    | 0.054 | 15 |
| 6  | 74    | 88    | 54    | 86    | 54    | 14 |
| 7  | 6.603 | 3.303 | 0.055 | 3.301 | 0.055 | 13 |
| 8  | 32    | 17    | 55    | 16    | 55    | 12 |
| 9  | 61    | 32    | 0.056 | 30    | 0.056 | 11 |
| 10 | 90    | 46    | 56    | 45    | 56    | 10 |
| 11 | 6.720 | 61    | 0.057 | 59    | 0.057 | 9  |
| 12 | 49    | 76    | 57    | 74    | 57    | 8  |
| 13 | 78    | 90    | 0.058 | 88    | 0.058 | 7  |
| 14 | 6.807 | 3.405 | 58    | 3.403 | 58    | 6  |
| 15 | 36    | 19    | 58    | 17    | 58    | 5  |
| 16 | 65    | 34    | 0.059 | 32    | 0.059 | 4  |
| 17 | 94    | 48    | 59    | 46    | 59    | 3  |
| 18 | 6.923 | 63    | 0.060 | 61    | 0.060 | 2  |
| 19 | 52    | 78    | 60    | 75    | 60    | 1  |
| 20 | 81    | 92    | 0.061 | 90    | 0.061 | 0  |

|                 | L     | T     | E     | X     | Y     |                 |
|-----------------|-------|-------|-------|-------|-------|-----------------|
| 0 1 1 4 4 4 4   | 6.981 | 3.492 | 0.061 | 3.490 | 0.061 | 0 1 1 4 4 4 4   |
|                 | 7.010 | 3.507 | 0.062 | 3.505 | 0.061 |                 |
|                 | 39    | 21    | 62    | 19    | 0.062 |                 |
|                 | 69    | 36    | 0.063 | 34    | 62    |                 |
|                 | 98    | 50    | 63    | 48    | 0.063 |                 |
| 5 5 5 7 7 7 7   | 7.127 | 65    | 0.064 | 63    | 0.064 | 5 5 5 7 7 7 7   |
|                 | 56    | 79    | 64    | 77    | 64    |                 |
|                 | 85    | 94    | 0.065 | 62    | 0.065 |                 |
|                 | 7.214 | 3.609 | 65    | 3.606 | 65    |                 |
|                 | 43    | 23    | 0.066 | 21    | 0.066 |                 |
| 1 0 1 1 1 1 4   | 72    | 38    | 66    | 35    | 66    | 1 0 1 1 1 1 4   |
|                 | 7.301 | 52    | 0.067 | 50    | 0.067 |                 |
|                 | 30    | 67    | 67    | 64    | 67    |                 |
|                 | 59    | 81    | 0.068 | 73    | 0.068 |                 |
|                 | 89    | 96    | 68    | 93    | 68    |                 |
| 1 1 1 1 1 1 5   | 7.418 | 3.711 | 0.069 | 3.708 | 0.069 | 1 1 1 1 1 1 5   |
|                 | 47    | 25    | 69    | 22    | 69    |                 |
|                 | 76    | 40    | 0.070 | 37    | 0.070 |                 |
|                 | 7.505 | 54    | 70    | 52    | 70    |                 |
|                 | 34    | 69    | 0.071 | 66    | 0.071 |                 |
| 2 2 2 2 2 2 0   | 63    | 83    | 0.072 | 81    | 0.072 | 2 2 2 2 2 2 0   |
|                 | 92    | 98    | 72    | 95    | 72    |                 |
|                 | 7.621 | 3.813 | 0.073 | 3.810 | 0.073 |                 |
|                 | 50    | 27    | 73    | 24    | 73    |                 |
|                 | 79    | 42    | 0.074 | 39    | 0.074 |                 |
| 2 2 2 2 2 2 3   | 7.709 | 56    | 74    | 53    | 74    | 2 2 2 2 2 2 3   |
|                 | 38    | 71    | 0.075 | 68    | 0.075 |                 |
|                 | 67    | 85    | 75    | 82    | 75    |                 |
|                 | 96    | 3.900 | 0.076 | 97    | 0.076 |                 |
|                 | 7.825 | 14    | 77    | 3.911 | 76    |                 |
| 3 3 3 3 3 3 0   | 54    | 29    | 77    | 26    | 77    | 3 3 3 3 3 3 0   |
|                 | 83    | 44    | 0.078 | 41    | 0.078 |                 |
|                 | 7.912 | 58    | 78    | 55    | 78    |                 |
|                 | 41    | 73    | 0.079 | 70    | 0.079 |                 |
|                 | 70    | 87    | 79    | 84    | 79    |                 |
| 3 3 3 3 3 3 3   | 99    | 4.002 | 0.080 | 99    | 0.080 | 3 3 3 3 3 3 3   |
|                 | 8.029 | 16    | 0.081 | 4.013 | 81    |                 |
|                 | 58    | 31    | 81    | 28    | 0.081 |                 |
|                 | 87    | 46    | 0.082 | 42    | 82    |                 |
|                 | 8.116 | 60    | 82    | 57    | 0.082 |                 |
| 4 4 4 4 4 4 0   | 45    | 75    | 0.083 | 71    | 0.083 | 4 4 4 4 4 4 0   |
|                 | 74    | 89    | 0.084 | 86    | 84    |                 |
|                 | 8.203 | 4.104 | 84    | 4.100 | 0.084 |                 |
|                 | 32    | 18    | 0.085 | 15    | 0.085 |                 |
|                 | 61    | 33    | 85    | 29    | 85    |                 |
| 4 4 4 4 4 4 5   | 90    | 48    | 0.086 | 44    | 0.086 | 4 4 4 4 4 4 5   |
|                 | 8.319 | 62    | 0.087 | 58    | 0.087 |                 |
|                 | 48    | 77    | 87    | 73    | 87    |                 |
|                 | 78    | 91    | 0.088 | 88    | 0.088 |                 |
|                 | 8.407 | 4.206 | 88    | 4.202 | 88    |                 |
| 4 4 4 4 4 4 8   | 96    | 20    | 0.089 | 17    | 0.089 | 4 4 4 4 4 4 8   |
|                 | 65    | 35    | 0.090 | 31    | 0.090 |                 |
|                 | 94    | 50    | 90    | 46    | 90    |                 |
|                 | 8.523 | 64    | 0.091 | 60    | 0.091 |                 |
|                 | 52    | 79    | 91    | 75    | 91    |                 |
| 4 4 4 4 4 4 1 0 | 81    | 93    | 0.092 | 89    | 0.092 | 4 4 4 4 4 4 1 0 |
|                 | 8.610 | 4.308 | 0.093 | 4.304 | 0.093 |                 |
|                 | 39    | 22    | 93    | 18    | 93    |                 |
|                 | 68    | 37    | 0.094 | 33    | 0.094 |                 |
|                 | 98    | 52    | 0.095 | 47    | 94    |                 |
|                 | 8.727 | 66    | 96    | 62    | 0.095 |                 |



## 曲線函數表

| '   | L      | T     | E     | X     | Y     | '   |
|-----|--------|-------|-------|-------|-------|-----|
| 0 1 | 8.727  | 4.366 | 0.095 | 4.362 | 0.096 | 6 0 |
| 1 2 | 56     | 81    | 96    | 77    | 96    | 9 9 |
| 2 3 | 85     | 95    | 96    | 91    | 96    | 8 8 |
| 3 4 | 8.814  | 4.410 | 97    | 4.406 | 97    | 7 6 |
|     | 43     | 24    | 98    | 20    | 98    | 5 6 |
| 5 5 | 72     | 39    | 98    | 35    | 98    | 5 5 |
| 6 6 | 8.901  | 53    | 99    | 49    | 99    | 4 4 |
| 7 7 | 30     | 68    | 0.100 | 64    | 0.100 | 3 3 |
| 8 8 | 59     | 83    | 0     | 78    | 0-    | 2 1 |
| 9 9 | 88     | 97    | 1     | 93    | 1     | 5 1 |
| 1 0 | 9.018  | 4.512 | 2     | 4.507 | 2     | 5 0 |
| 1 1 | 47     | 26    | 2     | 22    | 2     | 4 9 |
| 1 2 | 76     | 41    | 3     | 36    | 3     | 4 8 |
| 1 3 | 9.105  | 55    | 4     | 51    | 4     | 4 7 |
| 1 4 | 34     | 70    | 4     | 65    | 4     | 4 6 |
| 1 5 | 63     | 85    | 5     | 80    | 5     | 4 5 |
| 1 6 | 92     | 99    | 6     | 94    | 6     | 4 4 |
| 1 7 | 9.221  | 4.614 | 6     | 4.609 | 6     | 4 3 |
| 1 8 | 50     | 28    | 7     | 24    | 7     | 4 2 |
| 1 9 | 79     | 43    | 8     | 38    | 8     | 4 1 |
| 2 0 | 9.308  | 58    | 8     | 53    | 8     | 4 0 |
| 2 1 | 38     | 72    | 9     | 67    | 9     | 9 9 |
| 2 2 | 67     | 87    | 0.110 | 82    | 0.110 | 8 8 |
| 2 3 | 96     | 4.701 | 10    | 96    | 10    | 7 6 |
| 2 4 | 9.425  | 16    | 11    | 4.711 | 11    | 6 6 |
| 2 5 | 54     | 30    | 12    | 25    | 12    | 5 5 |
| 2 6 | 83     | 45    | 12    | 40    | 12    | 4 4 |
| 2 7 | 9.512  | 60    | 13    | 54    | 13    | 3 3 |
| 2 8 | 41     | 74    | 14    | 69    | 14    | 2 2 |
| 2 9 | 70     | 89    | 15    | 83    | 14    | 1 1 |
| 3 0 | 99     | 4.803 | 15    | 98    | 15    | 0 0 |
| 3 1 | 9.628  | 18    | 16    | 4.812 | 16    | 9 9 |
| 3 2 | 57     | 32    | 17    | 27    | 17    | 8 8 |
| 3 3 | 87     | 47    | 17    | 41    | 17    | 7 6 |
| 3 4 | 9.716  | 62    | 18    | 56    | 18    | 6 6 |
| 3 5 | 45     | 76    | 19    | 71    | 19    | 5 5 |
| 3 6 | 74     | 91    | 19    | 85    | 19    | 4 4 |
| 3 7 | 9.803  | 4.905 | 0.120 | 4.900 | 0.120 | 3 3 |
| 3 8 | 32     | 20    | 21    | 14    | 21    | 2 2 |
| 3 9 | 61     | 35    | 22    | 29    | 22    | 1 1 |
| 4 0 | 90     | 49    | 22    | 43    | 22    | 0 0 |
| 4 1 | 9.919  | 64    | 23    | 58    | 23    | 9 9 |
| 4 2 | 48     | 78    | 24    | 72    | 24    | 8 8 |
| 4 3 | 77     | 93    | 25    | 87    | 24    | 7 6 |
| 4 4 | 10.007 | 5.007 | 25    | 5.001 | 25    | 6 6 |
| 4 5 | 36     | 22    | 26    | 16    | 26    | 5 5 |
| 4 6 | 65     | 37    | 27    | 30    | 27    | 4 4 |
| 4 7 | 94     | 51    | 27    | 45    | 27    | 3 3 |
| 4 8 | 10.123 | 66    | 28    | 59    | 28    | 2 2 |
| 4 9 | 52     | 80    | 29    | 74    | 29    | 1 1 |
| 5 0 | 81     | 95    | 0.130 | 88    | 0.130 | 1 0 |
| 5 1 | 10.210 | 5.110 | 30    | 5.103 | 30    | 9 9 |
| 5 2 | 39     | 24    | 31    | 17    | 31    | 8 8 |
| 5 3 | 68     | 39    | 32    | 32    | 32    | 7 6 |
| 5 4 | 97     | 53    | 33    | 46    | 33    | 6 6 |
| 5 5 | 10.327 | 68    | 33    | 61    | 33    | 5 5 |
| 5 6 | 56     | 82    | 34    | 76    | 34    | 4 4 |
| 5 7 | 85     | 97    | 35    | 90    | 35    | 3 3 |
| 5 8 | 10.414 | 5.212 | 36    | 5.205 | 35    | 2 2 |
| 5 9 | 43     | 26    | 36    | 19    | 36    | 1 1 |
| 6 0 | 72     | 41    | 37    | 34    | 37    | 0 0 |

| '                               | L  | T                                   | E                                   | X                                   | Y                                | '  |
|---------------------------------|--|-------------------------------------|-------------------------------------|-------------------------------------|----------------------------------|--|
| 0<br>1<br>2<br>3<br>4           | 10.472<br>501<br>30<br>59<br>88          | 5.241<br>55<br>70<br>85<br>99       | 0.137<br>38<br>39<br>39<br>140      | 5.234<br>48<br>63<br>77<br>92       | 0.137<br>38<br>39<br>39<br>140   | 6<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>6 |
| 5<br>6<br>7<br>8<br>9           | 10.617<br>47<br>76<br>10.705<br>34       | 5.314<br>28<br>43<br>58<br>72       | 41<br>42<br>43<br>43<br>44          | 5.306<br>21<br>35<br>50<br>64       | 41<br>42<br>42<br>43<br>44       | 5<br>5<br>4<br>3<br>2<br>1<br>5<br>0           |
| 1<br>1<br>1<br>1<br>1<br>1<br>4 | 63<br>92<br>10.821<br>15<br>50<br>79     | 87<br>5.401<br>15<br>30<br>45       | 45<br>46<br>47<br>47<br>48          | 79<br>93<br>5.408<br>22<br>37       | 45<br>46<br>46<br>47<br>48       | 5<br>0<br>4<br>4<br>4<br>4<br>6                |
| 1<br>1<br>1<br>1<br>1<br>1<br>8 | 10.908<br>37<br>66<br>96<br>11.025<br>18 | 60<br>74<br>89<br>5.503<br>18       | 49<br>0.150<br>51<br>51<br>52       | 51<br>66<br>80<br>95<br>5.509       | 49<br>0.150<br>50<br>51<br>52    | 4<br>5<br>4<br>4<br>4<br>4<br>2                |
| 2<br>2<br>2<br>2<br>2<br>2<br>4 | 54<br>83<br>11.112<br>41<br>70           | 32<br>47<br>62<br>76<br>91          | 53<br>54<br>55<br>55<br>56          | 24<br>39<br>53<br>68<br>82          | 53<br>54<br>54<br>55<br>56       | 4<br>0<br>5<br>4<br>8<br>7<br>6                |
| 2<br>2<br>2<br>2<br>2<br>2<br>9 | 99<br>11.228<br>57<br>86<br>11.316<br>64 | 5.605<br>20<br>35<br>49<br>64       | 57<br>58<br>59<br>59<br>0.160<br>55 | 97<br>5.611<br>26<br>40<br>55       | 57<br>58<br>58<br>59<br>0.160    | 5<br>5<br>4<br>4<br>2<br>2<br>1                |
| 3<br>3<br>3<br>3<br>3<br>3<br>4 | 45<br>74<br>11.403<br>32<br>61           | 78<br>93<br>5.708<br>22<br>37       | 61<br>62<br>63<br>64<br>64          | 69<br>84<br>96<br>5.714<br>27       | 61<br>62<br>63<br>63<br>64       | 3<br>0<br>9<br>9<br>8<br>7<br>6                |
| 3<br>3<br>3<br>3<br>3<br>3<br>9 | 90<br>11.519<br>48<br>77<br>11.606<br>52 | 51<br>66<br>81<br>95<br>5.810<br>69 | 65<br>66<br>67<br>68<br>69          | 42<br>56<br>71<br>85<br>5.800       | 65<br>66<br>67<br>68<br>68       | 3<br>5<br>4<br>4<br>3<br>3<br>2                |
| 4<br>4<br>4<br>4<br>4<br>4<br>4 | 36<br>65<br>94<br>11.723<br>52           | 24<br>39<br>53<br>68<br>83          | 0.170<br>70<br>71<br>72<br>73       | 14<br>29<br>43<br>58<br>73          | 69<br>0.170<br>71<br>72<br>73    | 2<br>0<br>1<br>9<br>1<br>7<br>1<br>6           |
| 4<br>4<br>4<br>4<br>4<br>4<br>9 | 81<br>11.810<br>39<br>68<br>97           | 97<br>5.912<br>26<br>41<br>56       | 74<br>75<br>76<br>76<br>77          | 87<br>5.902<br>16<br>31<br>45       | 73<br>74<br>75<br>76<br>77       | 1<br>6<br>1<br>4<br>1<br>1<br>2<br>1           |
| 5<br>0<br>1<br>1<br>2<br>3<br>4 | 11.926<br>56<br>85<br>12.014<br>43       | 70<br>85<br>99<br>6.014<br>29       | 78<br>79<br>89<br>81<br>82          | 60<br>74<br>89<br>6.003<br>18       | 78<br>79<br>89<br>80<br>81       | 1<br>0<br>9<br>9<br>8<br>7<br>6                |
| 5<br>5<br>6<br>6<br>7<br>8<br>9 | 72<br>12.101<br>30<br>59<br>88<br>12.217 | 43<br>58<br>72<br>87<br>6.102<br>16 | 82<br>83<br>84<br>85<br>86<br>87    | 32<br>47<br>61<br>76<br>90<br>6.105 | 82<br>83<br>84<br>85<br>86<br>87 | 5<br>4<br>4<br>3<br>3<br>2<br>1<br>0           |

## 曲線函數表

| '  | L      | T     | E     | X     | Y     | ' |
|----|--------|-------|-------|-------|-------|---|
| 0  | 12.217 | 6.116 | 0.187 | 6.105 | 0.187 | 0 |
| 1  | 46     | 31    | 88    | 19    | 87    | 6 |
| 2  | 75     | 45    | 89    | 34    | 88    | 8 |
| 3  | 12.305 | 60    | 0.190 | 48    | 89    | 7 |
| 4  | 34     | 75    | 91    | 63    | 0.190 | 6 |
| 5  | 63     | 89    | 91    | 77    | 91    | 5 |
| 6  | 92     | 6.204 | 92    | 92    | 92    | 5 |
| 7  | 12.421 | 18    | 93    | 6.206 | 93    | 3 |
| 8  | 50     | 33    | 94    | 21    | 94    | 3 |
| 9  | 79     | 48    | 95    | 35    | 95    | 1 |
| 10 | 12.508 | 62    | 96    | 50    | 96    | 5 |
| 11 | 37     | 77    | 97    | 64    | 96    | 0 |
| 12 | 66     | 91    | 98    | 79    | 97    | 8 |
| 13 | 95     | 6.306 | 99    | 94    | 98    | 7 |
| 14 | 12.625 | 21    | 0.200 | 6.308 | 99    | 4 |
| 15 | 54     | 35    | 1     | 23    | 0.200 | 6 |
| 16 | 83     | 50    | 1     | 37    | 1     | 4 |
| 17 | 12.712 | 64    | 2     | 52    | 2     | 3 |
| 18 | 41     | 79    | 3     | 66    | 3     | 3 |
| 19 | 70     | 94    | 4     | 81    | 4     | 1 |
| 20 | 99     | 6.408 | 5     | 95    | 5     | 0 |
| 21 | 12.828 | 23    | 6     | 6.410 | 6     | 0 |
| 22 | 57     | 37    | 7     | 24    | 7     | 0 |
| 23 | 86     | 52    | 8     | 39    | 8     | 0 |
| 24 | 12.915 | 67    | 9     | 53    | 8     | 6 |
| 25 | 45     | 81    | 0.210 | 68    | 9     | 5 |
| 26 | 74     | 96    | 11    | 82    | 0.210 | 4 |
| 27 | 13.003 | 6.510 | 12    | 97    | 11    | 3 |
| 28 | 32     | 25    | 13    | 6.511 | 12    | 2 |
| 29 | 61     | 40    | 14    | 26    | 13    | 1 |
| 30 | 90     | 54    | 15    | 40    | 14    | 0 |
| 31 | 13.119 | 69    | 16    | 55    | 15    | 0 |
| 32 | 48     | 84    | 17    | 69    | 16    | 8 |
| 33 | 77     | 98    | 17    | 84    | 17    | 7 |
| 34 | 13.206 | 6.613 | 18    | 98    | 18    | 6 |
| 35 | 35     | 27    | 19    | 6.613 | 19    | 5 |
| 36 | 65     | 42    | 0.220 | 27    | 0.220 | 4 |
| 37 | 94     | 57    | 21    | 42    | 21    | 3 |
| 38 | 13.323 | 71    | 22    | 56    | 22    | 2 |
| 39 | 52     | 86    | 23    | 71    | 23    | 1 |
| 40 | 81     | 6.700 | 24    | 85    | 24    | 0 |
| 41 | 13.410 | 15    | 25    | 6.700 | 25    | 9 |
| 42 | 39     | 30    | 26    | 14    | 26    | 9 |
| 43 | 68     | 44    | 27    | 29    | 27    | 7 |
| 44 | 97     | 59    | 28    | 43    | 28    | 6 |
| 45 | 13.526 | 73    | 29    | 58    | 29    | 5 |
| 46 | 55     | 88    | 0.230 | 72    | 0.230 | 4 |
| 47 | 84     | 6.803 | 31    | 87    | 31    | 3 |
| 48 | 13.614 | 17    | 32    | 6.802 | 32    | 2 |
| 49 | 43     | 32    | 33    | 16    | 33    | 1 |
| 50 | 72     | 47    | 34    | 31    | 34    | 0 |
| 51 | 13.701 | 61    | 35    | 45    | 35    | 9 |
| 52 | 30     | 76    | 36    | 60    | 36    | 8 |
| 53 | 59     | 90    | 37    | 74    | 37    | 7 |
| 54 | 88     | 6.905 | 38    | 89    | 38    | 6 |
| 55 | 13.817 | 20    | 39    | 6.903 | 39    | 5 |
| 56 | 46     | 34    | 0.240 | 18    | 0.240 | 4 |
| 57 | 75     | 49    | 41    | 32    | 41    | 3 |
| 58 | 13.904 | 63    | 42    | 47    | 42    | 2 |
| 59 | 34     | 78    | 43    | 61    | 43    | 1 |
| 60 | 63     | 93    | 44    | 76    | 44    | 0 |

| '  | L      | T     | E     | X     | Y     | '     |
|----|--------|-------|-------|-------|-------|-------|
| 0  | 13.963 | 6.993 | 0.244 | 6.976 | 0.244 | 6.988 |
| 1  | 92     | 7.007 | 45    | 90    | 45    | 50    |
| 2  | 14.021 | 22    | 46    | 7.005 | 46    | 56    |
| 3  | 50     | 37    | 47    | 19    | 47    | 57    |
| 4  | 79     | 51    | 48    | 34    | 48    | 58    |
| 5  | 14.108 | 66    | 49    | 48    | 49    | 55    |
| 6  | 37     | 80    | 0.250 | 63    | 0.250 | 54    |
| 7  | 66     | 95    | 51    | 77    | 51    | 56    |
| 8  | 95     | 7.110 | 52    | 92    | 52    | 57    |
| 9  | 14.224 | 24    | 54    | 7.106 | 53    | 55    |
| 10 | 54     | 39    | 55    | 21    | 54    | 50    |
| 11 | 83     | 54    | 56    | 35    | 55    | 49    |
| 12 | 14.312 | 68    | 57    | 50    | 56    | 48    |
| 13 | 41     | 83    | 58    | 64    | 57    | 47    |
| 14 | 70     | 97    | 59    | 79    | 58    | 46    |
| 15 | 99     | 7.212 | 0.260 | 93    | 59    | 45    |
| 16 | 14.428 | 27    | 61    | 7.208 | 0.260 | 44    |
| 17 | 57     | 41    | 62    | 22    | 61    | 43    |
| 18 | 86     | 56    | 63    | 37    | 62    | 42    |
| 19 | 14.515 | 70    | 64    | 51    | 63    | 41    |
| 20 | 44     | 85    | 65    | 66    | 64    | 40    |
| 21 | 73     | 7.300 | 66    | 80    | 65    | 39    |
| 22 | 14.603 | 14    | 67    | 95    | 66    | 38    |
| 23 | 32     | 29    | 68    | 7.309 | 68    | 37    |
| 24 | 61     | 43    | 69    | 24    | 69    | 36    |
| 25 | 90     | 58    | 0.270 | 38    | 0.270 | 35    |
| 26 | 14.719 | 73    | 71    | 53    | 71    | 34    |
| 27 | 48     | 87    | 72    | 67    | 72    | 33    |
| 28 | 77     | 7.402 | 73    | 82    | 73    | 32    |
| 29 | 14.806 | 17    | 75    | 96    | 74    | 31    |
| 30 | 35     | 31    | 76    | 7.411 | 75    | 30    |
| 31 | 64     | 46    | 77    | 25    | 76    | 29    |
| 32 | 93     | 60    | 78    | 40    | 77    | 28    |
| 33 | 14.923 | 75    | 79    | 54    | 78    | 27    |
| 34 | 52     | 90    | 0.280 | 69    | 79    | 26    |
| 35 | 81     | 7.504 | 81    | 83    | 0.280 | 25    |
| 36 | 15.010 | 19    | 82    | 96    | 82    | 24    |
| 37 | 39     | 34    | 83    | 7.512 | 83    | 23    |
| 38 | 68     | 48    | 85    | 27    | 84    | 22    |
| 39 | 97     | 63    | 86    | 41    | 85    | 21    |
| 40 | 15.126 | 77    | 87    | 56    | 86    | 20    |
| 41 | 55     | 92    | 88    | 70    | 87    | 19    |
| 42 | 84     | 7.607 | 89    | 85    | 88    | 18    |
| 43 | 15.213 | 21    | 0.290 | 99    | 89    | 17    |
| 44 | 43     | 36    | 91    | 7.614 | 0.290 | 16    |
| 45 | 72     | 51    | 92    | 28    | 91    | 15    |
| 46 | 15.301 | 65    | 93    | 43    | 93    | 14    |
| 47 | 30     | 80    | 95    | 57    | 94    | 13    |
| 48 | 59     | 95    | 96    | 72    | 95    | 12    |
| 49 | 88     | 7.709 | 97    | 86    | 96    | 11    |
| 50 | 15.417 | 24    | 98    | 7.701 | 97    | 10    |
| 51 | 46     | 38    | 99    | 15    | 98    | 9     |
| 52 | 75     | 53    | 0.300 | 30    | 99    | 8     |
| 53 | 15.504 | 68    | 1     | 44    | 0.300 | 7     |
| 54 | 23     | 82    | 2     | 59    | 1     | 6     |
| 55 | 53     | 97    | 3     | 73    | 3     | 5     |
| 56 | 92     | 7.812 | 5     | 88    | 4     | 4     |
| 57 | 15.621 | 26    | 6     | 7.802 | 5     | 3     |
| 58 | 50     | 41    | 7     | 17    | 6     | 2     |
| 59 | 79     | 55    | 8     | 31    | 7     | 1     |
| 60 | 15.708 | 70    | 9     | 46    | 8     | 0     |

## 曲線函數表

|     | L      | T     | E     | X     | Y     | '   |
|-----|--------|-------|-------|-------|-------|-----|
| 0 1 | 15.738 | 7.870 | 0.309 | 7.846 | 0.308 | 8 0 |
| 2 3 | 37     | 85    | 0.310 | 60    | 9     | 1   |
| 4 5 | 66     | 99    | 11    | 75    | 0.311 | 2   |
| 6 7 | 95     | 7.914 | 13    | 89    | 12    | 3   |
| 8 9 | 15.824 | 29    | 14    | 7.934 | 13    | 4   |
| 5 6 | 53     | 43    | 15    | 18    | 14    | 5   |
| 7 8 | 82     | 58    | 16    | 33    | 15    | 6   |
| 9 0 | 15.912 | 73    | 17    | 47    | 16    | 7   |
| 1 1 | 41     | 87    | 19    | 62    | 17    | 8   |
| 2 2 | 70     | 8.002 | 0.320 | 76    | 19    | 9   |
| 3 3 | 99     | 16    | 21    | 91    | 0.320 | 0   |
| 4 4 | 16.028 | 31    | 22    | 8.005 | 21    | 1   |
| 5 5 | 57     | 46    | 23    | 20    | 22    | 2   |
| 6 6 | 86     | 60    | 24    | 34    | 23    | 3   |
| 7 7 | 16.115 | 75    | 26    | 49    | 24    | 4   |
| 8 8 | 44     | 90    | 27    | 63    | 26    | 5   |
| 9 9 | 73     | 8.104 | 28    | 78    | 27    | 6   |
| 0 0 | 16.202 | 19    | 29    | 92    | 28    | 7   |
| 1 1 | 32     | 34    | 0.330 | 8.107 | 29    | 8   |
| 2 2 | 61     | 48    | 31    | 21    | 0.330 | 9   |
| 3 3 | 90     | 63    | 33    | 36    | 31    | 0   |
| 4 4 | 16.310 | 78    | 34    | 50    | 33    | 1   |
| 5 5 | 48     | 92    | 35    | 65    | 34    | 2   |
| 6 6 | 77     | 8.207 | 36    | 79    | 35    | 3   |
| 7 7 | 16.406 | 21    | 37    | 94    | 36    | 4   |
| 8 8 | 36     | 36    | 39    | 8.208 | 37    | 5   |
| 9 9 | 64     | 51    | 0.340 | 23    | 39    | 6   |
| 0 0 | 93     | 65    | 41    | 37    | 0.340 | 7   |
| 1 1 | 16.522 | 80    | 42    | 52    | 41    | 8   |
| 2 2 | 52     | 95    | 43    | 66    | 42    | 9   |
| 3 3 | 81     | 8.309 | 45    | 81    | 43    | 0   |
| 4 4 | 16.610 | 24    | 46    | 95    | 45    | 1   |
| 5 5 | 39     | 39    | 47    | 8.310 | 46    | 2   |
| 6 6 | 68     | 53    | 48    | 24    | 47    | 3   |
| 7 7 | 97     | 68    | 0.350 | 39    | 48    | 4   |
| 8 8 | 16.726 | 83    | 51    | 53    | 49    | 5   |
| 9 9 | 55     | 97    | 52    | 68    | 0.351 | 6   |
| 0 0 | 84     | 8.412 | 53    | 82    | 52    | 7   |
| 1 1 | 16.813 | 26    | 54    | 97    | 53    | 8   |
| 2 2 | 42     | 41    | 56    | 8.411 | 54    | 9   |
| 3 3 | 72     | 56    | 57    | 26    | 56    | 0   |
| 4 4 | 16.901 | 70    | 58    | 40    | 57    | 1   |
| 5 5 | 30     | 85    | 59    | 55    | 58    | 2   |
| 6 6 | 59     | 8.500 | 0.361 | 69    | 59    | 3   |
| 7 7 | 88     | 14    | 62    | 84    | 0.361 | 4   |
| 8 8 | 17.017 | 29    | 63    | 98    | 62    | 5   |
| 9 9 | 46     | 44    | 64    | 8.153 | 63    | 6   |
| 0 0 | 75     | 58    | 66    | 27    | 64    | 7   |
| 1 1 | 17.104 | 73    | 67    | 42    | 65    | 8   |
| 2 2 | 33     | 88    | 68    | 56    | 67    | 9   |
| 3 3 | 62     | 8.602 | 69    | 71    | 68    | 0   |
| 4 4 | 91     | 17    | 0.371 | 85    | 69    | 1   |
| 5 5 | 17.221 | 32    | 72    | 8.600 | 0.372 | 2   |
| 6 6 | 50     | 46    | 73    | 14    | 72    | 3   |
| 7 7 | 79     | 61    | 74    | 29    | 73    | 4   |
| 8 8 | 17.303 | 76    | 76    | 43    | 74    | 5   |
| 9 9 | 37     | 90    | 77    | 58    | 76    | 6   |
| 0 0 | 66     | 8.705 | 78    | 72    | 77    | 7   |
| 1 1 | 95     | 20    | 79    | 87    | 78    | 8   |
| 2 2 | 17.424 | 34    | 0.381 | 8.701 | 79    | 9   |
| 3 3 | 53     | 49    | 82    | 16    | 0.381 | 0   |

## 曲線函數表

|     | L      | T     | E     | X     | Y     |     |
|-----|--------|-------|-------|-------|-------|-----|
| 0 1 | 17.453 | 8.749 | 0.382 | 8.716 | 0.381 | 6 0 |
| 2   | 82     | 64    | 83    | 30    | 82    | 0 0 |
| 3   | 17.511 | 78    | 85    | 45    | 83    | 0 0 |
| 4   | 41     | 93    | 86    | 59    | 84    | 0 0 |
|     | 70     | 8.908 | 87    | 74    | 86    | 0 6 |
| 5   | 99     | 22    | 88    | 88    | 87    | 5 5 |
| 6   | 17.628 | 37    | 0.390 | 8.803 | 88    | 5 4 |
| 7   | 57     | 52    | 91    | 17    | 0.390 | 5 0 |
| 8   | 86     | 66    | 92    | 32    | 91    | 5 0 |
| 9   | 17.715 | 81    | 94    | 46    | 92    | 5 0 |
| 1 0 | 44     | 95    | 95    | 61    | 93    | 0 0 |
| 1 1 | 73     | 8.910 | 96    | 75    | 95    | 4 4 |
| 1 2 | 17.802 | 25    | 98    | 89    | 96    | 4 4 |
| 1 3 | 31     | 39    | 99    | 8.904 | 97    | 4 4 |
| 1 4 | 61     | 54    | 0.400 | 18    | 99    | 4 6 |
| 1 5 | 90     | 69    | 1     | 33    | 0.400 | 4 5 |
| 1 6 | 17.919 | 83    | 3     | 47    | 1     | 4 4 |
| 1 7 | 48     | 98    | 4     | 62    | 2     | 4 4 |
| 1 8 | 77     | 9.013 | 5     | 76    | 4     | 4 4 |
| 1 9 | 18.006 | 27    | 7     | 91    | 5     | 4 4 |
| 2 0 | 35     | 42    | 8     | 9.005 | 6     | 4 0 |
| 2 1 | 64     | 57    | 9     | 20    | 8     | 0 0 |
| 2 2 | 93     | 71    | 0.411 | 34    | 9     | 0 0 |
| 2 3 | 18.122 | 85    | 12    | 49    | 0.410 | 0 6 |
| 2 4 | 51     | 9.101 | 13    | 63    | 12    | 0 6 |
| 2 5 | 81     | 15    | 15    | 78    | 13    | 0 5 |
| 2 6 | 18.210 | 30    | 16    | 92    | 14    | 0 4 |
| 2 7 | 39     | 45    | 17    | 9.107 | 16    | 0 0 |
| 2 8 | 68     | 59    | 19    | 21    | 17    | 0 0 |
| 2 9 | 97     | 74    | 0.420 | 36    | 18    | 0 7 |
| 3 0 | 18.326 | 89    | 21    | 50    | 0.420 | 0 0 |
| 3 1 | 55     | 9.203 | 23    | 65    | 21    | 0 0 |
| 3 2 | 84     | 18    | 24    | 79    | 22    | 0 0 |
| 3 3 | 18.413 | 33    | 25    | 94    | 24    | 0 0 |
| 3 4 | 42     | 47    | 27    | 9.208 | 25    | 0 6 |
| 3 5 | 71     | 62    | 28    | 23    | 26    | 2 5 |
| 3 6 | 18.500 | 77    | 29    | 37    | 28    | 2 4 |
| 3 7 | 90     | 91    | 0.431 | 51    | 29    | 2 0 |
| 3 8 | 59     | 9.306 | 32    | 66    | 0.430 | 2 0 |
| 3 9 | 88     | 21    | 33    | 80    | 32    | 2 1 |
| 4 0 | 18.617 | 35    | 35    | 95    | 33    | 2 0 |
| 4 1 | 46     | 50    | 36    | 9.309 | 34    | 1 6 |
| 4 2 | 75     | 65    | 38    | 24    | 36    | 1 6 |
| 4 3 | 18.704 | 79    | 39    | 38    | 37    | 1 7 |
| 4 4 | 33     | 94    | 0.440 | 53    | 38    | 1 6 |
| 4 5 | 62     | 9.409 | 42    | 67    | 0.440 | 1 5 |
| 4 6 | 91     | 23    | 43    | 82    | 41    | 1 4 |
| 4 7 | 18.820 | 38    | 44    | 96    | 42    | 1 3 |
| 4 8 | 50     | 53    | 46    | 9.411 | 44    | 1 2 |
| 4 9 | 79     | 68    | 47    | 25    | 45    | 1 1 |
| 5 0 | 18.908 | 82    | 49    | 40    | 47    | 1 0 |
| 5 1 | 37     | 97    | 0.450 | 54    | 48    | 0 9 |
| 5 2 | 66     | 8.512 | 51    | 69    | 49    | 0 8 |
| 5 3 | 95     | 25    | 53    | 83    | 0.451 | 0 7 |
| 5 4 | 19.024 | 41    | 54    | 98    | 52    | 0 6 |
| 5 5 | 53     | 56    | 56    | 9.512 | 53    | 5 4 |
| 5 6 | 82     | 70    | 57    | 27    | 55    | 4 4 |
| 5 7 | 19.111 | 85    | 58    | 41    | 56    | 3 3 |
| 5 8 | 40     | 9.600 | 0.460 | 56    | 58    | 3 0 |
| 5 9 | 70     | 14    | 61    | 70    | 59    | 2 1 |
| 6 0 | 99     | 29    | 63    | 85    | 0.460 | 0 0 |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '  |
|----|--------|--------|-------|--------|-------|----|
| 0  | 19.199 | 9.629  | 0.453 | 9.585  | 0.460 | 60 |
| 1  | 19.228 | 44     | 64    | 99     | 62    | 09 |
| 2  | 57     | 58     | 65    | 9.614  | 63    | 98 |
| 3  | 86     | 73     | 67    | 28     | 65    | 87 |
| 4  | 19.315 | 88     | 68    | 43     | 66    | 76 |
| 5  | 44     | 9.702  | 0.470 | 57     | 67    | 55 |
| 6  | 73     | 17     | 71    | 71     | 69    | 44 |
| 7  | 19.402 | 32     | 72    | 86     | 0.470 | 33 |
| 8  | 31     | 46     | 74    | 9.700  | 72    | 22 |
| 9  | 60     | 61     | 75    | 15     | 73    | 51 |
| 10 | 90     | 76     | 77    | 29     | 74    | 09 |
| 11 | 19.519 | 90     | 78    | 44     | 76    | 48 |
| 12 | 48     | 9.805  | 0.480 | 58     | 77    | 88 |
| 13 | 77     | 20     | 81    | 73     | 79    | 47 |
| 14 | 19.606 | 34     | 82    | 87     | 0.480 | 46 |
| 15 | 35     | 49     | 84    | 9.802  | 81    | 45 |
| 16 | 64     | 64     | 85    | 16     | 83    | 44 |
| 17 | 93     | 78     | 87    | 31     | 84    | 43 |
| 18 | 19.722 | 93     | 88    | 45     | 86    | 42 |
| 19 | 51     | 9.908  | 0.490 | 60     | 87    | 41 |
| 20 | 80     | 32     | 91    | 74     | 89    | 40 |
| 01 | 19.819 | 37     | 93    | 89     | 0.490 | 98 |
| 02 | 39     | 52     | 94    | 9.903  | 92    | 88 |
| 03 | 68     | 67     | 95    | 18     | 93    | 77 |
| 04 | 97     | 81     | 97    | 32     | 94    | 66 |
| 05 | 19.926 | 96     | 98    | 46     | 96    | 55 |
| 06 | 55     | 10.011 | 0.500 | 61     | 97    | 44 |
| 07 | 84     | 25     | 1     | 75     | 99    | 33 |
| 08 | 20.013 | 40     | 3     | 90     | 0.500 | 22 |
| 09 | 42     | 55     | 4     | 10.004 | 2     | 11 |
| 10 | 71     | 69     | 6     | 19     | 3     | 09 |
| 11 | 20.100 | 84     | 7     | 36     | 6     | 98 |
| 12 | 29     | 99     | 9     | 48     | 6     | 87 |
| 13 | 59     | 10.113 | 0.510 | 62     | 7     | 76 |
| 14 | 88     | 26     | 12    | 77     | 9     | 65 |
| 15 | 20.217 | 43     | 13    | 91     | 0.510 | 54 |
| 16 | 46     | 58     | 15    | 10.106 | 12    | 43 |
| 17 | 75     | 72     | 16    | 20     | 13    | 32 |
| 18 | 20.304 | 87     | 18    | 35     | 15    | 21 |
| 19 | 33     | 10.202 | 19    | 49     | 16    | 10 |
| 40 | 62     | 16     | 0.521 | 64     | 18    | 20 |
| 41 | 91     | 31     | 22    | 78     | 19    | 19 |
| 42 | 20.420 | 46     | 24    | 92     | 0.521 | 18 |
| 43 | 49     | 60     | 25    | 10.207 | 22    | 17 |
| 44 | 79     | 75     | 27    | 21     | 24    | 16 |
| 45 | 20.508 | 90     | 28    | 36     | 25    | 15 |
| 46 | 37     | 10.305 | 0.530 | 50     | 27    | 14 |
| 47 | 66     | 19     | 31    | 65     | 28    | 13 |
| 48 | 95     | 34     | 33    | 79     | 0.530 | 12 |
| 49 | 20.624 | 49     | 34    | 94     | 31    | 11 |
| 50 | 53     | 63     | 36    | 10.308 | 33    | 10 |
| 51 | 82     | 78     | 37    | 23     | 34    | 09 |
| 52 | 20.711 | 93     | 38    | 37     | 36    | 08 |
| 53 | 40     | 10.407 | 0.540 | 52     | 37    | 07 |
| 54 | 69     | 22     | 42    | 66     | 39    | 06 |
| 55 | 99     | 37     | 43    | 81     | 0.540 | 54 |
| 56 | 20.828 | 52     | 45    | 95     | 42    | 43 |
| 57 | 57     | 66     | 46    | 10.410 | 43    | 32 |
| 58 | 86     | 81     | 48    | 24     | 45    | 21 |
| 59 | 20.915 | 96     | 49    | 38     | 45    | 10 |
| 60 | 44     | 10.510 | 0.551 | 53     | 48    | 09 |

## 曲線圖數表

| '  | L      | T      | E     | X      | Y     | ' |
|----|--------|--------|-------|--------|-------|---|
| 0  | 20.944 | 10.510 | 0.551 | 10.453 | 0.548 | 8 |
| 1  | 73     | 25     | 52    | 67     | 94    | 0 |
| 2  | 21.002 | 40     | 54    | 82     | 0.551 | 0 |
| 3  | 31     | 54     | 55    | 96     | 52    | 0 |
| 4  | 60     | 69     | 57    | 10.511 | 54    | 7 |
| 5  | 89     | 84     | 59    | 25     | 55    | 5 |
| 6  | 21.118 | 99     | 0.560 | 59     | 57    | 5 |
| 7  | 48     | 10.613 | 62    | 64     | 59    | 3 |
| 8  | 77     | 28     | 63    | 69     | 0.560 | 3 |
| 9  | 21.206 | 43     | 65    | 83     | 62    | 2 |
| 10 | 35     | 57     | 65    | 99     | 63    | 0 |
| 11 | 64     | 72     | 68    | 10.612 | 65    | 0 |
| 12 | 93     | 87     | 69    | 25     | 66    | 0 |
| 13 | 21.322 | 10.702 | 0.571 | 41     | 68    | 0 |
| 14 | 51     | 16     | 73    | 55     | 69    | 4 |
| 15 | 80     | 31     | 74    | 70     | 0.571 | 5 |
| 16 | 21.409 | 46     | 76    | 84     | 72    | 4 |
| 17 | 38     | 60     | 77    | 99     | 74    | 4 |
| 18 | 68     | 75     | 79    | 10.713 | 76    | 4 |
| 19 | 97     | 90     | 0.580 | 23     | 77    | 4 |
| 20 | 21.525 | 10.805 | 82    | 42     | 79    | 0 |
| 1  | 55     | 19     | 84    | 57     | 0.580 | 0 |
| 2  | 84     | 34     | 85    | 71     | 82    | 0 |
| 3  | 21.613 | 49     | 87    | 86     | 83    | 0 |
| 4  | 42     | 64     | 88    | 10.800 | 85    | 0 |
| 5  | 71     | 78     | 0.590 | 14     | 86    | 0 |
| 6  | 21.700 | 93     | 92    | 29     | 88    | 0 |
| 7  | 29     | 10.908 | 93    | 43     | 0.590 | 0 |
| 8  | 58     | 22     | 95    | 53     | 91    | 0 |
| 9  | 88     | 37     | 96    | 72     | 93    | 1 |
| 10 | 21.817 | 52     | 98    | 87     | 94    | 0 |
| 11 | 46     | 67     | 0.600 | 10.901 | 95    | 0 |
| 12 | 75     | 81     | 1     | 16     | 97    | 0 |
| 13 | 21.904 | 96     | 3     | 30     | 98    | 0 |
| 14 | 33     | 11.011 | 4     | 45     | 0.601 | 0 |
| 15 | 62     | 25     | 6     | 59     | 2     | 0 |
| 16 | 91     | 40     | 8     | 73     | 4     | 0 |
| 17 | 22.020 | 55     | 9     | 88     | 5     | 0 |
| 18 | 49     | 70     | 0.611 | 11.002 | 7     | 0 |
| 19 | 78     | 84     | 12    | 17     | 9     | 1 |
| 20 | 22.108 | 89     | 14    | 31     | 0.610 | 0 |
| 1  | 37     | 11.114 | 16    | 46     | 12    | 0 |
| 2  | 66     | 28     | 17    | 60     | 14    | 0 |
| 3  | 95     | 43     | 19    | 75     | 15    | 0 |
| 4  | 22.224 | 58     | 0.621 | 89     | 17    | 0 |
| 5  | 53     | 73     | 22    | 11.103 | 18    | 1 |
| 6  | 82     | 87     | 24    | 18     | 0.620 | 5 |
| 7  | 22.311 | 11.202 | 26    | 32     | 23    | 5 |
| 8  | 40     | 17     | 27    | 47     | 23    | 5 |
| 9  | 69     | 32     | 29    | 61     | 25    | 1 |
| 10 | 22.427 | 46     | 0.630 | 76     | 27    | 0 |
| 11 | 57     | 61     | 32    | 90     | 28    | 0 |
| 12 | 86     | 76     | 34    | 11.205 | 0.630 | 0 |
| 13 | 22.515 | 90     | 35    | 19     | 31    | 0 |
| 14 | 98     | 11.305 | 37    | 34     | 33    | 0 |
| 15 | 44     | 20     | 39    | 48     | 35    | 5 |
| 16 | 73     | 35     | 0.640 | 62     | 36    | 4 |
| 17 | 22.602 | 49     | 42    | 77     | 38    | 0 |
| 18 | 31     | 64     | 44    | 91     | 38    | 0 |
| 19 | 60     | 79     | 45    | 11.306 | 41    | 0 |
| 20 | 89     | 94     | 47    | 20     | 43    | 0 |



## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '  |
|----|--------|--------|-------|--------|-------|----|
| 0  | 22.689 | 11.394 | 0.647 | 11.320 | 0.643 | 60 |
| 1  | 22.718 | 11.408 | 49    | 35     | 45    | 66 |
| 2  | 47     | 23     | 0.650 | 49     | 46    | 69 |
| 3  | 77     | 38     | 62    | 64     | 48    | 55 |
| 4  | 22.806 | 53     | 54    | 76     | 49    | 56 |
| 5  | 35     | 67     | 55    | 93     | 0.651 | 55 |
| 6  | 64     | 82     | 57    | 11.407 | 53    | 56 |
| 7  | 93     | 97     | 59    | 21     | 54    | 53 |
| 8  | 22.922 | 11.511 | 0.660 | 36     | 55    | 55 |
| 9  | 51     | 26     | 62    | 50     | 58    | 51 |
| 10 | 80     | 41     | 64    | 65     | 59    | 50 |
| 11 | 23.009 | 56     | 66    | 79     | 0.661 | 49 |
| 12 | 38     | 70     | 67    | 94     | 63    | 48 |
| 13 | 67     | 85     | 69    | 11.508 | 64    | 47 |
| 14 | 97     | 11.600 | 0.671 | 23     | 66    | 46 |
| 15 | 23.126 | 15     | 72    | 37     | 68    | 45 |
| 16 | 55     | 29     | 74    | 52     | 69    | 44 |
| 17 | 84     | 44     | 76    | 66     | 0.671 | 43 |
| 18 | 23.213 | 59     | 77    | 80     | 73    | 42 |
| 19 | 42     | 74     | 79    | 95     | 75    | 41 |
| 20 | 71     | 88     | 0.681 | 11.609 | 76    | 40 |
| 21 | 23.300 | 11.703 | 83    | 24     | 78    | 39 |
| 22 | 29     | 18     | 84    | 38     | 0.680 | 38 |
| 23 | 58     | 33     | 86    | 53     | 81    | 37 |
| 24 | 87     | 47     | 88    | 67     | 83    | 36 |
| 25 | 23.417 | 62     | 89    | 82     | 85    | 35 |
| 26 | 46     | 77     | 0.691 | 96     | 86    | 34 |
| 27 | 75     | 92     | 93    | 11.710 | 88    | 33 |
| 28 | 23.504 | 11.806 | 95    | 25     | 0.690 | 32 |
| 29 | 33     | 21     | 96    | 39     | 91    | 31 |
| 30 | 62     | 36     | 98    | 54     | 93    | 30 |
| 31 | 91     | 11.851 | 0.700 | 68     | 95    | 29 |
| 32 | 23.620 | 65     | 2     | 83     | 97    | 28 |
| 33 | 49     | 80     | 3     | 97     | 98    | 27 |
| 34 | 78     | 95     | 5     | 11.812 | 0.700 | 26 |
| 35 | 23.707 | 11.910 | 7     | 26     | 2     | 25 |
| 36 | 36     | 24     | 8     | 40     | 3     | 24 |
| 37 | 66     | 39     | 0.710 | 55     | 5     | 23 |
| 38 | 95     | 54     | 12    | 69     | 7     | 22 |
| 39 | 23.824 | 69     | 14    | 84     | 9     | 21 |
| 40 | 53     | 83     | 15    | 96     | 0.710 | 20 |
| 41 | 82     | 98     | 17    | 11.913 | 12    | 19 |
| 42 | 23.911 | 12.013 | 19    | 27     | 14    | 18 |
| 43 | 40     | 27     | 0.721 | 42     | 16    | 17 |
| 44 | 69     | 42     | 23    | 56     | 17    | 16 |
| 45 | 98     | 57     | 24    | 70     | 19    | 15 |
| 46 | 24.027 | 72     | 26    | 85     | 0.721 | 14 |
| 47 | 56     | 87     | 28    | 99     | 22    | 13 |
| 48 | 86     | 12.101 | 0.730 | 12.014 | 24    | 12 |
| 49 | 24.115 | 16     | 31    | 28     | 25    | 11 |
| 50 | 44     | 31     | 33    | 43     | 28    | 10 |
| 51 | 73     | 46     | 35    | 57     | 29    | 9  |
| 52 | 24.202 | 60     | 37    | 71     | 0.731 | 8  |
| 53 | 31     | 75     | 38    | 86     | 33    | 7  |
| 54 | 60     | 90     | 0.740 | 12.100 | 35    | 6  |
| 55 | 89     | 12.205 | 42    | 15     | 36    | 5  |
| 56 | 24.318 | 19     | 44    | 29     | 38    | 4  |
| 57 | 47     | 34     | 46    | 44     | 0.740 | 3  |
| 58 | 76     | 49     | 47    | 58     | 42    | 2  |
| 59 | 24.406 | 64     | 49    | 72     | 44    | 1  |
| 60 | 35     | 78     | 0.751 | 87     | 45    | 0  |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | ' |
|----|--------|--------|-------|--------|-------|---|
| 0  | 24.435 | 12.278 | 0.751 | 12.187 | 0.745 | 0 |
| 1  | 64     | 93     | 53    | 12.201 | 47    | 5 |
| 2  | 93     | 12.308 | 55    | 16     | 49    | 5 |
| 3  | 24.522 | 23     | 56    | 30     | 0.751 | 5 |
| 4  | 51     | 37     | 58    | 45     | 52    | 5 |
| 5  | 80     | 52     | 0.760 | 59     | 54    | 5 |
| 6  | 24.609 | 67     | 62    | 74     | 56    | 5 |
| 7  | 38     | 82     | 64    | 88     | 58    | 5 |
| 8  | 67     | 97     | 65    | 12.302 | 0.760 | 5 |
| 9  | 96     | 12.411 | 67    | 17     | 61    | 5 |
| 10 | 24.725 | 26     | 69    | 31     | 63    | 5 |
| 11 | 55     | 41     | 0.771 | 46     | 65    | 5 |
| 12 | 84     | 56     | 73    | 60     | 67    | 5 |
| 13 | 24.813 | 70     | 75    | 75     | 69    | 5 |
| 14 | 42     | 85     | 76    | 89     | 0.770 | 5 |
| 15 | 71     | 12.500 | 78    | 12.403 | 72    | 4 |
| 16 | 24.900 | 15     | 0.780 | 18     | 74    | 4 |
| 17 | 29     | 30     | 82    | 32     | 76    | 4 |
| 18 | 58     | 44     | 84    | 47     | 78    | 4 |
| 19 | 87     | 59     | 86    | 61     | 79    | 4 |
| 20 | 25.016 | 74     | 87    | 76     | 0.781 | 4 |
| 1  | 45     | 89     | 89    | 90     | 83    | 4 |
| 2  | 75     | 12.603 | 0.791 | 12.504 | 85    | 4 |
| 3  | 25.104 | 18     | 93    | 19     | 87    | 4 |
| 4  | 33     | 33     | 95    | 33     | 89    | 4 |
| 5  | 62     | 48     | 97    | 48     | 0.790 | 3 |
| 6  | 91     | 63     | 99    | 62     | 92    | 3 |
| 7  | 25.220 | 77     | 0.800 | 77     | 94    | 3 |
| 8  | 49     | 92     | 2     | 91     | 96    | 3 |
| 9  | 78     | 12.707 | 4     | 12.605 | 98    | 3 |
| 0  | 25.307 | 22     | 6     | 20     | 0.800 | 0 |
| 1  | 35     | 36     | 8     | 34     | 1     | 0 |
| 2  | 65     | 51     | 0.810 | 49     | 3     | 0 |
| 3  | 95     | 66     | 12    | 63     | 5     | 0 |
| 4  | 25.424 | 81     | 13    | 78     | 7     | 2 |
| 5  | 53     | 96     | 15    | 92     | 9     | 2 |
| 6  | 82     | 12.810 | 17    | 12.707 | 0.811 | 2 |
| 7  | 25.511 | 25     | 19    | 21     | 12    | 2 |
| 8  | 40     | 40     | 0.821 | 35     | 14    | 2 |
| 9  | 69     | 55     | 23    | 50     | 16    | 2 |
| 0  | 98     | 69     | 25    | 64     | 18    | 2 |
| 1  | 25.627 | 84     | 27    | 79     | 0.820 | 1 |
| 2  | 56     | 99     | 29    | 93     | 22    | 1 |
| 3  | 85     | 12.914 | 0.830 | 12.807 | 24    | 1 |
| 4  | 25.715 | 29     | 32    | 22     | 25    | 1 |
| 5  | 44     | 43     | 34    | 36     | 27    | 1 |
| 6  | 73     | 58     | 36    | 51     | 29    | 1 |
| 7  | 25.802 | 73     | 38    | 65     | 0.891 | 1 |
| 8  | 31     | 88     | 0.840 | 80     | 33    | 1 |
| 9  | 60     | 13.003 | 42    | 94     | 35    | 1 |
| 0  | 89     | 17     | 44    | 12.908 | 37    | 1 |
| 1  | 25.918 | 32     | 46    | 23     | 39    | 0 |
| 2  | 47     | 47     | 48    | 37     | 0.840 | 8 |
| 3  | 76     | 62     | 49    | 52     | 42    | 7 |
| 4  | 26.005 | 76     | 0.851 | 66     | 44    | 6 |
| 5  | 34     | 91     | 53    | 81     | 46    | 5 |
| 6  | 64     | 13.106 | 55    | 96     | 48    | 4 |
| 7  | 93     | 21     | 57    | 13.009 | 0.850 | 3 |
| 8  | 25.122 | 36     | 59    | 24     | 52    | 2 |
| 9  | 51     | 50     | 0.861 | 38     | 54    | 1 |
| 0  | 80     | 65     | 63    | 53     | 56    | 0 |

## 曲線函數表

|     | L      | T      | E     | X      | Y     |     |
|-----|--------|--------|-------|--------|-------|-----|
| 0   | 26.180 | 13.165 | 0.863 | 13.063 | 0.856 | 6 0 |
| 1   | 26.209 | 80     | 65    | 67     | 57    | 5 8 |
| 2   | 38     | 95     | 67    | 82     | 59    | 5 8 |
| 3   | 67     | 13.210 | 69    | 96     | 0.861 | 5 7 |
| 4   | 96     | 24     | 0.871 | 13.110 | 63    | 5 6 |
| 5   | 26.325 | 39     | 73    | 25     | 65    | 5 5 |
| 6   | 54     | 54     | 75    | 39     | 67    | 5 4 |
| 7   | 84     | 69     | 77    | 54     | 69    | 5 3 |
| 8   | 26.413 | 84     | 78    | 68     | 0.871 | 5 2 |
| 9   | 42     | 98     | 0.880 | 82     | 73    | 5 1 |
| 1 0 | 71     | 13.313 | 82    | 97     | 76    | 5 0 |
| 1 1 | 26.500 | 28     | 84    | 13.211 | 77    | 4 9 |
| 1 2 | 29     | 43     | 86    | 26     | 79    | 4 8 |
| 1 3 | 58     | 58     | 88    | 40     | 0.880 | 4 7 |
| 1 4 | 87     | 72     | 0.890 | 56     | 82    | 4 6 |
| 1 5 | 26.616 | 87     | 92    | 69     | 84    | 4 5 |
| 1 6 | 45     | 13.402 | 94    | 83     | 86    | 4 4 |
| 1 7 | 74     | 17     | 96    | 98     | 88    | 4 3 |
| 1 8 | 26.704 | 32     | 98    | 13.312 | 0.890 | 4 2 |
| 1 9 | 33     | 46     | 0.900 | 27     | 92    | 4 1 |
| 2 0 | 62     | 61     | 2     | 41     | 94    | 4 0 |
| 0 1 | 91     | 76     | 4     | 55     | 96    | 3 9 |
| 0 2 | 26.820 | 91     | 6     | 70     | 98    | 3 8 |
| 0 3 | 49     | 13.506 | 8     | 84     | 0.900 | 3 7 |
| 0 4 | 78     | 20     | 0.910 | 99     | 2     | 3 6 |
| 0 5 | 26.907 | 35     | 12    | 13.413 | 4     | 3 5 |
| 0 6 | 36     | 50     | 14    | 27     | 6     | 3 4 |
| 0 7 | 65     | 65     | 16    | 42     | 7     | 3 3 |
| 0 8 | 94     | 80     | 18    | 56     | 9     | 3 2 |
| 0 9 | 27.024 | 95     | 0.920 | 71     | 0.911 | 3 1 |
| 1 0 | 53     | 13.609 | 22    | 85     | 13    | 3 0 |
| 1 1 | 82     | 24     | 24    | 99     | 15    | 2 9 |
| 1 2 | 27.111 | 59     | 26    | 13.514 | 17    | 2 8 |
| 1 3 | 40     | 54     | 28    | 28     | 19    | 2 7 |
| 1 4 | 60     | 69     | 0.930 | 43     | 0.921 | 2 6 |
| 1 5 | 98     | 84     | 32    | 57     | 23    | 2 5 |
| 1 6 | 27.227 | 98     | 34    | 72     | 25    | 2 4 |
| 1 7 | 56     | 13.713 | 36    | 86     | 27    | 2 3 |
| 1 8 | 85     | 28     | 38    | 13.600 | 29    | 2 2 |
| 1 9 | 27.314 | 43     | 0.940 | 15     | 0.931 | 2 1 |
| 4 0 | 43     | 58     | 42    | 29     | 33    | 2 0 |
| 4 1 | 73     | 72     | 44    | 44     | 35    | 1 9 |
| 4 2 | 27.402 | 87     | 46    | 58     | 37    | 1 8 |
| 4 3 | 31     | 13.802 | 48    | 72     | 39    | 1 7 |
| 4 4 | 60     | 17     | 0.950 | 87     | 0.941 | 1 6 |
| 4 5 | 89     | 32     | 52    | 13.701 | 43    | 1 5 |
| 4 6 | 27.518 | 46     | 54    | 15     | 45    | 1 4 |
| 4 7 | 47     | 61     | 56    | 30     | 47    | 1 3 |
| 4 8 | 70     | 76     | 58    | 44     | 49    | 1 2 |
| 4 9 | 27.605 | 91     | 0.960 | 59     | 0.951 | 1 1 |
| 0 1 | 34     | 13.906 | 62    | 73     | 53    | 1 0 |
| 0 2 | 68     | 21     | 64    | 88     | 55    | 9 9 |
| 0 3 | 98     | 35     | 66    | 13.802 | 57    | 9 8 |
| 0 4 | 27.722 | 50     | 68    | 16     | 59    | 9 7 |
| 0 5 | 51     | 65     | 0.970 | 31     | 0.961 | 9 6 |
| 0 6 | 80     | 80     | 73    | 45     | 63    | 9 5 |
| 0 7 | 27.809 | 95     | 75    | 60     | 65    | 9 4 |
| 0 8 | 38     | 14.010 | 77    | 74     | 67    | 9 3 |
| 0 9 | 67     | 24     | 79    | 88     | 69    | 9 2 |
| 0 0 | 96     | 39     | 0.981 | 13.903 | 0.971 | 9 1 |
| 0 1 | 27.925 | 54     | 83    | 17     | 73    | 9 0 |

|    | L      | T      | E     | X      | Y     |   |
|----|--------|--------|-------|--------|-------|---|
| 0  | 27.925 | 14.054 | 0.933 | 13.917 | 0.973 | 0 |
| 1  | 54     | 69     | 85    | 32     | 75    | 1 |
| 2  | 83     | 84     | 87    | 46     | 77    | 2 |
| 3  | 28.013 | 99     | 89    | 60     | 79    | 3 |
| 4  | 42     | 14.113 | 0.991 | 75     | 0.981 | 4 |
| 5  | 71     | 28     | 93    | 89     | 83    | 5 |
| 6  | 28.100 | 43     | 95    | 14.004 | 85    | 6 |
| 7  | 29     | 58     | 97    | 18     | 87    | 7 |
| 8  | 58     | 73     | 99    | 32     | 0.990 | 8 |
| 9  | 87     | 88     | 1.001 | 47     | 92    | 9 |
| 10 | 28.216 | 14.202 | 4     | 61     | 94    | 0 |
| 11 | 45     | 17     | 6     | 76     | 96    | 1 |
| 12 | 74     | 32     | 8     | 90     | 98    | 2 |
| 13 | 28.303 | 47     | 1.010 | 14.105 | 1.000 | 3 |
| 14 | 33     | 62     | 12    | 19     | 2     | 4 |
| 15 | 62     | 77     | 14    | 33     | 4     | 5 |
| 16 | 91     | 91     | 16    | 48     | 6     | 6 |
| 17 | 28.420 | 14.306 | 18    | 62     | 8     | 7 |
| 18 | 49     | 21     | 1.020 | 76     | 1.010 | 8 |
| 19 | 78     | 36     | 22    | 91     | 12    | 9 |
| 20 | 28.507 | 51     | 25    | 14.205 | 14    | 0 |
| 21 | 36     | 66     | 27    | 20     | 16    | 1 |
| 22 | 65     | 80     | 29    | 34     | 18    | 2 |
| 23 | 94     | 95     | 1.031 | 48     | 1.020 | 3 |
| 24 | 28.623 | 14.410 | 33    | 63     | 22    | 4 |
| 25 | 52     | 25     | 35    | 77     | 24    | 5 |
| 26 | 82     | 40     | 37    | 92     | 27    | 6 |
| 27 | 28.711 | 55     | 39    | 14.306 | 29    | 7 |
| 28 | 40     | 70     | 1.041 | 20     | 1.031 | 8 |
| 29 | 69     | 84     | 44    | 35     | 33    | 9 |
| 30 | 98     | 99     | 46    | 49     | 35    | 0 |
| 31 | 28.827 | 14.514 | 48    | 64     | 37    | 1 |
| 32 | 56     | 29     | 1.050 | 78     | 39    | 2 |
| 33 | 85     | 44     | 52    | 92     | 1.041 | 3 |
| 34 | 28.914 | 59     | 54    | 14.407 | 43    | 4 |
| 35 | 43     | 74     | 56    | 21     | 45    | 5 |
| 36 | 72     | 88     | 59    | 36     | 47    | 6 |
| 37 | 29.002 | 14.603 | 1.061 | 50     | 1.050 | 7 |
| 38 | 31     | 18     | 63    | 64     | 52    | 8 |
| 39 | 60     | 33     | 65    | 79     | 54    | 9 |
| 40 | 89     | 48     | 67    | 93     | 56    | 0 |
| 41 | 29.118 | 63     | 69    | 14.508 | 58    | 1 |
| 42 | 47     | 77     | 1.071 | 22     | 1.060 | 2 |
| 43 | 76     | 92     | 74    | 36     | 62    | 3 |
| 44 | 29.205 | 14.707 | 76    | 51     | 64    | 4 |
| 45 | 34     | 22     | 78    | 65     | 66    | 5 |
| 46 | 63     | 37     | 1.080 | 79     | 69    | 6 |
| 47 | 92     | 52     | 82    | 94     | 1.071 | 7 |
| 48 | 29.322 | 67     | 84    | 14.608 | 73    | 8 |
| 49 | 51     | 82     | 87    | 23     | 75    | 9 |
| 50 | 80     | 96     | 89    | 37     | 77    | 0 |
| 51 | 29.409 | 14.811 | 1.091 | 51     | 79    | 1 |
| 52 | 38     | 26     | 93    | 66     | 1.081 | 2 |
| 53 | 67     | 41     | 95    | 80     | 83    | 3 |
| 54 | 96     | 56     | 98    | 95     | 85    | 4 |
| 55 | 29.525 | 71     | 1.100 | 14.709 | 88    | 5 |
| 56 | 54     | 85     | 2     | 23     | 1.090 | 6 |
| 57 | 83     | 14.900 | 4     | 38     | 82    | 7 |
| 58 | 29.612 | 15     | 6     | 52     | 94    | 8 |
| 59 | 42     | 30     | 8     | 67     | 95    | 9 |
| 60 | 71     | 45     | 1.111 | 81     | 98    | 0 |

## 曲線函數表

|    | L      | T      | E     | X      | Y     | '   |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 29.671 | 14.945 | 1.111 | 14.781 | 1.098 | 6 0 |
| 1  | 29.700 | 60     | 13    | 95     | 1.101 | 5 9 |
| 2  | 29     | 75     | 15    | 14.810 | 3     | 5 8 |
| 3  | 58     | 90     | 17    | 24     | 5     | 5 7 |
| 4  | 87     | 15.005 | 19    | 38     | 7     | 5 6 |
| 5  | 29.816 | 19     | 1.122 | 53     | 9     | 5 5 |
| 6  | 45     | 34     | 24    | 67     | 1.111 | 5 4 |
| 7  | 74     | 49     | 26    | 82     | 14    | 5 3 |
| 8  | 29.903 | 64     | 28    | 96     | 16    | 5 2 |
| 9  | 32     | 79     | 1.131 | 14.910 | 18    | 5 1 |
| 10 | 61     | 94     | 33    | 25     | 1.120 | 5 0 |
| 11 | 91     | 15.109 | 35    | 39     | 22    | 4 9 |
| 12 | 30.020 | 24     | 37    | 54     | 24    | 4 8 |
| 13 | 49     | 38     | 39    | 68     | 27    | 4 7 |
| 14 | 78     | 53     | 1.142 | 82     | 29    | 4 6 |
| 15 | 30.107 | 68     | 44    | 97     | 1.131 | 4 5 |
| 16 | 36     | 83     | 46    | 15.011 | 33    | 4 4 |
| 17 | 65     | 98     | 48    | 25     | 35    | 4 3 |
| 18 | 94     | 15.213 | 1.151 | 40     | 38    | 4 2 |
| 19 | 30.223 | 28     | 53    | 54     | 1.140 | 4 1 |
| 20 | 52     | 43     | 55    | 69     | 42    | 4 0 |
| 21 | 81     | 57     | 57    | 83     | 44    | 3 9 |
| 22 | 30.311 | 72     | 1.160 | 97     | 46    | 3 8 |
| 23 | 40     | 87     | 62    | 15.112 | 48    | 3 7 |
| 24 | 69     | 15.302 | 64    | 26     | 1.151 | 3 6 |
| 25 | 98     | 17     | 66    | 40     | 53    | 3 5 |
| 26 | 30.427 | 32     | 69    | 55     | 55    | 3 4 |
| 27 | 56     | 47     | 1.171 | 69     | 57    | 3 3 |
| 28 | 85     | 62     | 73    | 84     | 59    | 3 2 |
| 29 | 30.514 | 77     | 75    | 98     | 1.162 | 3 1 |
| 30 | 43     | 91     | 78    | 15.212 | 64    | 3 0 |
| 31 | 72     | 15.406 | 80    | 27     | 66    | 2 9 |
| 32 | 30.601 | 21     | 82    | 41     | 68    | 2 8 |
| 33 | 31     | 36     | 84    | 55     | 1.171 | 2 7 |
| 34 | 60     | 51     | 87    | 70     | 73    | 2 6 |
| 35 | 89     | 66     | 89    | 84     | 75    | 2 5 |
| 36 | 30.718 | 81     | 1.191 | 99     | 77    | 2 4 |
| 37 | 47     | 96     | 94    | 15.313 | 79    | 2 3 |
| 38 | 76     | 15.511 | 96    | 27     | 1.182 | 2 2 |
| 39 | 30.805 | 25     | 99    | 42     | 84    | 2 1 |
| 40 | 34     | 40     | 1.200 | 56     | 86    | 2 0 |
| 41 | 63     | 55     | 3     | 70     | 88    | 1 9 |
| 42 | 92     | 70     | 5     | 85     | 1.191 | 1 8 |
| 43 | 30.921 | 85     | 7     | 99     | 93    | 1 7 |
| 44 | 51     | 15.600 | 1.210 | 15.414 | 96    | 1 6 |
| 45 | 80     | 15     | 12    | 28     | 97    | 1 5 |
| 46 | 31.009 | 30     | 14    | 42     | 1.200 | 1 4 |
| 47 | 98     | 45     | 16    | 57     | 2     | 1 3 |
| 48 | 67     | 60     | 19    | 71     | 4     | 1 2 |
| 49 | 96     | 74     | 1.221 | 85     | 6     | 1 1 |
| 50 | 31.125 | 89     | 23    | 15.500 | 9     | 1 0 |
| 51 | 54     | 15.704 | 26    | 14     | 1.211 | 9 9 |
| 52 | 83     | 19     | 28    | 28     | 13    | 9 8 |
| 53 | 31.212 | 34     | 1.230 | 43     | 15    | 9 7 |
| 54 | 41     | 49     | 33    | 57     | 18    | 9 6 |
| 55 | 70     | 64     | 35    | 72     | 1.220 | 5 4 |
| 56 | 31.300 | 79     | 37    | 86     | 22    | 4 3 |
| 57 | 29     | 94     | 1.240 | 15.600 | 24    | 3 2 |
| 58 | 58     | 15.809 | 42    | 15     | 27    | 2 1 |
| 59 | 87     | 23     | 44    | 29     | 29    | 1 0 |
| 60 | 31.416 | 38     | 47    | 43     | 1.231 | 0   |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '  |
|----|--------|--------|-------|--------|-------|----|
| 0  | 31.416 | 15.838 | 1.247 | 15.643 | 1.231 | 60 |
| 1  | 45     | 53     | 49    | 58     | 33    | 9  |
| 2  | 74     | 68     | 1.251 | 72     | 36    | 8  |
| 3  | 31.503 | 83     | 54    | 86     | 38    | 7  |
| 4  | 32     | 98     | 56    | 15.701 | 1.240 | 6  |
| 5  | 61     | 15.913 | 58    | 15     | 43    | 5  |
| 6  | 90     | 28     | 1.261 | 30     | 45    | 4  |
| 7  | 31.620 | 43     | 63    | 44     | 47    | 3  |
| 8  | 49     | 59     | 65    | 58     | 49    | 2  |
| 9  | 78     | 73     | 68    | 73     | 1.252 | 1  |
| 10 | 31.707 | 88     | 1.270 | 87     | 54    | 50 |
| 11 | 36     | 16.002 | 72    | 15.801 | 56    | 9  |
| 12 | 65     | 17     | 75    | 16     | 59    | 8  |
| 13 | 94     | 32     | 77    | 30     | 1.261 | 7  |
| 14 | 31.823 | 47     | 79    | 44     | 63    | 6  |
| 15 | 52     | 62     | 1.282 | 59     | 65    | 5  |
| 16 | 81     | 77     | 84    | 73     | 68    | 4  |
| 17 | 31.910 | 92     | 87    | 88     | 1.270 | 3  |
| 18 | 40     | 16.107 | 89    | 15.902 | 72    | 2  |
| 19 | 69     | 22     | 1.291 | 16     | 75    | 1  |
| 20 | 98     | 37     | 94    | 31     | 77    | 40 |
| 21 | 32.027 | 52     | 96    | 45     | 79    | 9  |
| 22 | 56     | 67     | 98    | 59     | 1.282 | 8  |
| 23 | 85     | 81     | 1.301 | 74     | 84    | 7  |
| 24 | 32.114 | 96     | 3     | 88     | 86    | 6  |
| 25 | 43     | 16.211 | 5     | 16.002 | 89    | 5  |
| 26 | 72     | 26     | 8     | 17     | 1.291 | 4  |
| 27 | 32.201 | 41     | 1.310 | 31     | 93    | 3  |
| 28 | 30     | 56     | 13    | 45     | 96    | 2  |
| 29 | 60     | 71     | 15    | 60     | 98    | 1  |
| 30 | 89     | 86     | 17    | 74     | 1.300 | 30 |
| 31 | 32.318 | 16.301 | 20    | 89     | 3     | 9  |
| 32 | 47     | 16     | 22    | 16.103 | 5     | 8  |
| 33 | 76     | 31     | 25    | 17     | 7     | 7  |
| 34 | 32.405 | 46     | 27    | 32     | 1.310 | 6  |
| 35 | 34     | 61     | 29    | 46     | 12    | 5  |
| 36 | 63     | 76     | 1.332 | 60     | 14    | 4  |
| 37 | 92     | 91     | 34    | 75     | 17    | 3  |
| 38 | 32.521 | 16.405 | 37    | 89     | 19    | 2  |
| 39 | 50     | 20     | 39    | 16.203 | 1.321 | 1  |
| 40 | 80     | 35     | 1.342 | 18     | 24    | 20 |
| 41 | 32.609 | 50     | 44    | 32     | 26    | 9  |
| 42 | 88     | 65     | 47    | 46     | 29    | 8  |
| 43 | 67     | 80     | 49    | 61     | 1.331 | 7  |
| 44 | 96     | 96     | 1.351 | 75     | 33    | 6  |
| 45 | 32.725 | 16.510 | 54    | 90     | 36    | 15 |
| 46 | 54     | 25     | 56    | 16.304 | 38    | 14 |
| 47 | 83     | 40     | 59    | 18     | 1.340 | 13 |
| 48 | 32.812 | 55     | 1.361 | 33     | 43    | 12 |
| 49 | 41     | 70     | 64    | 47     | 45    | 11 |
| 50 | 70     | 85     | 66    | 61     | 47    | 10 |
| 51 | 32.900 | 16.600 | 69    | 76     | 1.350 | 9  |
| 52 | 29     | 15     | 1.371 | 90     | 52    | 8  |
| 53 | 59     | 30     | 73    | 16.404 | 55    | 7  |
| 54 | 87     | 45     | 76    | 19     | 57    | 6  |
| 55 | 33.016 | 59     | 78    | 33     | 59    | 5  |
| 56 | 45     | 74     | 1.381 | 47     | 1.362 | 4  |
| 57 | 74     | 89     | 83    | 62     | 64    | 3  |
| 58 | 33.103 | 16.704 | 86    | 76     | 67    | 2  |
| 59 | 32     | 19     | 88    | 90     | 69    | 1  |
| 60 | 61     | 34     | 1.391 | 16.505 | 1.371 | 0  |

| '  | L      | T      | E     | X      | Y     | ' |
|----|--------|--------|-------|--------|-------|---|
| 0  | 33.161 | 16.734 | 1.391 | 15.505 | 1.371 | 0 |
| 1  | 90     | 49     | 93    | 19     | 74    | 9 |
| 2  | 33.219 | 64     | 96    | 33     | 76    | 8 |
| 3  | 49     | 79     | 98    | 48     | 79    | 7 |
| 4  | 78     | 94     | 1.400 | 62     | 1.381 | 6 |
| 5  | 33.307 | 16.809 | 3     | 77     | 83    | 5 |
| 6  | 36     | 24     | 5     | 91     | 86    | 4 |
| 7  | 65     | 39     | 8     | 16.605 | 88    | 3 |
| 8  | 94     | 54     | 1.410 | 20     | 1.391 | 2 |
| 9  | 33.423 | 69     | 13    | 34     | 93    | 1 |
| 10 | 52     | 84     | 15    | 48     | 96    | 0 |
| 11 | 81     | 99     | 18    | 63     | 98    | 9 |
| 12 | 33.510 | 16.914 | 1.420 | 77     | 1.400 | 8 |
| 13 | 39     | 29     | 23    | 91     | 3     | 7 |
| 14 | 68     | 44     | 25    | 16.705 | 5     | 6 |
| 15 | 98     | 59     | 28    | 20     | 8     | 5 |
| 16 | 33.627 | 74     | 1.430 | 34     | 1.401 | 4 |
| 17 | 56     | 88     | 33    | 49     | 12    | 4 |
| 18 | 85     | 17.003 | 35    | 63     | 15    | 3 |
| 19 | 33.714 | 18     | 38    | 77     | 17    | 2 |
| 20 | 43     | 33     | 1.440 | 92     | 1.420 | 1 |
| 1  | 72     | 48     | 43    | 16.806 | 22    | 0 |
| 2  | 33.801 | 63     | 45    | 20     | 25    | 9 |
| 3  | 30     | 78     | 48    | 35     | 27    | 8 |
| 4  | 59     | 93     | 1.450 | 49     | 1.430 | 7 |
| 5  | 88     | 17.108 | 53    | 33     | 32    | 6 |
| 6  | 33.918 | 23     | 55    | 78     | 35    | 5 |
| 7  | 47     | 38     | 58    | 92     | 37    | 4 |
| 8  | 76     | 53     | 1.461 | 16.906 | 39    | 3 |
| 9  | 34.005 | 68     | 63    | 21     | 1.442 | 2 |
| 0  | 34     | 83     | 66    | 35     | 44    | 1 |
| 1  | 63     | 98     | 68    | 49     | 47    | 0 |
| 2  | 92     | 17.213 | 1.471 | 64     | 49    | 9 |
| 3  | 34.121 | 28     | 73    | 78     | 1.452 | 8 |
| 4  | 50     | 43     | 76    | 92     | 54    | 7 |
| 5  | 79     | 58     | 78    | 17.007 | 57    | 6 |
| 6  | 34.208 | 73     | 1.481 | 22     | 59    | 5 |
| 7  | 38     | 88     | 83    | 35     | 1.462 | 4 |
| 8  | 67     | 17.303 | 86    | 50     | 64    | 3 |
| 9  | 96     | 18     | 89    | 64     | 67    | 2 |
| 0  | 34.325 | 33     | 1.491 | 78     | 69    | 1 |
| 1  | 54     | 48     | 94    | 93     | 1.472 | 0 |
| 2  | 83     | 63     | 96    | 17.107 | 74    | 9 |
| 3  | 34.412 | 78     | 99    | 21     | 77    | 8 |
| 4  | 41     | 93     | 1.501 | 36     | 79    | 7 |
| 5  | 70     | 17.408 | 4     | 50     | 1.482 | 6 |
| 6  | 99     | 23     | 6     | 64     | 84    | 5 |
| 7  | 34.528 | 38     | 9     | 79     | 87    | 4 |
| 8  | 58     | 53     | 1.512 | 93     | 89    | 3 |
| 9  | 87     | 68     | 14    | 17.207 | 1.492 | 2 |
| 0  | 34.616 | 83     | 17    | 22     | 94    | 1 |
| 1  | 45     | 98     | 19    | 36     | 97    | 0 |
| 2  | 74     | 17.513 | 1.522 | 50     | 99    | 9 |
| 3  | 34.703 | 28     | 25    | 65     | 1.502 | 8 |
| 4  | 32     | 43     | 27    | 79     | 4     | 7 |
| 5  | 61     | 58     | 1.530 | 93     | 7     | 6 |
| 6  | 90     | 73     | 32    | 17.308 | 9     | 5 |
| 7  | 34.819 | 88     | 35    | 22     | 1.512 | 4 |
| 8  | 48     | 17.603 | 38    | 36     | 14    | 3 |
| 9  | 77     | 18     | 1.540 | 51     | 17    | 2 |
| 0  | 34.907 | 33     | 43    | 65     | 19    | 1 |

## 曲線函數表

|    | L      | T      | E     | X      | Y     |   |
|----|--------|--------|-------|--------|-------|---|
| 0  | 34.907 | 17.633 | 1.543 | 17.365 | 1.519 | 6 |
| 1  | 36     | 48     | 45    | 79     | 1.522 | 5 |
| 2  | 65     | 63     | 48    | 94     | 24    | 5 |
| 3  | 94     | 78     | 1.551 | 17.408 | 27    | 5 |
| 4  | 35.023 | 93     | 53    | 22     | 29    | 5 |
| 5  | 52     | 17.708 | 56    | 36     | 1.532 | 5 |
| 6  | 81     | 23     | 58    | 51     | 34    | 5 |
| 7  | 35.110 | 39     | 1.561 | 65     | 37    | 5 |
| 8  | 39     | 53     | 64    | 79     | 1.540 | 5 |
| 9  | 68     | 66     | 66    | 94     | 42    | 5 |
| 10 | 97     | 83     | 69    | 17.508 | 45    | 5 |
| 11 | 35.227 | 98     | 1.572 | 22     | 47    | 5 |
| 12 | 56     | 17.813 | 74    | 37     | 1.550 | 5 |
| 13 | 85     | 28     | 77    | 51     | 52    | 5 |
| 14 | 35.314 | 43     | 79    | 65     | 55    | 5 |
| 15 | 43     | 58     | 1.582 | 80     | 57    | 4 |
| 16 | 72     | 73     | 85    | 94     | 1.560 | 4 |
| 17 | 35.401 | 88     | 87    | 17.608 | 62    | 4 |
| 18 | 90     | 17.903 | 1.590 | 23     | 65    | 4 |
| 19 | 59     | 18     | 93    | 37     | 68    | 4 |
| 20 | 68     | 33     | 95    | 51     | 1.570 | 4 |
| 1  | 35.517 | 48     | 98    | 65     | 73    | 4 |
| 2  | 47     | 63     | 1.601 | 80     | 75    | 4 |
| 3  | 76     | 78     | 3     | 94     | 78    | 4 |
| 4  | 35.605 | 93     | 6     | 17.708 | 1.580 | 4 |
| 5  | 34     | 18.006 | 9     | 23     | 83    | 3 |
| 6  | 63     | 23     | 1.611 | 37     | 86    | 3 |
| 7  | 92     | 38     | 14    | 51     | 88    | 3 |
| 8  | 35.721 | 53     | 17    | 66     | 1.591 | 3 |
| 9  | 50     | 68     | 19    | 80     | 93    | 3 |
| 10 | 79     | 83     | 1.622 | 94     | 96    | 3 |
| 11 | 35.808 | 98     | 25    | 17.809 | 59    | 3 |
| 12 | 37     | 18.113 | 27    | 23     | 1.601 | 3 |
| 13 | 67     | 28     | 1.630 | 37     | 4     | 3 |
| 14 | 96     | 43     | 33    | 52     | 6     | 3 |
| 15 | 35.925 | 58     | 35    | 66     | 9     | 2 |
| 16 | 54     | 73     | 38    | 80     | 1.612 | 2 |
| 17 | 83     | 88     | 1.641 | 94     | 14    | 2 |
| 18 | 35.012 | 18.203 | 43    | 17.909 | 17    | 2 |
| 19 | 41     | 18     | 46    | 23     | 19    | 2 |
| 20 | 70     | 33     | 49    | 37     | 1.622 | 2 |
| 1  | 99     | 48     | 1.651 | 52     | 25    | 1 |
| 2  | 36.128 | 63     | 64    | 66     | 27    | 1 |
| 3  | 57     | 78     | 57    | 80     | 1.630 | 1 |
| 4  | 86     | 93     | 1.660 | 95     | 32    | 1 |
| 5  | 36.216 | 18.306 | 62    | 18.009 | 35    | 1 |
| 6  | 45     | 23     | 65    | 28     | 38    | 1 |
| 7  | 74     | 38     | 68    | 38     | 1.640 | 1 |
| 8  | 36.303 | 53     | 1.670 | 52     | 43    | 1 |
| 9  | 32     | 69     | 73    | 66     | 46    | 1 |
| 10 | 61     | 84     | 76    | 81     | 48    | 1 |
| 11 | 96     | 99     | 78    | 95     | 1.651 | 9 |
| 12 | 36.419 | 18.414 | 1.681 | 18.109 | 53    | 8 |
| 13 | 48     | 29     | 84    | 23     | 56    | 7 |
| 14 | 77     | 44     | 87    | 38     | 59    | 6 |
| 15 | 36.505 | 59     | 89    | 52     | 1.661 | 5 |
| 16 | 36     | 74     | 1.692 | 66     | 64    | 4 |
| 17 | 65     | 89     | 95    | 81     | 67    | 3 |
| 18 | 94     | 18.504 | 98    | 96     | 69    | 2 |
| 19 | 36.623 | 19     | 1.700 | 18.209 | 1.672 | 1 |
| 20 | 52     | 34     | 3     | 24     | 75    | 0 |



## 曲線函數表

| '  | L      | T      | E     | X      | Y     | ' |
|----|--------|--------|-------|--------|-------|---|
| 0  | 36.652 | 18.534 | 1.703 | 18.224 | 1.675 | 6 |
| 1  | 81     | 49     | 6     | 38     | 77    | 0 |
| 2  | 36.710 | 64     | 9     | 52     | 1.680 | 9 |
| 3  | 39     | 79     | 1.711 | 67     | 83    | 8 |
| 4  | 68     | 94     | 14    | 81     | 85    | 7 |
| 5  | 97     | 18.609 | 17    | 95     | 88    | 5 |
| 6  | 36.826 | 24     | 1.720 | 18.309 | 1.691 | 5 |
| 7  | 56     | 39     | 22    | 24     | 93    | 6 |
| 8  | 85     | 54     | 25    | 38     | 96    | 5 |
| 9  | 36.914 | 69     | 28    | 52     | 98    | 6 |
| 10 | 43     | 84     | 1.731 | 67     | 1.701 | 5 |
| 11 | 72     | 99     | 33    | 81     | 4     | 0 |
| 12 | 37.001 | 18.715 | 36    | 95     | 9     | 9 |
| 13 | 30     | 30     | 39    | 18.409 | 7     | 4 |
| 14 | 59     | 45     | 1.742 | 24     | 1.712 | 4 |
| 15 | 88     | 60     | 44    | 38     | 15    | 4 |
| 16 | 37.117 | 75     | 47    | 52     | 17    | 5 |
| 17 | 46     | 90     | 1.750 | 67     | 1.720 | 4 |
| 18 | 76     | 18.805 | 53    | 81     | 23    | 4 |
| 19 | 37.205 | 20     | 56    | 95     | 25    | 4 |
| 20 | 34     | 36     | 58    | 18.509 | 28    | 4 |
| 21 | 63     | 50     | 1.761 | 24     | 1.731 | 0 |
| 22 | 92     | 65     | 64    | 38     | 33    | 8 |
| 23 | 37.321 | 80     | 67    | 52     | 36    | 6 |
| 24 | 50     | 95     | 69    | 67     | 39    | 6 |
| 25 | 79     | 18.910 | 1.772 | 81     | 1.741 | 5 |
| 26 | 37.408 | 25     | 75    | 95     | 44    | 5 |
| 27 | 37     | 40     | 78    | 18.609 | 47    | 4 |
| 28 | 66     | 56     | 1.781 | 24     | 1.750 | 3 |
| 29 | 95     | 71     | 84    | 38     | 52    | 2 |
| 30 | 37.525 | 86     | 86    | 52     | 55    | 0 |
| 31 | 54     | 19.001 | 89    | 67     | 58    | 8 |
| 32 | 83     | 16     | 1.792 | 81     | 1.760 | 5 |
| 33 | 37.612 | 31     | 95    | 95     | 63    | 6 |
| 34 | 41     | 46     | 98    | 18.710 | 66    | 2 |
| 35 | 70     | 61     | 1.800 | 24     | 68    | 5 |
| 36 | 99     | 76     | 3     | 38     | 1.771 | 4 |
| 37 | 37.728 | 91     | .6    | 52     | 74    | 3 |
| 38 | 57     | 19.106 | 9     | 67     | 77    | 2 |
| 39 | 86     | 21     | 1.812 | 81     | 1.780 | 2 |
| 40 | 37.815 | 36     | 15    | 95     | 82    | 0 |
| 41 | 45     | 51     | 17    | 18.810 | 85    | 1 |
| 42 | 74     | 67     | 1.820 | 24     | 88    | 9 |
| 43 | 37.903 | 82     | 23    | 38     | 1.790 | 1 |
| 44 | 32     | 97     | 28    | 52     | 93    | 6 |
| 45 | 61     | 19.212 | 29    | 67     | 96    | 1 |
| 46 | 90     | 27     | 1.832 | 81     | 99    | 4 |
| 47 | 38.019 | 42     | 34    | 95     | 1.801 | 1 |
| 48 | 48     | 57     | 37    | 18.009 | 4     | 1 |
| 49 | 77     | 72     | 1.840 | 24     | 7     | 1 |
| 50 | 38.106 | 87     | 43    | 38     | 1.810 | 1 |
| 51 | 35     | 19.302 | 46    | 52     | 12    | 0 |
| 52 | 65     | 17     | 49    | 67     | 15    | 9 |
| 53 | 94     | 32     | 1.852 | 81     | 18    | 8 |
| 54 | 38.223 | 48     | 54    | 95     | 1.821 | 7 |
| 55 | 62     | 63     | 57    | 19.009 | 23    | 5 |
| 56 | 81     | 78     | 1.860 | 24     | 26    | 4 |
| 57 | 38.310 | 93     | 63    | 38     | 29    | 3 |
| 58 | 39     | 19.408 | 66    | 52     | 1.832 | 2 |
| 59 | 68     | 23     | 69    | 67     | 34    | 1 |
| 60 | 97     | 38     | 1.872 | 81     | 37    | 0 |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '   |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 39.397 | 19.438 | 1.872 | 19.081 | 1.837 | 5 0 |
| 1  | 38.426 | 53     | 75    | 95     | 1.840 | 0 0 |
| 2  | 55     | 68     | 77    | 19.109 | 43    | 0 0 |
| 3  | 85     | 83     | 1.880 | 24     | 45    | 0 0 |
| 4  | 39.514 | 98     | 83    | 38     | 48    | 7 6 |
| 5  | 43     | 19.513 | 86    | 52     | 1.851 | 5 5 |
| 6  | 72     | 29     | 89    | 67     | 84    | 0 0 |
| 7  | 38.601 | 44     | 1.892 | 81     | 57    | 0 0 |
| 8  | 90     | 59     | 95    | 95     | 1.860 | 0 0 |
| 9  | 59     | 74     | 98    | 19.209 | 62    | 0 0 |
| 10 | 68     | 89     | 1.901 | 24     | 65    | 5 0 |
| 11 | 38.717 | 19.604 | 4     | 38     | 68    | 0 0 |
| 12 | 46     | 19     | 6     | 52     | 1.871 | 4 4 |
| 13 | 75     | 34     | 9     | 67     | 73    | 4 4 |
| 14 | 39.804 | 49     | 1.912 | 81     | 76    | 4 6 |
| 15 | 34     | 65     | 15    | 95     | 79    | 4 5 |
| 16 | 63     | 80     | 18    | 19.309 | 1.882 | 4 4 |
| 17 | 92     | 95     | 1.921 | 24     | 85    | 4 4 |
| 18 | 39.921 | 19.710 | 24    | 38     | 88    | 4 4 |
| 19 | 50     | 25     | 27    | 52     | 1.890 | 4 1 |
| 20 | 79     | 40     | 1.930 | 66     | 93    | 4 0 |
| 01 | 39.008 | 55     | 33    | 81     | 95    | 0 0 |
| 02 | 37     | 70     | 36    | 95     | 99    | 0 0 |
| 03 | 66     | 85     | 39    | 19.409 | 1.902 | 0 0 |
| 04 | 95     | 19.800 | 1.942 | 23     | 4     | 6 6 |
| 05 | 39.124 | 16     | 44    | 38     | 7     | 3 5 |
| 06 | 54     | 31     | 47    | 52     | 1.910 | 4 4 |
| 07 | 83     | 46     | 1.950 | 66     | 13    | 0 0 |
| 08 | 39.212 | 61     | 53    | 81     | 16    | 0 0 |
| 09 | 41     | 76     | 56    | 95     | 19    | 5 1 |
| 10 | 70     | 91     | 59    | 19.509 | 1.921 | 3 0 |
| 11 | 99     | 19.906 | 1.962 | 23     | 24    | 0 0 |
| 12 | 38.328 | 21     | 65    | 38     | 27    | 8 8 |
| 13 | 57     | 37     | 68    | 52     | 1.930 | 2 7 |
| 14 | 86     | 52     | 1.971 | 66     | 33    | 2 6 |
| 15 | 39.415 | 67     | 74    | 80     | 36    | 2 5 |
| 16 | 44     | 82     | 77    | 95     | 38    | 2 4 |
| 17 | 74     | 97     | 1.980 | 19.609 | 1.941 | 2 3 |
| 18 | 39.503 | 20.012 | 83    | 23     | 44    | 2 2 |
| 19 | 82     | 27     | 86    | 37     | 47    | 2 1 |
| 20 | 61     | 42     | 89    | 52     | 1.950 | 2 0 |
| 01 | 90     | 58     | 1.992 | 66     | 53    | 1 9 |
| 02 | 39.619 | 73     | 95    | 80     | 56    | 1 8 |
| 03 | 48     | 88     | 98    | 94     | 59    | 1 7 |
| 04 | 77     | 20.103 | 2.001 | 19.709 | 1.961 | 1 6 |
| 05 | 39.706 | 18     | 4     | 23     | 64    | 1 5 |
| 06 | 35     | 33     | 7     | 37     | 67    | 1 4 |
| 07 | 64     | 48     | 2.010 | 52     | 1.970 | 1 3 |
| 08 | 94     | 63     | 13    | 66     | 73    | 1 2 |
| 09 | 39.823 | 79     | 16    | 80     | 76    | 1 1 |
| 10 | 52     | 94     | 19    | 94     | 79    | 1 0 |
| 11 | 81     | 20.209 | 2.022 | 19.809 | 1.982 | 9 8 |
| 12 | 39.910 | 24     | 25    | 23     | 84    | 8 7 |
| 13 | 39     | 39     | 28    | 37     | 87    | 7 6 |
| 14 | 68     | 54     | 2.031 | 51     | 1.990 | 6 6 |
| 15 | 97     | 69     | 34    | 66     | 93    | 5 5 |
| 16 | 40.026 | 85     | 37    | 80     | 96    | 4 4 |
| 17 | 55     | 20.300 | 2.040 | 94     | 99    | 3 3 |
| 18 | 84     | 15     | 43    | 19.908 | 2.002 | 2 2 |
| 19 | 40.113 | 30     | 46    | 23     | 5     | 1 0 |
| 20 | 43     | 45     | 49    | 37     | 6     | 0 0 |

## 曲線函數表

|    | L      | T      | E     | X      | Y     |   |
|----|--------|--------|-------|--------|-------|---|
| 0  | 40.143 | 20.345 | 2.049 | 19.937 | 2.008 | 6 |
| 1  | 72     | 60     | 2.052 | 51     | 2.010 | 0 |
| 2  | 40.201 | 75     | 55    | 65     | 13    | 8 |
| 3  | 30     | 91     | 53    | 80     | 16    | 8 |
| 4  | 59     | 20.406 | 2.061 | 94     | 19    | 7 |
| 5  | 88     | 21     | 64    | 20.008 | 2.022 | 5 |
| 6  | 40.317 | 36     | 67    | 22     | 25    | 5 |
| 7  | 46     | 51     | 2.070 | 37     | 28    | 4 |
| 8  | 75     | 66     | 73    | 51     | 2.031 | 5 |
| 9  | 40.404 | 82     | 76    | 65     | 34    | 5 |
| 10 | 33     | 97     | 79    | 79     | 37    | 0 |
| 11 | 63     | 20.512 | 2.082 | 94     | 2.040 | 9 |
| 12 | 92     | 27     | 85    | 20.108 | 43    | 8 |
| 13 | 40.521 | 42     | 88    | 22     | 45    | 4 |
| 14 | 50     | 57     | 2.091 | 35     | 48    | 4 |
| 15 | 79     | 73     | 94    | 50     | 2.051 | 5 |
| 16 | 40.608 | 88     | 97    | 65     | 54    | 4 |
| 17 | 37     | 20.603 | 2.100 | 79     | 57    | 4 |
| 18 | 66     | 18     | 3     | 93     | 2.060 | 4 |
| 19 | 95     | 33     | 7     | 20.207 | 63    | 4 |
| 20 | 40.724 | 48     | 2.110 | 22     | 66    | 0 |
| 1  | 53     | 64     | 13    | 35     | 69    | 0 |
| 2  | 83     | 79     | 16    | 50     | 2.072 | 0 |
| 3  | 40.812 | 94     | 19    | 64     | 75    | 0 |
| 4  | 41     | 20.709 | 2.122 | 79     | 78    | 6 |
| 5  | 70     | 24     | 25    | 93     | 2.081 | 5 |
| 6  | 99     | 39     | 28    | 20.307 | 84    | 5 |
| 7  | 40.928 | 55     | 2.131 | 21     | 87    | 0 |
| 8  | 57     | 70     | 34    | 36     | 89    | 0 |
| 9  | 86     | 85     | 37    | 50     | 2.092 | 0 |
| 10 | 41.015 | 20.800 | 2.140 | 64     | 95    | 0 |
| 1  | 44     | 15     | 43    | 20.378 | 2.098 | 0 |
| 2  | 73     | 30     | 46    | 93     | 2.101 | 0 |
| 3  | 41.103 | 45     | 2.150 | 20.407 | 4     | 0 |
| 4  | 32     | 61     | 53    | 21     | 7     | 6 |
| 5  | 61     | 76     | 56    | 35     | 2.110 | 5 |
| 6  | 90     | 91     | 59    | 50     | 13    | 5 |
| 7  | 41.219 | 20.905 | 2.162 | 64     | 16    | 0 |
| 8  | 48     | 21     | 65    | 78     | 19    | 0 |
| 9  | 67     | 37     | 68    | 92     | 2.122 | 2 |
| 10 | 41.306 | 52     | 2.171 | 20.506 | 25    | 0 |
| 1  | 35     | 67     | 74    | 21     | 28    | 1 |
| 2  | 64     | 82     | 76    | 35     | 2.131 | 1 |
| 3  | 93     | 97     | 2.181 | 49     | 34    | 1 |
| 4  | 41.422 | 21.013 | 84    | 63     | 37    | 6 |
| 5  | 52     | 23     | 87    | 78     | 2.140 | 1 |
| 6  | 81     | 49     | 2.190 | 92     | 43    | 1 |
| 7  | 41.510 | 58     | 92    | 20.606 | 46    | 1 |
| 8  | 39     | 73     | 95    | 20     | 49    | 1 |
| 9  | 68     | 89     | 99    | 35     | 2.152 | 1 |
| 10 | 97     | 21.104 | 2.203 | 49     | 55    | 1 |
| 1  | 41.626 | 19     | 6     | 63     | 58    | 0 |
| 2  | 55     | 34     | 9     | 77     | 2.161 | 8 |
| 3  | 84     | 49     | 2.212 | 92     | 64    | 8 |
| 4  | 41.713 | 65     | 15    | 20.706 | 67    | 7 |
| 5  | 42     | 80     | 18    | 20     | 2.170 | 5 |
| 6  | 72     | 95     | 2.221 | 34     | 73    | 4 |
| 7  | 41.801 | 21.210 | 25    | 48     | 76    | 3 |
| 8  | 30     | 25     | 28    | 63     | 79    | 2 |
| 9  | 59     | 41     | 2.231 | 77     | 2.182 | 1 |
| 10 | 88     | 56     | 34    | 91     | 85    | 0 |

|    | L      | T      | E     | X      | Y     |    |
|----|--------|--------|-------|--------|-------|----|
| 0  | 41.886 | 21.256 | 2.234 | 20.791 | 2.185 | 60 |
| 1  | 41.917 | 71     | 37    | 20.805 | 88    | 09 |
| 2  | 46     | 86     | 2.240 | 20     | 2.191 | 98 |
| 3  | 75     | 21.301 | 44    | 34     | 94    | 06 |
| 4  | 42.004 | 17     | 47    | 48     | 97    | 56 |
| 5  | 33     | 32     | 2.250 | 62     | 2.200 | 55 |
| 6  | 62     | 47     | 53    | 76     | 3     | 44 |
| 7  | 92     | 62     | 56    | 91     | 6     | 33 |
| 8  | 42.121 | 77     | 59    | 20.905 | 2.210 | 52 |
| 9  | 50     | 93     | 2.263 | 19     | 13    | 51 |
| 10 | 79     | 21.408 | 66    | 33     | 16    | 50 |
| 11 | 42.208 | 23     | 69    | 48     | 19    | 49 |
| 12 | 37     | 38     | 2.272 | 62     | 2.222 | 48 |
| 13 | 66     | 53     | 75    | 76     | 25    | 47 |
| 14 | 95     | 69     | 79    | 90     | 28    | 46 |
| 15 | 42.324 | 84     | 2.282 | 21.004 | 2.231 | 45 |
| 16 | 53     | 99     | 85    | 19     | 34    | 44 |
| 17 | 82     | 21.514 | 88    | 33     | 37    | 43 |
| 18 | 42.412 | 29     | 2.291 | 47     | 2.240 | 42 |
| 19 | 41     | 45     | 95    | 61     | 43    | 41 |
| 20 | 70     | 60     | 98    | 76     | 46    | 40 |
| 21 | 99     | 75     | 2.301 | 90     | 49    | 39 |
| 22 | 42.528 | 90     | 4     | 21.104 | 2.252 | 38 |
| 23 | 57     | 21.606 | 7     | 18     | 55    | 37 |
| 24 | 86     | 21     | 2.311 | 33     | 58    | 36 |
| 25 | 42.615 | 36     | 14    | 47     | 2.262 | 35 |
| 26 | 44     | 51     | 17    | 61     | 65    | 34 |
| 27 | 73     | 66     | 2.320 | 75     | 68    | 33 |
| 28 | 42.702 | 82     | 24    | 89     | 2.271 | 32 |
| 29 | 31     | 97     | 27    | 21.204 | 74    | 31 |
| 30 | 61     | 21.712 | 2.330 | 18     | 77    | 30 |
| 31 | 90     | 27     | 33    | 32     | 80    | 29 |
| 32 | 42.819 | 43     | 36    | 46     | 83    | 28 |
| 33 | 48     | 58     | 2.340 | 60     | 86    | 27 |
| 34 | 77     | 73     | 43    | 75     | 89    | 26 |
| 35 | 42.906 | 88     | 46    | 89     | 2.292 | 25 |
| 36 | 35     | 21.803 | 49    | 21.303 | 95    | 24 |
| 37 | 64     | 19     | 2.353 | 17     | 99    | 23 |
| 38 | 93     | 34     | 56    | 32     | 2.302 | 22 |
| 39 | 43.022 | 49     | 59    | 46     | 5     | 21 |
| 40 | 51     | 64     | 2.362 | 60     | 8     | 20 |
| 41 | 81     | 80     | 66    | 74     | 2.311 | 19 |
| 42 | 43.110 | 95     | 69    | 88     | 14    | 18 |
| 43 | 39     | 21.910 | 2.372 | 21.403 | 17    | 17 |
| 44 | 68     | 25     | 75    | 17     | 2.320 | 16 |
| 45 | 97     | 41     | 79    | 31     | 23    | 15 |
| 46 | 43.226 | 56     | 2.382 | 45     | 27    | 14 |
| 47 | 55     | 71     | 85    | 59     | 2.330 | 13 |
| 48 | 84     | 86     | 89    | 74     | 23    | 12 |
| 49 | 43.313 | 22.002 | 2.392 | 88     | 36    | 11 |
| 50 | 42     | 17     | 95    | 21.502 | 39    | 10 |
| 01 | 71     | 32     | 98    | 16     | 2.342 | 9  |
| 02 | 43.401 | 47     | 2.402 | 30     | 45    | 8  |
| 03 | 30     | 63     | 5     | 45     | 48    | 7  |
| 04 | 59     | 78     | 8     | 59     | 2.352 | 6  |
| 05 | 88     | 93     | 2.412 | 73     | 55    | 5  |
| 06 | 43.517 | 22.108 | 15    | 87     | 58    | 4  |
| 07 | 46     | 24     | 18    | 21.601 | 2.361 | 3  |
| 08 | 75     | 39     | 2.421 | 16     | 64    | 2  |
| 09 | 43.604 | 54     | 25    | 30     | 67    | 1  |
| 10 | 33     | 69     | 28    | 44     | 2.370 | 0  |

| '  | L      | T      | E     | X      | Y     | '  |
|----|--------|--------|-------|--------|-------|----|
| 0  | 43.633 | 22.169 | 2.428 | 21.644 | 2.370 | 60 |
| 1  | 62     | 85     | 2.431 | 58     | 78    | 59 |
| 2  | 91     | 22.200 | 35    | 72     | 77    | 58 |
| 3  | 43.739 | 15     | 38    | 87     | 2.330 | 57 |
| 4  | 50     | 30     | 2.441 | 21.701 | 89    | 56 |
| 5  | 79     | 46     | 45    | 15     | 86    | 55 |
| 6  | 43.808 | 61     | 49    | 29     | 89    | 54 |
| 7  | 37     | 76     | 2.451 | 43     | 2.392 | 53 |
| 8  | 66     | 92     | 54    | 58     | 96    | 52 |
| 9  | 95     | 22.307 | 58    | 72     | 99    | 51 |
| 10 | 43.924 | 22     | 2.461 | 86     | 2.402 | 50 |
| 11 | 53     | 37     | 64    | 21.800 | 5     | 49 |
| 12 | 82     | 53     | 68    | 14     | 6     | 48 |
| 13 | 44.011 | 68     | 2.471 | 29     | 2.412 | 47 |
| 14 | 40     | 83     | 74    | 43     | 15    | 46 |
| 15 | 70     | 98     | 78    | 57     | 18    | 45 |
| 16 | 99     | 22.414 | 2.481 | 71     | 2.421 | 44 |
| 17 | 44.128 | 29     | 85    | 85     | 24    | 43 |
| 18 | 57     | 44     | 88    | 21.900 | 27    | 42 |
| 19 | 86     | 60     | 2.491 | 14     | 2.431 | 41 |
| 20 | 44.215 | 75     | 95    | 28     | 34    | 40 |
| 21 | 44     | 90     | 98    | 42     | 37    | 39 |
| 22 | 73     | 22.505 | 2.501 | 56     | 2.440 | 38 |
| 23 | 44.302 | 21     | 6     | 70     | 43    | 37 |
| 24 | 31     | 36     | 5     | 85     | 47    | 36 |
| 25 | 60     | 51     | 2.511 | 99     | 2.450 | 35 |
| 26 | 90     | 67     | 15    | 22.013 | 53    | 34 |
| 27 | 44.419 | 82     | 18    | 27     | 56    | 33 |
| 28 | 48     | 97     | 2.521 | 41     | 59    | 32 |
| 29 | 77     | 22.612 | 25    | 56     | 2.463 | 31 |
| 30 | 44.506 | 25     | 28    | 70     | 66    | 30 |
| 31 | 35     | 43     | 31    | 84     | 69    | 29 |
| 32 | 64     | 58     | 35    | 98     | 2.472 | 28 |
| 33 | 93     | 74     | 38    | 22.112 | 75    | 27 |
| 34 | 44.622 | 89     | 2.542 | 27     | 79    | 26 |
| 35 | 51     | 22.704 | 45    | 41     | 2.482 | 25 |
| 36 | 80     | 19     | 48    | 55     | 85    | 24 |
| 37 | 44.710 | 35     | 2.552 | 69     | 88    | 23 |
| 38 | 39     | 50     | 55    | 83     | 2.492 | 22 |
| 39 | 68     | 65     | 59    | 97     | 95    | 21 |
| 40 | 97     | 81     | 2.562 | 22.212 | 98    | 20 |
| 41 | 44.826 | 96     | 65    | 26     | 2.501 | 19 |
| 42 | 55     | 22.811 | 69    | 40     | 4     | 18 |
| 43 | 84     | 27     | 2.572 | 54     | 6     | 17 |
| 44 | 44.913 | 42     | 76    | 68     | 2.511 | 16 |
| 45 | 42     | 57     | 79    | 83     | 14    | 15 |
| 46 | 71     | 72     | 2.582 | 97     | 17    | 14 |
| 47 | 45.000 | 88     | 86    | 22.311 | 2.521 | 13 |
| 48 | 29     | 22.903 | 89    | 25     | 24    | 12 |
| 49 | 59     | 18     | 2.593 | 39     | 27    | 11 |
| 50 | 88     | 34     | 96    | 53     | 2.530 | 10 |
| 51 | 45.117 | 49     | 99    | 68     | 34    | 9  |
| 52 | 46     | 64     | 2.603 | 82     | 37    | 8  |
| 53 | 75     | 80     | 6     | 96     | 2.540 | 7  |
| 54 | 45.204 | 95     | 2.610 | 22.410 | 43    | 6  |
| 55 | 33     | 23.010 | 13    | 24     | 47    | 5  |
| 56 | 62     | 26     | 17    | 38     | 2.550 | 4  |
| 57 | 91     | 41     | 2.620 | 53     | 53    | 3  |
| 58 | 45.330 | 56     | 23    | 67     | 56    | 2  |
| 59 | 49     | 72     | 27    | 81     | 2.560 | 1  |
| 60 | 79     | 87     | 2.630 | 95     | 63    | 0  |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '  |
|----|--------|--------|-------|--------|-------|----|
| 0  | 45.379 | 23.087 | 2.630 | 22.495 | 2.563 | 60 |
| 1  | 45.408 | 23.102 | 34    | 22.509 | 65    | 0  |
| 2  | 37     | 18     | 37    | 23     | 2.570 | 8  |
| 3  | 66     | 33     | 2.641 | 38     | 73    | 7  |
| 4  | 95     | 48     | 44    | 52     | 76    | 6  |
| 5  | 45.524 | 63     | 48    | 66     | 79    | 5  |
| 6  | 53     | 79     | 2.651 | 80     | 2.583 | 5  |
| 7  | 82     | 94     | 55    | 94     | 86    | 4  |
| 8  | 45.611 | 23.209 | 58    | 22.608 | 89    | 3  |
| 9  | 40     | 25     | 2.661 | 23     | 2.593 | 2  |
| 10 | 69     | 40     | 65    | 37     | 96    | 0  |
| 11 | 99     | 55     | 68    | 51     | 99    | 9  |
| 12 | 45.723 | 71     | 2.672 | 65     | 2.602 | 9  |
| 13 | 57     | 86     | 75    | 79     | 6     | 8  |
| 14 | 86     | 23.301 | 79    | 93     | 9     | 7  |
| 15 | 45.815 | 17     | 2.682 | 22.708 | 2.612 | 4  |
| 16 | 44     | 32     | 86    | 22     | 16    | 5  |
| 17 | 73     | 47     | 89    | 36     | 19    | 4  |
| 18 | 45.902 | 63     | 2.693 | 50     | 2.622 | 4  |
| 19 | 31     | 78     | 95    | 64     | 26    | 1  |
| 20 | 60     | 93     | 2.700 | 78     | 29    | 0  |
| 21 | 89     | 23.409 | 3     | 93     | 2.632 | 9  |
| 22 | 48.019 | 24     | 7     | 22.807 | 36    | 9  |
| 23 | 48     | 29     | 2.710 | 21     | 39    | 8  |
| 24 | 77     | 55     | 14    | 35     | 2.642 | 7  |
| 25 | 46.106 | 70     | 17    | 49     | 45    | 5  |
| 26 | 35     | 85     | 2.721 | 63     | 49    | 4  |
| 27 | 64     | 23.501 | 24    | 78     | 2.652 | 4  |
| 28 | 93     | 16     | 28    | 92     | 55    | 3  |
| 29 | 46.222 | 32     | 2.731 | 22.906 | 59    | 2  |
| 30 | 51     | 47     | 35    | 20     | 2.662 | 0  |
| 31 | 80     | 62     | 38    | 34     | 65    | 9  |
| 32 | 48.309 | 78     | 2.742 | 48     | 69    | 8  |
| 33 | 38     | 93     | 45    | 63     | 2.672 | 7  |
| 34 | 68     | 23.608 | 49    | 77     | 75    | 6  |
| 35 | 97     | 24     | 2.753 | 91     | 79    | 5  |
| 36 | 46.426 | 39     | 56    | 23.005 | 2.682 | 4  |
| 37 | 55     | 54     | 2.760 | 19     | 86    | 3  |
| 38 | 84     | 70     | 63    | 33     | 89    | 2  |
| 39 | 46.513 | 85     | 67    | 47     | 2.692 | 1  |
| 40 | 42     | 23.700 | 2.770 | 62     | 96    | 0  |
| 41 | 71     | 16     | 74    | 76     | 99    | 9  |
| 42 | 46.600 | 31     | 77    | 90     | 2.702 | 8  |
| 43 | 29     | 47     | 2.781 | 23.104 | 6     | 7  |
| 44 | 58     | 62     | 84    | 18     | 9     | 6  |
| 45 | 88     | 77     | 86    | 32     | 2.712 | 5  |
| 46 | 46.717 | 93     | 2.792 | 47     | 16    | 4  |
| 47 | 46     | 23.808 | 95    | 61     | 19    | 3  |
| 48 | 75     | 23     | 99    | 75     | 2.722 | 2  |
| 49 | 46.804 | 38     | 2.802 | 89     | 26    | 1  |
| 50 | 33     | 54     | 6     | 23.203 | 29    | 0  |
| 51 | 62     | 70     | 9     | 17     | 2.733 | 9  |
| 52 | 91     | 85     | 2.813 | 31     | 36    | 8  |
| 53 | 46.920 | 23.900 | 16    | 46     | 39    | 7  |
| 54 | 49     | 16     | 2.820 | 60     | 2.743 | 6  |
| 55 | 78     | 31     | 24    | 74     | 46    | 5  |
| 56 | 47.003 | 46     | 27    | 88     | 49    | 4  |
| 57 | 37     | 62     | 2.831 | 23.302 | 2.753 | 3  |
| 58 | 66     | 77     | 34    | 16     | 56    | 2  |
| 59 | 95     | 93     | 33    | 30     | 2.760 | 1  |
| 60 | 47.124 | 24.008 | 2.842 | 45     | 63    | 0  |

| '   | L      | T      | E     | X      | Y     | '   |
|-----|--------|--------|-------|--------|-------|-----|
| 0 1 | 47.124 | 24.008 | 2.842 | 23.345 | 2.763 | 6 0 |
| 0 2 | 53     | 23     | 45    | 59     | 66    | 6 0 |
| 0 3 | 82     | 39     | 49    | 73     | 2.770 | 6 0 |
| 0 4 | 47.211 | 54     | 2.852 | 87     | 73    | 6 0 |
| 0 5 | 40     | 69     | 56    | 23.401 | 77    | 6 0 |
| 0 6 |        |        |       |        |       | 5 5 |
| 0 7 | 69     | 85     | 2.860 | 15     | 2.780 | 5 5 |
| 0 8 | 98     | 24.100 | 63    | 29     | 83    | 5 5 |
| 0 9 | 47.328 | 16     | 67    | 44     | 87    | 5 5 |
| 1 0 | 57     | 31     | 2.870 | 58     | 2.790 | 5 5 |
| 1 1 | 86     | 46     | 74    | 72     | 94    | 5 5 |
| 1 2 |        |        |       |        |       | 5 0 |
| 1 3 | 47.415 | 62     | 78    | 86     | 97    | 5 0 |
| 1 4 | 44     | 77     | 2.881 | 23.500 | 2.801 | 4 9 |
| 1 5 | 73     | 93     | 85    | 14     | 4     | 4 9 |
| 1 6 | 47.502 | 24.208 | 88    | 28     | 7     | 4 7 |
| 1 7 | 31     | 23     | 2.892 | 43     | 2.811 | 4 7 |
| 1 8 |        |        |       |        |       | 4 6 |
| 1 9 | 60     | 39     | 96    | 57     | 14    | 4 5 |
| 2 0 | 89     | 54     | 99    | 71     | 18    | 4 4 |
| 2 1 | 47.618 | 70     | 2.903 | 85     | 2.821 | 4 3 |
| 2 2 | 47     | 85     | 7     | 99     | 25    | 4 3 |
| 2 3 | 77     | 24.300 | 2.910 | 23.613 | 28    | 4 2 |
| 2 4 |        |        |       |        |       | 4 1 |
| 2 5 | 47.706 | 16     | 14    | 27     | 2.831 | 4 0 |
| 2 6 | 35     | 31     | 18    | 41     | 35    | 3 9 |
| 2 7 | 64     | 47     | 2.921 | 55     | 38    | 3 9 |
| 2 8 | 93     | 62     | 25    | 70     | 2.842 | 3 8 |
| 2 9 | 47.822 | 77     | 28    | 84     | 45    | 3 8 |
| 3 0 |        |        |       |        |       | 3 7 |
| 3 1 | 51     | 93     | 2.932 | 98     | 49    | 3 5 |
| 3 2 | 80     | 24.408 | 36    | 23.712 | 2.852 | 3 5 |
| 3 3 | 47.909 | 24     | 39    | 26     | 55    | 3 5 |
| 3 4 | 38     | 39     | 2.943 | 40     | 59    | 3 5 |
| 3 5 | 67     | 54     | 47    | 55     | 2.862 | 3 3 |
| 3 6 |        |        |       |        |       | 3 2 |
| 3 7 | 97     | 70     | 2.950 | 69     | 65    | 3 0 |
| 3 8 | 48.026 | 85     | 54    | 83     | 69    | 3 0 |
| 3 9 | 55     | 24.501 | 58    | 97     | 2.873 | 3 0 |
| 4 0 | 84     | 16     | 2.961 | 23.811 | 76    | 3 0 |
| 4 1 | 43.113 | 32     | 65    | 25     | 2.890 | 2 8 |
| 4 2 |        |        |       |        |       | 2 6 |
| 4 3 | 42     | 47     | 69    | 39     | 83    | 2 5 |
| 4 4 | 71     | 62     | 2.972 | 53     | 87    | 2 4 |
| 4 5 | 48.200 | 76     | 76    | 68     | 2.890 | 2 3 |
| 4 6 | 29     | 93     | 2.980 | 82     | 94    | 2 2 |
| 4 7 | 58     | 24.609 | 83    | 96     | 97    | 2 2 |
| 4 8 |        |        |       |        |       | 2 1 |
| 4 9 | 87     | 24     | 87    | 23.910 | 2.901 | 2 0 |
| 5 0 | 48.317 | 40     | 2.991 | 24     | 4     | 1 9 |
| 5 1 | 46     | 55     | 94    | 38     | 7     | 1 8 |
| 5 2 | 75     | 70     | 98    | 52     | 2.911 | 1 7 |
| 5 3 | 48.494 | 86     | 3.002 | 66     | 14    | 1 6 |
| 5 4 |        |        |       |        |       | 1 6 |
| 5 5 | 33     | 24.701 | 6     | 80     | 18    | 1 5 |
| 5 6 | 62     | 17     | 9     | 95     | 2.921 | 1 4 |
| 5 7 | 91     | 32     | 3.013 | 24.009 | 25    | 1 3 |
| 5 8 | 48.520 | 48     | 17    | 25     | 23    | 1 2 |
| 5 9 | 49     | 63     | 3.020 | 37     | 2.932 | 1 1 |
| 6 0 |        |        |       |        |       | 1 1 |
| 6 1 | 78     | 78     | 24    | 51     | 35    | 1 0 |
| 6 2 | 48.607 | 94     | 23    | 65     | 39    | 9 9 |
| 6 3 | 37     | 24.809 | 3.031 | 79     | 2.942 | 9 8 |
| 6 4 | 66     | 25     | 35    | 93     | 46    | 9 7 |
| 6 5 | 96     | 40     | 39    | 24.107 | 49    | 9 6 |
| 6 6 |        |        |       |        |       | 9 6 |
| 6 7 | 48.724 | 56     | 3.043 | 22     | 2.953 | 5   |
| 6 8 | 53     | 71     | 46    | 36     | 56    | 4   |
| 6 9 | 82     | 87     | 3.050 | 50     | 2.960 | 3   |
| 7 0 | 48.811 | 24.902 | 54    | 64     | 63    | 3   |
| 7 1 | 40     | 17     | 58    | 78     | 67    | 2   |
| 7 2 | 69     | 33     | 3.061 | 92     | 2.970 | 1   |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '   |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 48.869 | 24.933 | 3.061 | 24.192 | 2.970 | 6 0 |
| 1  | 98     | 48     | 65    | 24.205 | 74    | 0 0 |
| 2  | 48.927 | 64     | 69    | 20     | 77    | 0 0 |
| 3  | 56     | 79     | 3.073 | 34     | 2.981 | 0 0 |
| 4  | 86     | 95     | 76    | 49     | 84    | 0 0 |
| 5  | 48.015 | 25.010 | 3.080 | 63     | 88    | 5 5 |
| 6  | 44     | 26     | 84    | 77     | 2.992 | 4 4 |
| 7  | 73     | 41     | 88    | 91     | 95    | 0 0 |
| 8  | 48.102 | 56     | 3.091 | 24.305 | 99    | 0 0 |
| 9  | 31     | 72     | 95    | 19     | 3.002 | 5 1 |
| 10 | 60     | 87     | 99    | 33     | 6     | 5 0 |
| 11 | 89     | 25.103 | 3.103 | 47     | 9     | 4 4 |
| 12 | 48.218 | 18     | 6     | 61     | 3.013 | 0 0 |
| 13 | 47     | 34     | 3.110 | 76     | 16    | 4 4 |
| 14 | 76     | 49     | 14    | 90     | 3.020 | 7 6 |
| 15 | 48.306 | 65     | 18    | 24.404 | 23    | 4 5 |
| 16 | 35     | 80     | 3.122 | 18     | 27    | 4 4 |
| 17 | 64     | 95     | 25    | 32     | 3.031 | 4 4 |
| 18 | 93     | 25.211 | 29    | 45     | 34    | 4 4 |
| 19 | 48.422 | 27     | 3.133 | 60     | 38    | 4 1 |
| 20 | 51     | 42     | 37    | 74     | 3.041 | 4 0 |
| 21 | 80     | 58     | 3.140 | 88     | 45    | 0 0 |
| 22 | 48.509 | 73     | 44    | 24.502 | 48    | 0 0 |
| 23 | 38     | 88     | 48    | 17     | 3.052 | 7 6 |
| 24 | 67     | 25.304 | 3.152 | 31     | 56    | 6 6 |
| 25 | 96     | 19     | 56    | 45     | 59    | 5 5 |
| 26 | 48.625 | 35     | 59    | 59     | 3.063 | 4 4 |
| 27 | 55     | 50     | 3.163 | 73     | 66    | 0 0 |
| 28 | 84     | 66     | 67    | 87     | 3.070 | 0 0 |
| 29 | 48.713 | 81     | 3.171 | 24.601 | 73    | 2 1 |
| 30 | 42     | 97     | 75    | 15     | 77    | 0 0 |
| 31 | 71     | 25.412 | 78    | 29     | 3.081 | 0 0 |
| 32 | 48.800 | 28     | 3.182 | 43     | 84    | 0 0 |
| 33 | 29     | 43     | 86    | 58     | 88    | 0 0 |
| 34 | 58     | 59     | 3.190 | 72     | 3.091 | 7 6 |
| 35 | 87     | 74     | 94    | 86     | 95    | 5 5 |
| 36 | 48.916 | 90     | 97    | 24.700 | 98    | 5 5 |
| 37 | 46     | 25.505 | 3.201 | 14     | 3.102 | 4 4 |
| 38 | 75     | 21     | 5     | 28     | 6     | 2 2 |
| 39 | 50.004 | 36     | 9     | 42     | 9     | 2 1 |
| 40 | 33     | 52     | 3.213 | 56     | 3.113 | 2 0 |
| 41 | 62     | 67     | 17    | 70     | 16    | 1 8 |
| 42 | 91     | 83     | 3.221 | 84     | 3.120 | 0 8 |
| 43 | 50.120 | 98     | 24    | 98     | 24    | 1 7 |
| 44 | 49     | 25.614 | 28    | 24.813 | 27    | 1 6 |
| 45 | 78     | 29     | 3.232 | 27     | 3.131 | 1 5 |
| 46 | 50.207 | 45     | 36    | 41     | 35    | 1 4 |
| 47 | 36     | 60     | 3.240 | 55     | 38    | 1 3 |
| 48 | 65     | 76     | 44    | 69     | 3.142 | 1 2 |
| 49 | 95     | 91     | 47    | 83     | 45    | 1 1 |
| 50 | 50.324 | 25.707 | 3.251 | 97     | 49    | 1 0 |
| 51 | 53     | 22     | 55    | 24.911 | 3.153 | 0 9 |
| 52 | 82     | 38     | 89    | 25     | 66    | 0 8 |
| 53 | 50.411 | 53     | 3.263 | 39     | 3.160 | 0 7 |
| 54 | 40     | 69     | 67    | 53     | 63    | 0 6 |
| 55 | 69     | 84     | 3.271 | 68     | 67    | 5 5 |
| 56 | 98     | 25.800 | 75    | 82     | 3.171 | 4 4 |
| 57 | 50.527 | 15     | 78    | 96     | 74    | 4 3 |
| 58 | 55     | 31     | 3.282 | 25.010 | 78    | 3 2 |
| 59 | 85     | 46     | 85    | 24     | 3.182 | 2 1 |
| 60 | 50.615 | 62     | 3.290 | 38     | 85    | 1 0 |



|    | L      | T      | E     | X      | Y     |    |
|----|--------|--------|-------|--------|-------|----|
| 0  | 60.615 | 25.862 | 3.290 | 25.038 | 3.185 | 60 |
| 1  | 44     | 77     | 94    | 52     | 89    | 69 |
| 2  | 73     | 93     | 98    | 66     | 192   | 68 |
| 3  | 50.702 | 25.908 | 3.302 | 80     | 96    | 87 |
| 4  | 31     | 24     | 6     | 94     | 200   | 56 |
| 5  | 60     | 39     | 3.310 | 25.108 | 3     | 55 |
| 6  | 89     | 55     | 13    | 22     | 7     | 44 |
| 7  | 50.818 | 70     | 17    | 37     | 211   | 33 |
| 8  | 47     | 86     | 3.321 | 51     | 14    | 58 |
| 9  | 76     | 26.002 | 25    | 65     | 18    | 51 |
| 10 | 50.905 | 17     | 29    | 79     | 3.222 | 50 |
| 11 | 35     | 33     | 3.333 | 93     | 25    | 49 |
| 12 | 64     | 48     | 37    | 25.207 | 29    | 48 |
| 13 | 93     | 64     | 3.341 | 21     | 233   | 47 |
| 14 | 51.022 | 79     | 45    | 35     | 36    | 46 |
| 15 | 51     | 95     | 49    | 49     | 3.240 | 45 |
| 16 | 80     | 26.110 | 3.353 | 63     | 44    | 44 |
| 17 | 51.109 | 26     | 55    | 77     | 47    | 43 |
| 18 | 38     | 41     | 3.360 | 91     | 251   | 42 |
| 19 | 67     | 57     | 64    | 25.305 | 55    | 41 |
| 20 | 96     | 72     | 68    | 19     | 58    | 40 |
| 21 | 51.225 | 88     | 3.372 | 34     | 3.262 | 39 |
| 22 | 55     | 26.203 | 76    | 48     | 66    | 38 |
| 23 | 84     | 19     | 3.380 | 62     | 69    | 37 |
| 24 | 51.313 | 35     | 64    | 76     | 3.273 | 36 |
| 25 | 42     | 50     | 88    | 90     | 77    | 35 |
| 26 | 71     | 66     | 3.392 | 25.404 | 3.281 | 34 |
| 27 | 51.400 | 81     | 95    | 18     | 84    | 33 |
| 28 | 29     | 97     | 3.400 | 32     | 88    | 32 |
| 29 | 58     | 26.312 | 4     | 45     | 3.292 | 31 |
| 30 | 87     | 28     | 8     | 60     | 95    | 30 |
| 31 | 51.516 | 43     | 12    | 74     | 99    | 29 |
| 32 | 45     | 59     | 16    | 88     | 3.303 | 28 |
| 33 | 74     | 75     | 3.420 | 25.502 | 6     | 27 |
| 34 | 51.604 | 90     | 24    | 15     | 3.310 | 26 |
| 35 | 33     | 26.406 | 28    | 30     | 14    | 25 |
| 36 | 62     | 21     | 3.432 | 45     | 18    | 24 |
| 37 | 91     | 37     | 36    | 59     | 3.321 | 23 |
| 38 | 51.720 | 52     | 3.440 | 73     | 25    | 22 |
| 39 | 49     | 68     | 43    | 87     | 29    | 21 |
| 40 | 78     | 83     | 47    | 25.601 | 3.332 | 20 |
| 41 | 51.807 | 99     | 3.451 | 15     | 36    | 19 |
| 42 | 36     | 26.515 | 55    | 29     | 3.340 | 18 |
| 43 | 65     | 30     | 59    | 43     | 44    | 17 |
| 44 | 94     | 46     | 3.463 | 57     | 47    | 16 |
| 45 | 51.924 | 61     | 67    | 71     | 3.351 | 15 |
| 46 | 53     | 77     | 3.471 | 85     | 55    | 14 |
| 47 | 82     | 92     | 75    | 99     | 59    | 13 |
| 48 | 52.011 | 26.608 | 79    | 25.713 | 3.362 | 12 |
| 49 | 40     | 24     | 3.483 | 27     | 66    | 11 |
| 50 | 69     | 39     | 87    | 41     | 3.370 | 10 |
| 51 | 98     | 55     | 3.491 | 55     | 74    | 9  |
| 52 | 52.127 | 70     | 95    | 70     | 77    | 8  |
| 53 | 56     | 86     | 99    | 84     | 3.381 | 7  |
| 54 | 85     | 26.701 | 3.504 | 98     | 85    | 6  |
| 55 | 52.214 | 17     | 8     | 25.812 | 69    | 5  |
| 56 | 44     | 33     | 3.512 | 26     | 3.392 | 4  |
| 57 | 73     | 43     | 16    | 40     | 96    | 3  |
| 58 | 52.302 | 64     | 3.520 | 54     | 3.400 | 2  |
| 59 | 31     | 79     | 24    | 68     | 4     | 1  |
| 60 | 60     | 95     | 28    | 82     | 7     | 0  |

|    | L      | T      | E     | X      | Y     |    |
|----|--------|--------|-------|--------|-------|----|
| 0  | 52.360 | 26.795 | 3.528 | 25.882 | 3.407 | 60 |
| 1  | 89     | 26.811 | 3.532 | 96     | 3.411 | 0  |
| 2  | 52.448 | 26     | 36    | 25.910 | 15    | 5  |
| 3  | 47     | 42     | 3.540 | 24     | 19    | 0  |
| 4  | 76     | 57     | 44    | 38     | 3.422 | 5  |
| 5  | 52.505 | 73     | 48    | 52     | 26    | 5  |
| 6  | 34     | 89     | 3.552 | 66     | 3.430 | 5  |
| 7  | 63     | 26.904 | 55    | 80     | 34    | 5  |
| 8  | 93     | 20     | 3.560 | 94     | 38    | 5  |
| 9  | 52.622 | 35     | 64    | 26.008 | 3.441 | 5  |
| 10 | 51     | 51     | 68    | 22     | 45    | 5  |
| 11 | 80     | 67     | 3.572 | 36     | 49    | 0  |
| 12 | 52.709 | 82     | 76    | 50     | 3.453 | 0  |
| 13 | 38     | 98     | 3.580 | 64     | 56    | 4  |
| 14 | 67     | 27.013 | 84    | 78     | 3.460 | 4  |
| 15 | 96     | 29     | 88    | 93     | 64    | 4  |
| 16 | 52.825 | 45     | 3.593 | 26.107 | 68    | 4  |
| 17 | 54     | 60     | 97    | 21     | 3.472 | 4  |
| 18 | 83     | 76     | 3.601 | 35     | 75    | 4  |
| 19 | 52.913 | 91     | 5     | 49     | 79    | 4  |
| 20 | 42     | 27.107 | 9     | 63     | 3.483 | 4  |
| 1  | 71     | 23     | 3.613 | 77     | 87    | 0  |
| 2  | 53.000 | 38     | 17    | 91     | 3.491 | 0  |
| 3  | 29     | 54     | 3.621 | 26.205 | 94    | 0  |
| 4  | 58     | 69     | 25    | 19     | 98    | 0  |
| 5  | 87     | 85     | 29    | 33     | 3.502 | 5  |
| 6  | 53.116 | 27.201 | 3.633 | 47     | 6     | 5  |
| 7  | 45     | 16     | 38    | 61     | 3.510 | 5  |
| 8  | 74     | 32     | 3.642 | 75     | 14    | 5  |
| 9  | 53.203 | 47     | 46    | 89     | 17    | 2  |
| 0  | 33     | 63     | 3.650 | 26.303 | 3.521 | 0  |
| 1  | 62     | 79     | 54    | 17     | 25    | 0  |
| 2  | 91     | 94     | 58    | 31     | 29    | 0  |
| 3  | 53.320 | 27.310 | 3.662 | 45     | 3.533 | 0  |
| 4  | 49     | 26     | 66    | 59     | 37    | 0  |
| 5  | 78     | 41     | 3.670 | 73     | 3.540 | 5  |
| 6  | 53.407 | 57     | 75    | 87     | 44    | 4  |
| 7  | 36     | 72     | 79    | 26.401 | 48    | 3  |
| 8  | 65     | 88     | 3.683 | 15     | 3.552 | 3  |
| 9  | 94     | 27.404 | 87    | 29     | 56    | 2  |
| 0  | 53.523 | 19     | 3.691 | 43     | 3.560 | 2  |
| 1  | 53     | 35     | 95    | 57     | 64    | 0  |
| 2  | 82     | 51     | 99    | 71     | 67    | 1  |
| 3  | 53.611 | 66     | 3.703 | 85     | 3.571 | 1  |
| 4  | 40     | 82     | 8     | 99     | 75    | 1  |
| 5  | 69     | 98     | 3.712 | 26.513 | 79    | 1  |
| 6  | 98     | 27.513 | 16    | 28     | 3.583 | 5  |
| 7  | 53.727 | 29     | 3.720 | 42     | 87    | 1  |
| 8  | 56     | 45     | 24    | 56     | 3.591 | 1  |
| 9  | 85     | 60     | 28    | 70     | 94    | 1  |
| 0  | 53.814 | 76     | 3.733 | 84     | 98    | 1  |
| 1  | 43     | 91     | 37    | 98     | 3.602 | 0  |
| 2  | 72     | 27.607 | 3.741 | 26.612 | 6     | 0  |
| 3  | 53.902 | 23     | 45    | 26     | 3.610 | 7  |
| 4  | 31     | 33     | 49    | 40     | 14    | 6  |
| 5  | 80     | 54     | 3.753 | 54     | 18    | 5  |
| 6  | 89     | 70     | 57    | 68     | 3.621 | 4  |
| 7  | 54.018 | 85     | 3.762 | 82     | 25    | 3  |
| 8  | 47     | 27.701 | 65    | 96     | 29    | 3  |
| 9  | 76     | 17     | 3.770 | 26.710 | 3.633 | 2  |
| 0  | 54.105 | 32     | 74    | 24     | 37    | 0  |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '   |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 54.105 | 27.732 | 3.774 | 26.724 | 3.637 | 8 0 |
| 1  | 34     | 48     | 75    | 38     | 3.641 | 5 9 |
| 2  | 63     | 64     | 3.783 | 52     | 45    | 5 8 |
| 3  | 92     | 79     | 87    | 66     | 49    | 5 7 |
| 4  | 54.222 | 95     | 3.791 | 80     | 3.653 | 5 6 |
| 5  | 51     | 27.811 | 95    | 94     | 56    | 5 5 |
| 6  | 80     | 26     | 99    | 28.808 | 3.660 | 5 4 |
| 7  | 54.309 | 42     | 3.804 | 22     | 64    | 5 3 |
| 8  | 38     | 58     | 8     | 36     | 68    | 5 2 |
| 9  | 67     | 73     | 3.812 | 50     | 3.672 | 5 1 |
| 10 | 96     | 89     | 16    | 64     | 76    | 5 0 |
| 11 | 54.425 | 27.905 | 3.820 | 78     | 3.680 | 4 9 |
| 12 | 54     | 20     | 25    | 92     | 84    | 4 8 |
| 13 | 83     | 35     | 29    | 28.905 | 88    | 4 7 |
| 14 | 54.512 | 52     | 3.833 | 20     | 3.692 | 4 6 |
| 15 | 42     | 67     | 37    | 34     | 95    | 4 5 |
| 16 | 71     | 83     | 3.842 | 48     | 99    | 4 4 |
| 17 | 54.600 | 99     | 46    | 62     | 3.703 | 4 3 |
| 18 | 29     | 28.015 | 3.850 | 76     | 7     | 4 2 |
| 19 | 58     | 30     | 54    | 90     | 3.711 | 4 1 |
| 20 | 87     | 46     | 58    | 27.004 | 15    | 4 0 |
| 21 | 54.716 | 62     | 3.863 | 18     | 19    | 3 9 |
| 22 | 45     | 77     | 67    | 32     | 3.723 | 3 8 |
| 23 | 74     | 93     | 3.871 | 46     | 27    | 3 7 |
| 24 | 54.803 | 28.109 | 75    | 60     | 3.731 | 3 6 |
| 25 | 32     | 24     | 3.880 | 74     | 35    | 3 5 |
| 26 | 62     | 40     | 81    | 88     | 39    | 3 4 |
| 27 | 91     | 56     | 88    | 27.102 | 3.743 | 3 3 |
| 28 | 54.920 | 72     | 3.892 | 16     | 47    | 3 2 |
| 29 | 49     | 87     | 97    | 30     | 3.750 | 3 1 |
| 30 | 78     | 28.203 | 3.901 | 44     | 54    | 3 0 |
| 31 | 55.007 | 19     | 5     | 27.158 | 58    | 2 9 |
| 32 | 36     | 34     | 3.910 | 72     | 3.762 | 2 8 |
| 33 | 65     | 50     | 14    | 86     | 66    | 2 7 |
| 34 | 94     | 66     | 13    | 27.200 | 3.770 | 2 6 |
| 35 | 55.123 | 81     | 3.922 | 14     | 74    | 2 5 |
| 36 | 52     | 97     | 37    | 28     | 78    | 2 4 |
| 37 | 81     | 28.313 | 3.931 | 42     | 3.782 | 2 3 |
| 38 | 55.211 | 29     | 35    | 56     | 86    | 2 2 |
| 39 | 40     | 44     | 39    | 70     | 3.790 | 2 1 |
| 40 | 69     | 60     | 3.944 | 84     | 94    | 2 0 |
| 41 | 98     | 76     | 48    | 98     | 98    | 1 9 |
| 42 | 55.327 | 91     | 3.952 | 27.312 | 3.802 | 1 8 |
| 43 | 56     | 28.407 | 57    | 26     | 6     | 1 7 |
| 44 | 85     | 23     | 3.961 | 40     | 3.810 | 1 6 |
| 45 | 55.414 | 39     | 65    | 54     | 14    | 1 5 |
| 46 | 43     | 54     | 69    | 68     | 18    | 1 4 |
| 47 | 72     | 70     | 3.974 | 82     | 3.822 | 1 3 |
| 48 | 55.501 | 86     | 78    | 96     | 26    | 1 2 |
| 49 | 31     | 28.502 | 3.982 | 27.410 | 3.830 | 1 1 |
| 50 | 60     | 17     | 87    | 24     | 34    | 1 0 |
| 51 | 89     | 33     | 3.991 | 38     | 38    | 9 9 |
| 52 | 55.618 | 49     | 95    | 52     | 3.842 | 9 8 |
| 53 | 47     | 64     | 4.000 | 66     | 46    | 9 7 |
| 54 | 76     | 80     | 4     | 80     | 3.850 | 9 6 |
| 55 | 55.705 | 96     | 8     | 94     | 54    | 9 5 |
| 56 | 34     | 28.612 | 4.013 | 27.508 | 58    | 9 4 |
| 57 | 63     | 27     | 17    | 22     | 3.862 | 9 3 |
| 58 | 92     | 43     | 4.021 | 36     | 66    | 9 2 |
| 59 | 55.821 | 59     | 26    | 50     | 3.870 | 9 1 |
| 60 | 51     | 75     | 4.030 | 64     | 74    | 9 0 |

| '  | L      | T      | E     | X      | Y     | '   |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 55.851 | 28.675 | 4.030 | 27.564 | 3.874 | 6 0 |
| 1  | 80     | 90     | 34    | 78     | 78    | 0 0 |
| 2  | 55.909 | 28.705 | 39    | 92     | 3.882 | 0 0 |
| 3  | 38     | 22     | 4.043 | 27.605 | 86    | 0 0 |
| 4  | 67     | 33     | 47    | 20     | 3.890 | 0 6 |
| 5  | 96     | 53     | 4.052 | 34     | 94    | 0 6 |
| 6  | 56.025 | 69     | 56    | 43     | 98    | 0 6 |
| 7  | 54     | 85     | 4.060 | 62     | 3.902 | 0 6 |
| 8  | 83     | 28.801 | 65    | 75     | 8     | 0 6 |
| 9  | 56.112 | 16     | 69    | 90     | 3.910 | 0 6 |
| 10 | 41     | 32     | 4.074 | 27.704 | 14    | 0 0 |
| 11 | 71     | 48     | 78    | 18     | 18    | 0 0 |
| 12 | 56.200 | 64     | 4.082 | 32     | 3.922 | 0 0 |
| 13 | 29     | 79     | 67    | 45     | 26    | 0 6 |
| 14 | 58     | 95     | 4.091 | 59     | 3.930 | 0 6 |
| 15 | 87     | 28.911 | 95    | 73     | 34    | 0 6 |
| 16 | 56.315 | 27     | 4.100 | 87     | 38    | 0 6 |
| 17 | 45     | 42     | 4     | 27.801 | 3.942 | 0 6 |
| 18 | 74     | 58     | 8     | 15     | 46    | 0 6 |
| 19 | 56.403 | 74     | 4.113 | 29     | 3.950 | 0 6 |
| 20 | 32     | 90     | 17    | 43     | 54    | 0 0 |
| 21 | 61     | 29.005 | 4.122 | 57     | 59    | 0 0 |
| 22 | 90     | 21     | 26    | 71     | 3.963 | 0 0 |
| 23 | 56.520 | 37     | 4.130 | 85     | 67    | 0 0 |
| 24 | 49     | 53     | 35    | 99     | 3.971 | 0 6 |
| 25 | 78     | 63     | 39    | 27.913 | 75    | 0 6 |
| 26 | 56.607 | 84     | 4.144 | 27     | 79    | 0 6 |
| 27 | 36     | 29.100 | 48    | 41     | 3.983 | 0 6 |
| 28 | 65     | 16     | 4.152 | 55     | 87    | 0 6 |
| 29 | 94     | 32     | 57    | 69     | 3.991 | 0 6 |
| 30 | 56.723 | 47     | 4.161 | 83     | 95    | 0 0 |
| 31 | 52     | 63     | 66    | 97     | 99    | 0 0 |
| 32 | 81     | 79     | 4.170 | 28.011 | 4.003 | 0 0 |
| 33 | 56.810 | 95     | 74    | 25     | 7     | 0 6 |
| 34 | 40     | 29.210 | 79    | 39     | 4.011 | 0 6 |
| 35 | 69     | 26     | 4.183 | 53     | 15    | 0 6 |
| 36 | 98     | 42     | 88    | 67     | 4.020 | 0 6 |
| 37 | 56.927 | 58     | 4.192 | 81     | 24    | 0 6 |
| 38 | 56     | 74     | 97    | 95     | 28    | 0 6 |
| 39 | 85     | 89     | 4.201 | 28.109 | 4.032 | 0 6 |
| 40 | 57.014 | 29.305 | 6     | 23     | 36    | 0 0 |
| 41 | 43     | 21     | 4.210 | 37     | 4.040 | 0 6 |
| 42 | 72     | 37     | 14    | 50     | 44    | 0 6 |
| 43 | 57.101 | 53     | 19    | 64     | 48    | 0 6 |
| 44 | 30     | 68     | 4.223 | 78     | 4.052 | 0 6 |
| 45 | 60     | 84     | 28    | 92     | 56    | 0 6 |
| 46 | 89     | 29.400 | 4.232 | 28.206 | 4.060 | 0 6 |
| 47 | 57.218 | 16     | 37    | 20     | 65    | 0 6 |
| 48 | 47     | 32     | 4.241 | 34     | 69    | 0 6 |
| 49 | 76     | 47     | 46    | 48     | 4.073 | 0 6 |
| 50 | 57.305 | 63     | 4.250 | 62     | 77    | 0 0 |
| 51 | 34     | 79     | 55    | 76     | 4.081 | 0 6 |
| 52 | 63     | 95     | 59    | 90     | 85    | 0 6 |
| 53 | 92     | 29.511 | 4.264 | 28.304 | 89    | 0 6 |
| 54 | 57.421 | 28     | 68    | 18     | 4.093 | 0 6 |
| 55 | 50     | 42     | 4.273 | 32     | 97    | 0 6 |
| 56 | 80     | 58     | 77    | 46     | 4.102 | 0 6 |
| 57 | 57.509 | 74     | 4.281 | 60     | 6     | 0 6 |
| 58 | 38     | 90     | 86    | 74     | 4.110 | 0 6 |
| 59 | 67     | 29.605 | 4.290 | 88     | 14    | 0 6 |
| 60 | 95     | 21     | 95    | 28.402 | 18    | 0 0 |

## 曲線函數表

|    | L      | T      | E     | X      | Y     |   |
|----|--------|--------|-------|--------|-------|---|
| 0  | 57.596 | 29.621 | 4.295 | 28.402 | 4.118 | 6 |
| 1  | 57.625 | 37     | 99    | 16     | 4.122 | 0 |
| 2  | 54     | 53     | 4.304 | 29     | 75    | 3 |
| 3  | 63     | 69     | 8     | 43     | 4.130 | 5 |
| 4  | 57.712 | 85     | 4.313 | 57     | 35    | 7 |
| 5  | 41     | 28.700 | 17    | 71     | 33    | 5 |
| 6  | 70     | 16     | 4.322 | 85     | 4.143 | 4 |
| 7  | 99     | 32     | 25    | 99     | 47    | 5 |
| 8  | 57.829 | 48     | 4.331 | 28.513 | 4.151 | 5 |
| 9  | 58     | 64     | 35    | 27     | 55    | 1 |
| 10 | 87     | 80     | 4.340 | 41     | 59    | 0 |
| 11 | 57.916 | 96     | 45    | 55     | 4.164 | 9 |
| 12 | 45     | 29.811 | 49    | 69     | 68    | 4 |
| 13 | 74     | 27     | 4.354 | 83     | 4.172 | 4 |
| 14 | 58.003 | 43     | 58    | 97     | 76    | 6 |
| 15 | 32     | 59     | 4.363 | 28.611 | 4.180 | 4 |
| 16 | 61     | 75     | 67    | 25     | 84    | 5 |
| 17 | 90     | 91     | 4.372 | 39     | 89    | 4 |
| 18 | 58.119 | 29.906 | 76    | 52     | 4.193 | 3 |
| 19 | 49     | 22     | 4.381 | 65     | 97    | 4 |
| 20 | 78     | 38     | 85    | 80     | 4.201 | 0 |
| 21 | 58.207 | 54     | 4.390 | 94     | 6     | 4 |
| 22 | 36     | 70     | 94    | 28.708 | 9     | 8 |
| 23 | 65     | 86     | 99    | 22     | 4.214 | 7 |
| 24 | 94     | 30.001 | 4.404 | 35     | 18    | 6 |
| 25 | 58.323 | 17     | 8     | 50     | 4.222 | 5 |
| 26 | 52     | 33     | 4.413 | 64     | 26    | 4 |
| 27 | 81     | 49     | 17    | 78     | 4.230 | 3 |
| 28 | 58.410 | 65     | 4.422 | 92     | 35    | 5 |
| 29 | 39     | 81     | 26    | 28.806 | 39    | 1 |
| 30 | 69     | 97     | 4.431 | 20     | 4.243 | 0 |
| 31 | 93     | 112    | 35    | 34     | 47    | 9 |
| 32 | 58.527 | 28     | 4.440 | 48     | 4.251 | 8 |
| 33 | 55     | 44     | 45    | 61     | 55    | 2 |
| 34 | 85     | 60     | 49    | 75     | 4.260 | 6 |
| 35 | 58.614 | 76     | 4.454 | 89     | 64    | 2 |
| 36 | 43     | 92     | 58    | 28.903 | 68    | 4 |
| 37 | 72     | 30.208 | 4.463 | 17     | 4.272 | 2 |
| 38 | 58.701 | 24     | 68    | 31     | 77    | 2 |
| 39 | 30     | 39     | 4.472 | 45     | 4.281 | 1 |
| 40 | 69     | 55     | 77    | 59     | 85    | 0 |
| 41 | 89     | 71     | 4.481 | 73     | 89    | 9 |
| 42 | 58.818 | 87     | 85    | 87     | 4.293 | 1 |
| 43 | 47     | 30.303 | 4.491 | 29.001 | 98    | 7 |
| 44 | 76     | 19     | 95    | 15     | 4.302 | 1 |
| 45 | 58.905 | 35     | 4.500 | 28     | 6     | 1 |
| 46 | 34     | 51     | 4     | 42     | 4.310 | 4 |
| 47 | 63     | 65     | 9     | 56     | 14    | 3 |
| 48 | 92     | 82     | 4.514 | 70     | 19    | 1 |
| 49 | 59.021 | 98     | 18    | 84     | 4.323 | 1 |
| 50 | 50     | 30.414 | 4.523 | 98     | 27    | 0 |
| 51 | 79     | 30     | 27    | 29.112 | 4.331 | 9 |
| 52 | 58.108 | 46     | 4.532 | 26     | 36    | 8 |
| 53 | 38     | 62     | 37    | 40     | 4.340 | 7 |
| 54 | 67     | 78     | 4.541 | 54     | 44    | 6 |
| 55 | 96     | 94     | 46    | 68     | 48    | 5 |
| 56 | 59.225 | 30.510 | 4.551 | 81     | 4.353 | 4 |
| 57 | 54     | 25     | 55    | 95     | 57    | 3 |
| 58 | 83     | 41     | 4.560 | 29.209 | 4.361 | 2 |
| 59 | 59.312 | 57     | 64    | 23     | 65    | 1 |
| 60 | 41     | 73     | 69    | 37     | 4.370 | 0 |

|    | L      | T      | E     | X      | Y     |    |
|----|--------|--------|-------|--------|-------|----|
| 0  | 59.341 | 30.573 | 4.569 | 29.237 | 4.370 | 6  |
| 1  | 70     | 89     | 4.574 | 51     | 74    | 0  |
| 2  | 99     | 30.605 | 78    | 65     | 78    | 0  |
| 3  | 59.428 | 21     | 4.583 | 79     | 4.382 | 0  |
| 4  | 58     | 37     | 88    | 93     | 87    | 6  |
| 5  | 87     | 53     | 4.592 | 29.307 | 4.391 | 5  |
| 6  | 59.516 | 69     | 97    | 21     | 95    | 5  |
| 7  | 45     | 84     | 4.602 | 34     | 99    | 4  |
| 8  | 74     | 30.700 | 7     | 48     | 4.404 | 5  |
| 9  | 59.603 | 16     | 4.611 | 62     | 8     | 1  |
| 10 | 32     | 32     | 16    | 76     | 4.412 | 0  |
| 11 | 61     | 48     | 4.621 | 90     | 16    | 4  |
| 12 | 90     | 64     | 25    | 29.404 | 4.421 | 4  |
| 13 | 59.719 | 80     | 4.630 | 18     | 25    | 4  |
| 14 | 48     | 96     | 35    | 32     | 29    | 6  |
| 15 | 78     | 30.812 | 39    | 46     | 4.434 | 4  |
| 16 | 59.807 | 28     | 4.644 | 60     | 38    | 4  |
| 17 | 36     | 44     | 49    | 73     | 4.442 | 4  |
| 18 | 65     | 60     | 4.653 | 87     | 46    | 2  |
| 19 | 94     | 76     | 58    | 29.501 | 4.451 | 4  |
| 20 | 59.923 | 91     | 4.663 | 15     | 55    | 4  |
| 21 | 52     | 30.907 | 67    | 29     | 59    | 0  |
| 22 | 81     | 23     | 4.672 | 43     | 4.464 | 4  |
| 23 | 80.010 | 39     | 77    | 57     | 68    | 7  |
| 24 | 39     | 55     | 4.682 | 71     | 4.472 | 6  |
| 25 | 68     | 71     | 86    | 85     | 77    | 3  |
| 26 | 98     | 87     | 4.691 | 99     | 4.481 | 5  |
| 27 | 60.127 | 31.003 | 96    | 29.612 | 85    | 4  |
| 28 | 56     | 19     | 4.700 | 26     | 89    | 4  |
| 29 | 85     | 35     | 5     | 40     | 4.494 | 2  |
| 30 | 60.214 | 51     | 4.710 | 54     | 98    | 0  |
| 31 | 43     | 67     | 15    | 68     | 4.502 | 0  |
| 32 | 72     | 83     | 19    | 82     | 7     | 8  |
| 33 | 60.301 | 99     | 4.724 | 96     | 4.511 | 7  |
| 34 | 30     | 31.115 | 29    | 29.710 | 15    | 6  |
| 35 | 59     | 31     | 4.734 | 24     | 4.520 | 2  |
| 36 | 89     | 47     | 38    | 37     | 24    | 5  |
| 37 | 60.417 | 63     | 4.743 | 51     | 28    | 4  |
| 38 | 47     | 78     | 48    | 65     | 4.533 | 3  |
| 39 | 76     | 94     | 4.753 | 79     | 37    | 1  |
| 40 | 60.505 | 31.210 | 57    | 93     | 4.541 | 0  |
| 41 | 34     | 26     | 4.762 | 29.807 | 46    | 0  |
| 42 | 63     | 42     | 67    | 21     | 4.550 | 18 |
| 43 | 92     | 58     | 4.772 | 35     | 54    | 1  |
| 44 | 60.621 | 74     | 76    | 49     | 59    | 6  |
| 45 | 50     | 90     | 4.781 | 62     | 4.563 | 1  |
| 46 | 79     | 31.306 | 86    | 76     | 67    | 4  |
| 47 | 60.708 | 22     | 4.791 | 90     | 4.572 | 3  |
| 48 | 37     | 38     | 95    | 29.904 | 76    | 1  |
| 49 | 67     | 54     | 4.800 | 18     | 4.580 | 1  |
| 50 | 96     | 70     | 5     | 32     | 85    | 1  |
| 51 | 60.825 | 86     | 4.810 | 46     | 89    | 0  |
| 52 | 54     | 31.402 | 15    | 60     | 4.593 | 0  |
| 53 | 83     | 18     | 19    | 74     | 98    | 0  |
| 54 | 60.912 | 34     | 4.824 | 87     | 4.602 | 7  |
| 55 | 41     | 50     | 29    | 30.001 | 6     | 5  |
| 56 | 70     | 66     | 4.834 | 15     | 4.611 | 3  |
| 57 | 99     | 82     | 39    | 29     | 15    | 4  |
| 58 | 61.028 | 98     | 4.843 | 43     | 4.620 | 3  |
| 59 | 57     | 31.514 | 48    | 57     | 24    | 2  |
| 60 | 87     | 30     | 4.853 | 71     | 28    | 0  |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '  |
|----|--------|--------|-------|--------|-------|----|
| 0  | 61.087 | 31.530 | 4.853 | 30.071 | 4.628 | 60 |
| 1  | 61.116 | 46     | 58    | 85     | 33    | 59 |
| 2  | 45     | 62     | 63    | 98     | 37    | 58 |
| 3  | 74     | 78     | 67    | 30.112 | 41    | 57 |
| 4  | 61.203 | 94     | 72    | 26     | 46    | 56 |
| 5  | 32     | 31.610 | 77    | 40     | 50    | 55 |
| 6  | 61     | 26     | 82    | 54     | 55    | 54 |
| 7  | 90     | 42     | 87    | 68     | 59    | 53 |
| 8  | 61.319 | 58     | 92    | 82     | 63    | 52 |
| 9  | 48     | 74     | 96    | 95     | 66    | 51 |
| 10 | 77     | 90     | 4.901 | 30.209 | 72    | 50 |
| 11 | 61.407 | 31.706 | 6     | 23     | 76    | 49 |
| 12 | 36     | 22     | 11    | 37     | 81    | 48 |
| 13 | 65     | 38     | 16    | 51     | 85    | 47 |
| 14 | 94     | 54     | 21    | 65     | 90    | 46 |
| 15 | 61.523 | 70     | 25    | 79     | 94    | 45 |
| 16 | 52     | 86     | 30    | 92     | 98    | 44 |
| 17 | 61     | 31.802 | 35    | 30.306 | 4.703 | 43 |
| 18 | 61.610 | 18     | 40    | 20     | 7     | 42 |
| 19 | 39     | 34     | 45    | 34     | 12    | 41 |
| 20 | 68     | 50     | 50    | 48     | 16    | 40 |
| 21 | 97     | 66     | 54    | 62     | 21    | 39 |
| 22 | 61.726 | 82     | 59    | 76     | 25    | 38 |
| 23 | 56     | 98     | 64    | 89     | 29    | 37 |
| 24 | 85     | 31.914 | 69    | 30.403 | 34    | 36 |
| 25 | 61.814 | 30     | 74    | 17     | 38    | 35 |
| 26 | 43     | 46     | 79    | 31     | 43    | 34 |
| 27 | 72     | 62     | 84    | 45     | 47    | 33 |
| 28 | 61.901 | 78     | 89    | 59     | 52    | 32 |
| 29 | 30     | 94     | 93    | 73     | 56    | 31 |
| 30 | 59     | 32.010 | 98    | 86     | 60    | 30 |
| 31 | 61.988 | 26     | 5.006 | 30.500 | 65    | 29 |
| 32 | 62.017 | 42     | 8     | 14     | 69    | 28 |
| 33 | 46     | 58     | 13    | 28     | 74    | 27 |
| 34 | 76     | 74     | 18    | 42     | 78    | 26 |
| 35 | 62.105 | 90     | 23    | 56     | 83    | 25 |
| 36 | 34     | 32.106 | 28    | 69     | 37    | 24 |
| 37 | 62     | 22     | 33    | 83     | 91    | 23 |
| 38 | 92     | 39     | 38    | 97     | 96    | 22 |
| 39 | 62.221 | 55     | 42    | 30.611 | 4.800 | 21 |
| 40 | 50     | 71     | 47    | 25     | 5     | 20 |
| 41 | 79     | 87     | 52    | 39     | 9     | 19 |
| 42 | 62.308 | 32.203 | 57    | 53     | 14    | 18 |
| 43 | 37     | 19     | 62    | 66     | 18    | 17 |
| 44 | 66     | 36     | 67    | 80     | 23    | 16 |
| 45 | 96     | 51     | 72    | 94     | 27    | 15 |
| 46 | 62.425 | 69     | 77    | 30.708 | 32    | 14 |
| 47 | 54     | 83     | 82    | 22     | 36    | 13 |
| 48 | 83     | 99     | 87    | 36     | 41    | 12 |
| 49 | 62.512 | 32.315 | 92    | 50     | 46    | 11 |
| 50 | 41     | 31     | 97    | 63     | 49    | 10 |
| 51 | 70     | 47     | 5.102 | 77     | 54    | 9  |
| 52 | 99     | 63     | 7     | 91     | 58    | 8  |
| 53 | 62.628 | 80     | 11    | 30.805 | 63    | 7  |
| 54 | 57     | 96     | 16    | 19     | 67    | 6  |
| 55 | 86     | 32.412 | 21    | 33     | 72    | 5  |
| 56 | 62.715 | 28     | 26    | 46     | 76    | 4  |
| 57 | 45     | 44     | 31    | 60     | 81    | 3  |
| 58 | 74     | 60     | 36    | 74     | 85    | 2  |
| 59 | 62.803 | 76     | 41    | 88     | 90    | 1  |
| 60 | 32     | 92     | 46    | 30.902 | 94    | 0  |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | ' |
|----|--------|--------|-------|--------|-------|---|
| 0  | 62.882 | 32.492 | 5.146 | 30.902 | 4.894 | 0 |
| 1  | 61     | 32.508 | 51    | 16     | 99    | 0 |
| 2  | 90     | 24     | 56    | 29     | 4.903 | 0 |
| 3  | 62.919 | 40     | 61    | 43     | 8     | 0 |
| 4  | 48     | 55     | 66    | 57     | 12    | 0 |
| 5  | 77     | 72     | 71    | 71     | 17    | 5 |
| 6  | 63.006 | 89     | 76    | 85     | 21    | 5 |
| 7  | 35     | 32.605 | 81    | 99     | 26    | 5 |
| 8  | 65     | 21     | 86    | 31.012 | 30    | 5 |
| 9  | 94     | 37     | 91    | 26     | 35    | 5 |
| 10 | 63.123 | 53     | 96    | 40     | 39    | 5 |
| 11 | 52     | 69     | 5.201 | 54     | 44    | 5 |
| 12 | 81     | 85     | 6     | 68     | 48    | 4 |
| 13 | 63.210 | 32.701 | 11    | 81     | 53    | 4 |
| 14 | 39     | 17     | 16    | 95     | 57    | 4 |
| 15 | 68     | 33     | 21    | 31.109 | 62    | 4 |
| 16 | 97     | 49     | 25    | 23     | 65    | 4 |
| 17 | 63.326 | 66     | 31    | 37     | 71    | 4 |
| 18 | 55     | 82     | 36    | 51     | 76    | 4 |
| 19 | 85     | 96     | 41    | 64     | 80    | 4 |
| 20 | 63.414 | 32.814 | 46    | 78     | 85    | 4 |
| 1  | 43     | 30     | 51    | 92     | 89    | 0 |
| 2  | 72     | 46     | 56    | 31.206 | 94    | 0 |
| 3  | 63.501 | 62     | 61    | 20     | 98    | 0 |
| 4  | 30     | 73     | 66    | 33     | 6.003 | 0 |
| 5  | 59     | 54     | 71    | 47     | 7     | 5 |
| 6  | 88     | 32.911 | 76    | 51     | 12    | 5 |
| 7  | 63.617 | 27     | 81    | 75     | 16    | 5 |
| 8  | 46     | 43     | 86    | 89     | 21    | 5 |
| 9  | 75     | 59     | 92    | 31.303 | 25    | 5 |
| 30 | 63.705 | 75     | 97    | 16     | 30    | 0 |
| 1  | 34     | 91     | 5.302 | 30     | 35    | 0 |
| 2  | 63     | 33.007 | 7     | 44     | 39    | 0 |
| 3  | 92     | 23     | 12    | 58     | 44    | 0 |
| 4  | 63.821 | 40     | 17    | 72     | 48    | 2 |
| 35 | 50     | 55     | 22    | 85     | 53    | 2 |
| 6  | 79     | 72     | 27    | 99     | 58    | 2 |
| 7  | 63.908 | 88     | 32    | 31.413 | 62    | 2 |
| 8  | 37     | 33.104 | 37    | 27     | 67    | 2 |
| 9  | 66     | 20     | 42    | 41     | 71    | 2 |
| 40 | 95     | 35     | 47    | 54     | 76    | 2 |
| 1  | 64.024 | 53     | 52    | 68     | 80    | 0 |
| 2  | 54     | 69     | 57    | 82     | 85    | 1 |
| 3  | 83     | 85     | 62    | 96     | 90    | 1 |
| 4  | 64.112 | 33.201 | 68    | 31.510 | 94    | 1 |
| 45 | 41     | 17     | 73    | 23     | 99    | 1 |
| 6  | 70     | 33     | 78    | 37     | 5.103 | 1 |
| 7  | 99     | 49     | 83    | 51     | 8     | 1 |
| 8  | 64.228 | 86     | 88    | 65     | 12    | 1 |
| 9  | 57     | 82     | 93    | 79     | 17    | 1 |
| 50 | 85     | 98     | 98    | 92     | 22    | 1 |
| 1  | 64.315 | 33.314 | 5.403 | 31.605 | 26    | 0 |
| 2  | 44     | 30     | 8     | 20     | 31    | 0 |
| 3  | 74     | 48     | 13    | 34     | 35    | 0 |
| 4  | 64.403 | 63     | 19    | 48     | 40    | 0 |
| 55 | 32     | 79     | 24    | 61     | 45    | 5 |
| 6  | 61     | 95     | 29    | 75     | 49    | 4 |
| 7  | 90     | 33.411 | 34    | 89     | 54    | 4 |
| 8  | 64.519 | 27     | 39    | 31.703 | 58    | 3 |
| 9  | 48     | 43     | 44    | 17     | 63    | 2 |
| 60 | 77     | 60     | 49    | 30     | 68    | 1 |



## 曲線函數表

|    | L      | T      | E     | X      | Y     |     |
|----|--------|--------|-------|--------|-------|-----|
| 01 | 64.577 | 33.460 | 5.449 | 31.730 | 5.168 | 660 |
| 2  | 64.606 | 76     | 54    | 44     | 72    | 659 |
| 3  | 35     | 92     | 59    | 58     | 77    | 658 |
| 4  | 64     | 33.503 | 65    | 72     | 82    | 657 |
|    | 94     | 24     | 70    | 86     | 86    | 656 |
| 5  | 64.723 | 40     | 75    | 99     | 91    | 555 |
| 6  | 52     | 57     | 80    | 31.813 | 95    | 554 |
| 7  | 81     | 73     | 85    | 27     | 5.200 | 553 |
| 8  | 64.810 | 89     | 90    | 41     | 5     | 552 |
| 9  | 39     | 33.605 | 96    | 55     | 9     | 551 |
| 10 | 68     | 21     | 5.501 | 68     | 14    | 509 |
| 11 | 97     | 38     | 6     | 82     | 19    | 499 |
| 12 | 64.928 | 54     | 11    | 96     | 23    | 488 |
| 13 | 55     | 70     | 16    | 31.910 | 28    | 476 |
| 14 | 84     | 86     | 21    | 23     | 32    | 466 |
| 15 | 65.014 | 33.702 | 27    | 37     | 37    | 455 |
| 16 | 43     | 19     | 32    | 51     | 42    | 444 |
| 17 | 72     | 35     | 37    | 65     | 46    | 433 |
| 18 | 65.101 | 51     | 42    | 79     | 51    | 422 |
| 19 | 30     | 67     | 47    | 92     | 56    | 411 |
| 20 | 59     | 83     | 52    | 32.006 | 60    | 400 |
| 21 | 88     | 33.800 | 58    | 20     | 65    | 389 |
| 22 | 65.217 | 16     | 63    | 34     | 70    | 378 |
| 23 | 46     | 32     | 68    | 47     | 74    | 367 |
| 24 | 75     | 48     | 73    | 61     | 79    | 356 |
| 25 | 65.304 | 64     | 78    | 75     | 84    | 345 |
| 26 | 33     | 81     | 84    | 89     | 88    | 334 |
| 27 | 63     | 97     | 89    | 32.103 | 93    | 323 |
| 28 | 92     | 33.913 | 94    | 16     | 98    | 312 |
| 29 | 65.421 | 29     | 99    | 30     | 5.302 | 301 |
| 30 | 50     | 45     | 5.604 | 44     | 7     | 290 |
| 31 | 79     | 33.962 | 10    | 58     | 5.312 | 279 |
| 32 | 65.508 | 78     | 15    | 72     | 16    | 268 |
| 33 | 37     | 94     | 20    | 85     | 21    | 257 |
| 34 | 66     | 34.010 | 25    | 99     | 26    | 246 |
| 35 | 95     | 27     | 90    | 32.213 | 30    | 235 |
| 36 | 65.624 | 43     | 36    | 27     | 35    | 224 |
| 37 | 53     | 59     | 41    | 40     | 40    | 213 |
| 38 | 83     | 75     | 46    | 54     | 45    | 202 |
| 39 | 65.712 | 91     | 51    | 68     | 49    | 191 |
| 40 | 41     | 34.108 | 57    | 82     | 54    | 180 |
| 41 | 70     | 24     | 62    | 95     | 59    | 169 |
| 42 | 99     | 40     | 67    | 32.309 | 63    | 158 |
| 43 | 65.828 | 56     | 73    | 23     | 68    | 147 |
| 44 | 57     | 73     | 78    | 37     | 73    | 136 |
| 45 | 86     | 89     | 83    | 51     | 77    | 125 |
| 46 | 65.915 | 34.205 | 88    | 64     | 82    | 114 |
| 47 | 44     | 21     | 94    | 78     | 87    | 103 |
| 48 | 73     | 38     | 99    | 92     | 92    | 92  |
| 49 | 66.003 | 54     | 5.704 | 32.406 | 96    | 81  |
| 50 | 32     | 70     | 9     | 19     | 5.401 | 70  |
| 51 | 61     | 86     | 15    | 33     | 6     | 59  |
| 52 | 90     | 34.303 | 20    | 47     | 10    | 48  |
| 53 | 66.119 | 19     | 25    | 61     | 15    | 37  |
| 54 | 48     | 35     | 30    | 74     | 20    | 26  |
| 55 | 77     | 51     | 36    | 88     | 24    | 15  |
| 56 | 66.206 | 68     | 41    | 32.502 | 29    | 4   |
| 57 | 35     | 84     | 46    | 16     | 34    | 3   |
| 58 | 64     | 34.400 | 52    | 29     | 39    | 2   |
| 59 | 93     | 17     | 57    | 43     | 43    | 1   |
| 60 | 66.323 | 33     | 62    | 57     | 48    | 0   |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '  |
|----|--------|--------|-------|--------|-------|----|
| 0  | 66.323 | 34.433 | 5.762 | 32.557 | 5.448 | 60 |
| 1  | 52     | 49     | 67    | 71     | 53    | 61 |
| 2  | 81     | 65     | 73    | 84     | 58    | 62 |
| 3  | 66.410 | 82     | 78    | 98     | 62    | 63 |
| 4  | 39     | 93     | 83    | 32.612 | 67    | 64 |
| 5  | 68     | 34.514 | 89    | 26     | 72    | 55 |
| 6  | 97     | 30     | 94    | 39     | 77    | 54 |
| 7  | 66.526 | 47     | 99    | 53     | 81    | 53 |
| 8  | 55     | 63     | 5.805 | 67     | 85    | 52 |
| 9  | 84     | 79     | 10    | 81     | 91    | 51 |
| 10 | 66.613 | 96     | 15    | 94     | 96    | 50 |
| 11 | 42     | 34.612 | 21    | 32.708 | 5.500 | 49 |
| 12 | 72     | 28     | 26    | 22     | 5     | 48 |
| 13 | 66.701 | 44     | 31    | 35     | 10    | 47 |
| 14 | 30     | 61     | 37    | 49     | 15    | 46 |
| 15 | 59     | 77     | 42    | 63     | 19    | 45 |
| 16 | 88     | 93     | 47    | 77     | 24    | 44 |
| 17 | 66.817 | 34.710 | 53    | 90     | 29    | 43 |
| 18 | 46     | 26     | 58    | 32.804 | 34    | 42 |
| 19 | 75     | 42     | 63    | 18     | 39    | 41 |
| 20 | 66.904 | 59     | 69    | 32     | 43    | 40 |
| 21 | 33     | 75     | 74    | 45     | 48    | 39 |
| 22 | 62     | 91     | 79    | 59     | 53    | 38 |
| 23 | 92     | 34.807 | 85    | 73     | 58    | 37 |
| 24 | 67.021 | 24     | 90    | 87     | 62    | 36 |
| 25 | 50     | 40     | 95    | 32.900 | 67    | 35 |
| 26 | 79     | 56     | 5.901 | 14     | 72    | 34 |
| 27 | 67.108 | 73     | 6     | 28     | 77    | 33 |
| 28 | 37     | 89     | 11    | 42     | 82    | 32 |
| 29 | 66     | 34.905 | 17    | 55     | 86    | 31 |
| 30 | 95     | 22     | 22    | 69     | 91    | 30 |
| 31 | 67.224 | 38     | 29    | 83     | 96    | 29 |
| 32 | 53     | 54     | 33    | 96     | 5.601 | 28 |
| 33 | 82     | 71     | 38    | 33.010 | 5     | 27 |
| 34 | 67.312 | 87     | 44    | 24     | 10    | 26 |
| 35 | 41     | 35.003 | 49    | 38     | 15    | 25 |
| 36 | 70     | 20     | 55    | 51     | 20    | 24 |
| 37 | 99     | 36     | 60    | 65     | 25    | 23 |
| 38 | 67.428 | 52     | 65    | 79     | 30    | 22 |
| 39 | 57     | 69     | 71    | 93     | 34    | 21 |
| 40 | 86     | 85     | 76    | 33.106 | 39    | 20 |
| 41 | 67.515 | 35.101 | 82    | 20     | 44    | 19 |
| 42 | 44     | 18     | 87    | 34     | 49    | 18 |
| 43 | 73     | 34     | 92    | 47     | 54    | 17 |
| 44 | 67.602 | 50     | 98    | 61     | 58    | 16 |
| 45 | 32     | 67     | 6.003 | 75     | 63    | 15 |
| 46 | 61     | 83     | 9     | 89     | 68    | 14 |
| 47 | 90     | 99     | 14    | 33.202 | 73    | 13 |
| 48 | 67.719 | 35.216 | 20    | 16     | 78    | 12 |
| 49 | 48     | 32     | 25    | 30     | 83    | 11 |
| 50 | 77     | 48     | 30    | 44     | 87    | 10 |
| 51 | 67.806 | 65     | 35    | 57     | 92    | 9  |
| 52 | 35     | 81     | 41    | 71     | 97    | 8  |
| 53 | 64     | 97     | 47    | 85     | 5.702 | 7  |
| 54 | 93     | 35.314 | 52    | 98     | 7     | 6  |
| 55 | 67.922 | 30     | 58    | 33.312 | 12    | 5  |
| 56 | 51     | 45     | 63    | 25     | 16    | 4  |
| 57 | 81     | 63     | 69    | 40     | 21    | 3  |
| 58 | 68.010 | 79     | 74    | 53     | 26    | 2  |
| 59 | 39     | 95     | 79    | 67     | 31    | 1  |
| 60 | 68     | 35.412 | 85    | 81     | 36    | 0  |

## 曲線函數表

|    | L      | T      | E     | X      | Y     |     |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 68.068 | 35.412 | 6.085 | 33.321 | 5.736 | 6 0 |
| 1  | 97     | 28     | 90    | 94     | 41    | 5 9 |
| 2  | 68.126 | 45     | 96    | 33.408 | 46    | 5 8 |
| 3  | 56     | 61     | 6.101 | 22     | 30    | 5 7 |
| 4  | 84     | 77     | 7     | 36     | 55    | 5 6 |
| 5  | 68.213 | 94     | 12    | 49     | 60    | 5 5 |
| 6  | 42     | 15.510 | 18    | 63     | 65    | 5 4 |
| 7  | 71     | 27     | 23    | 77     | 70    | 5 3 |
| 8  | 68.301 | 43     | 29    | 90     | 75    | 5 2 |
| 9  | 30     | 59     | 34    | 33.504 | 80    | 5 1 |
| 10 | 59     | 76     | 40    | 18     | 85    | 5 0 |
| 11 | 88     | 92     | 45    | 32     | 89    | 4 9 |
| 12 | 68.417 | 35.608 | 51    | 45     | 94    | 4 8 |
| 13 | 46     | 25     | 56    | 59     | 99    | 4 7 |
| 14 | 75     | 41     | 62    | 73     | 5.904 | 4 6 |
| 15 | 69.504 | 58     | 67    | 86     | 9     | 4 5 |
| 16 | 33     | 74     | 73    | 33.600 | 14    | 4 4 |
| 17 | 62     | 90     | 78    | 14     | 19    | 4 3 |
| 18 | 68.591 | 35.707 | 84    | 27     | 24    | 4 2 |
| 19 | 69.621 | 23     | 89    | 41     | 28    | 4 1 |
| 20 | 50     | 40     | 95    | 55     | 33    | 4 0 |
| 21 | 79     | 56     | 6.200 | 68     | 38    | 3 9 |
| 22 | 68.708 | 72     | 6     | 82     | 43    | 3 8 |
| 23 | 37     | 69     | 11    | 96     | 48    | 3 7 |
| 24 | 66     | 35.805 | 17    | 33.710 | 53    | 3 6 |
| 25 | 95     | 22     | 22    | 23     | 58    | 3 5 |
| 26 | 68.824 | 38     | 28    | 37     | 63    | 3 4 |
| 27 | 53     | 54     | 33    | 51     | 68    | 3 3 |
| 28 | 82     | 71     | 39    | 64     | 73    | 3 2 |
| 29 | 68.911 | 97     | 44    | 78     | 77    | 3 1 |
| 30 | 41     | 35.904 | 50    | 92     | 82    | 3 0 |
| 31 | 70     | 20     | 6.256 | 33.805 | 87    | 2 9 |
| 32 | 99     | 37     | 61    | 19     | 92    | 2 8 |
| 33 | 69.028 | 53     | 67    | 33     | 97    | 2 7 |
| 34 | 57     | 69     | 72    | 46     | 5.902 | 2 6 |
| 35 | 86     | 85     | 78    | 60     | 7     | 2 5 |
| 36 | 69.115 | 35.072 | 83    | 74     | 12    | 2 4 |
| 37 | 44     | 19     | 89    | 86     | 17    | 2 3 |
| 38 | 73     | 35     | 95    | 33.901 | 22    | 2 2 |
| 39 | 69.202 | 52     | 6.300 | 15     | 27    | 2 1 |
| 40 | 31     | 68     | 6     | 29     | 32    | 2 0 |
| 41 | 60     | 84     | 11    | 42     | 37    | 1 9 |
| 42 | 90     | 36.101 | 17    | 56     | 42    | 1 8 |
| 43 | 69.319 | 17     | 22    | 70     | 47    | 1 7 |
| 44 | 48     | 34     | 28    | 83     | 51    | 1 6 |
| 45 | 77     | 50     | 34    | 97     | 56    | 1 5 |
| 46 | 69.406 | 67     | 39    | 34.011 | 61    | 1 4 |
| 47 | 35     | 83     | 45    | 24     | 66    | 1 3 |
| 48 | 64     | 36.200 | 50    | 38     | 71    | 1 2 |
| 49 | 93     | 16     | 56    | 52     | 76    | 1 1 |
| 50 | 69.522 | 32     | 62    | 65     | 81    | 1 0 |
| 51 | 51     | 49     | 67    | 79     | 86    | 9 9 |
| 52 | 80     | 65     | 73    | 93     | 91    | 9 8 |
| 53 | 69.610 | 82     | 78    | 34.106 | 96    | 9 7 |
| 54 | 39     | 98     | 84    | 20     | 6.001 | 9 6 |
| 55 | 68     | 36.315 | 90    | 34     | 6     | 9 5 |
| 56 | 97     | 31     | 95    | 47     | 11    | 9 4 |
| 57 | 69.726 | 48     | 6.401 | 61     | 16    | 9 3 |
| 58 | 55     | 64     | 7     | 75     | 21    | 9 2 |
| 59 | 84     | 81     | 12    | 88     | 26    | 9 1 |
| 60 | 69.813 | 97     | 18    | 34.202 | 31    | 9 0 |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '   |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 69.813 | 36.397 | 6.418 | 34.202 | 6.031 | 6 0 |
| 1  | 42     | 36.413 | 24    | 16     | 36    | 5 9 |
| 2  | 71     | 30     | 29    | 29     | 41    | 3 8 |
| 3  | 69.900 | 46     | 35    | 43     | 46    | 5 5 |
| 4  | 30     | 63     | 40    | 57     | 51    | 5 7 |
| 5  | 59     | 79     | 46    | 70     | 56    | 5 5 |
| 6  | 88     | 96     | 52    | 84     | 61    | 4 4 |
| 7  | 70.017 | 36.512 | 57    | 96     | 66    | 5 5 |
| 8  | 46     | 29     | 63    | 34.311 | 71    | 5 2 |
| 9  | 75     | 45     | 69    | 25     | 76    | 5 1 |
| 10 | 70.104 | 62     | 74    | 39     | 81    | 5 0 |
| 11 | 33     | 78     | 80    | 52     | 86    | 4 9 |
| 12 | 62     | 95     | 86    | 66     | 91    | 4 8 |
| 13 | 91     | 36.611 | 91    | 80     | 96    | 4 7 |
| 14 | 70.220 | 28     | 97    | 93     | 6.101 | 4 6 |
| 15 | 50     | 44     | 6.503 | 34.407 | 6     | 4 5 |
| 16 | 79     | 61     | 8     | 21     | 11    | 4 4 |
| 17 | 70.308 | 77     | 14    | 34     | 16    | 4 3 |
| 18 | 37     | 94     | 20    | 48     | 21    | 4 2 |
| 19 | 66     | 36.710 | 25    | 62     | 26    | 4 1 |
| 20 | 95     | 27     | 31    | 75     | 31    | 4 0 |
| 21 | 70.424 | 43     | 37    | 89     | 36    | 3 9 |
| 22 | 53     | 60     | 42    | 34.503 | 41    | 3 8 |
| 23 | 82     | 76     | 48    | 16     | 46    | 3 7 |
| 24 | 70.511 | 99     | 54    | 30     | 51    | 3 6 |
| 25 | 40     | 36.809 | 60    | 44     | 56    | 3 5 |
| 26 | 69     | 26     | 65    | 57     | 61    | 3 4 |
| 27 | 99     | 42     | 71    | 71     | 66    | 3 3 |
| 28 | 70.628 | 59     | 77    | 84     | 71    | 3 3 |
| 29 | 57     | 75     | 82    | 98     | 76    | 3 2 |
| 30 | 86     | 92     | 88    | 34.612 | 81    | 3 0 |
| 31 | 70.715 | 36.909 | 94    | 25     | 86    | 2 9 |
| 32 | 44     | 25     | 6.600 | 39     | 91    | 2 8 |
| 33 | 73     | 42     | 5     | 53     | 96    | 2 7 |
| 34 | 70.802 | 58     | 11    | 66     | 6.201 | 2 6 |
| 35 | 31     | 75     | 17    | 80     | 6     | 2 5 |
| 36 | 60     | 91     | 22    | 94     | 11    | 2 4 |
| 37 | 89     | 37.008 | 28    | 34.707 | 16    | 2 3 |
| 38 | 70.919 | 24     | 34    | 21     | 21    | 2 2 |
| 39 | 48     | 41     | 40    | 35     | 26    | 2 1 |
| 40 | 77     | 57     | 45    | 48     | 31    | 2 0 |
| 41 | 71.006 | 74     | 51    | 62     | 36    | 1 9 |
| 42 | 35     | 90     | 57    | 75     | 41    | 1 8 |
| 43 | 64     | 37.107 | 63    | 89     | 47    | 1 7 |
| 44 | 93     | 23     | 68    | 34.803 | 52    | 1 6 |
| 45 | 71.122 | 40     | 74    | 16     | 57    | 1 5 |
| 46 | 51     | 57     | 80    | 30     | 62    | 1 4 |
| 47 | 80     | 73     | 86    | 44     | 67    | 1 3 |
| 48 | 71.209 | 90     | 92    | 57     | 72    | 1 2 |
| 49 | 39     | 37.206 | 97    | 71     | 77    | 1 1 |
| 50 | 68     | 23     | 6.703 | 85     | 82    | 1 0 |
| 51 | 97     | 39     | 9     | 98     | 87    | 9 9 |
| 52 | 71.326 | 56     | 15    | 34.912 | 92    | 8 8 |
| 53 | 55     | 72     | 20    | 25     | 97    | 7 7 |
| 54 | 84     | 89     | 26    | 39     | 6.302 | 6 6 |
| 55 | 71.413 | 37.306 | 32    | 52     | 7     | 5 5 |
| 56 | 41     | 22     | 38    | 66     | 12    | 4 4 |
| 57 | 70     | 39     | 44    | 80     | 18    | 3 3 |
| 58 | 71.500 | 55     | 49    | 94     | 23    | 2 2 |
| 59 | 24     | 72     | 55    | 35.007 | 28    | 1 1 |
| 60 | 58     | 88     | 61    | 21     | 33    | 0 0 |

## 曲線函數表

|     | CL     | T      | E     | X      | Y     |     |
|-----|--------|--------|-------|--------|-------|-----|
| 0   | 71.568 | 37.388 | 6.761 | 35.021 | 6.333 | 6 0 |
| 1   | 88     | 37.405 | 67    | 34     | 38    | 5 9 |
| 2   | 71.617 | 22     | 73    | 48     | 43    | 5 8 |
| 3   | 46     | 38     | 78    | 62     | 48    | 5 7 |
| 4   | 75     | 55     | 84    | 75     | 53    | 5 6 |
| 5   | 71.704 | 71     | 90    | 89     | 58    | 5 5 |
| 6   | 33     | 88     | 96    | 35.103 | 63    | 5 4 |
| 7   | 62     | 37.505 | 6.802 | 16     | 69    | 5 3 |
| 8   | 91     | 21     | 8     | 30     | 74    | 5 2 |
| 9   | 71.820 | 38     | 13    | 43     | 79    | 5 1 |
| 1 0 | 49     | 54     | 19    | 57     | 84    | 5 0 |
| 1 1 | 78     | 71     | 25    | 71     | 89    | 4 9 |
| 1 2 | 71.908 | 88     | 31    | 84     | 94    | 4 8 |
| 1 3 | 37     | 37.604 | 37    | 98     | 99    | 4 7 |
| 1 4 | 66     | 21     | 43    | 35.211 | 6.404 | 4 6 |
| 1 5 | 95     | 37     | 48    | 25     | 9     | 4 5 |
| 1 6 | 72.024 | 54     | 54    | 39     | 15    | 4 4 |
| 1 7 | 53     | 71     | 60    | 52     | 20    | 4 3 |
| 1 8 | 82     | 87     | 66    | 66     | 25    | 4 2 |
| 1 9 | 72.111 | 37.704 | 72    | 79     | 30    | 4 1 |
| 2 0 | 40     | 20     | 78    | 93     | 35    | 4 0 |
| 2 1 | 69     | 37     | 83    | 35.307 | 40    | 3 9 |
| 2 2 | 98     | 54     | 89    | 20     | 45    | 3 8 |
| 2 3 | 72.228 | 70     | 95    | 34     | 50    | 3 7 |
| 2 4 | 57     | 87     | 6.901 | 47     | 56    | 3 6 |
| 2 5 | 86     | 37.804 | 7     | 61     | 61    | 3 5 |
| 2 6 | 72.315 | 20     | 13    | 75     | 66    | 3 4 |
| 2 7 | 44     | 37     | 19    | 88     | 71    | 3 3 |
| 2 8 | 73     | 53     | 25    | 35.402 | 76    | 3 2 |
| 2 9 | 72.402 | 70     | 30    | 15     | 81    | 3 1 |
| 3 0 | 31     | 87     | 36    | 29     | 86    | 3 0 |
| 3 1 | 60     | 37.903 | 42    | 43     | 92    | 2 9 |
| 3 2 | 89     | 20     | 48    | 56     | 97    | 2 8 |
| 3 3 | 72.518 | 37     | 54    | 70     | 6.502 | 2 7 |
| 3 4 | 48     | 53     | 60    | 83     | 7     | 2 6 |
| 3 5 | 77     | 70     | 66    | 97     | 12    | 2 5 |
| 3 6 | 72.606 | 86     | 72    | 35.511 | 17    | 2 4 |
| 3 7 | 35     | 38.003 | 78    | 24     | 23    | 2 3 |
| 3 8 | 64     | 20     | 84    | 38     | 28    | 2 2 |
| 3 9 | 93     | 36     | 90    | 51     | 33    | 2 1 |
| 4 0 | 72.722 | 53     | 96    | 65     | 38    | 2 0 |
| 4 1 | 51     | 70     | 7.001 | 79     | 43    | 1 9 |
| 4 2 | 80     | 86     | 7     | 92     | 48    | 1 8 |
| 4 3 | 72.809 | 38.103 | 13    | 35.606 | 54    | 1 7 |
| 4 4 | 38     | 20     | 19    | 19     | 59    | 1 6 |
| 4 5 | 67     | 36     | 25    | 33     | 64    | 1 5 |
| 4 6 | 97     | 53     | 31    | 47     | 69    | 1 4 |
| 4 7 | 72.926 | 70     | 37    | 60     | 74    | 1 3 |
| 4 8 | 56     | 86     | 43    | 74     | 80    | 1 2 |
| 4 9 | 84     | 38.203 | 49    | 87     | 85    | 1 1 |
| 5 0 | 73.013 | 20     | 55    | 35.701 | 90    | 1 0 |
| 5 1 | 42     | 36     | 61    | 15     | 95    | 9   |
| 5 2 | 71     | 53     | 67    | 28     | 6.600 | 8   |
| 5 3 | 73.100 | 70     | 73    | 42     | 6     | 7   |
| 5 4 | 29     | 86     | 79    | 55     | 11    | 6   |
| 5 5 | 56     | 38.303 | 85    | 69     | 16    | 5   |
| 5 6 | 87     | 20     | 91    | 83     | 21    | 4   |
| 5 7 | 73.217 | 36     | 97    | 96     | 26    | 3   |
| 5 8 | 46     | 53     | 7.103 | 35.810 | 32    | 2   |
| 5 9 | 75     | 70     | 9     | 23     | 37    | 1   |
| 6 0 | 73.304 | 86     | 15    | 37     | 42    | 0   |

| '  | L      | T      | E     | X      | Y     | '   |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 73.304 | 38.386 | 7.115 | 35.837 | 6.642 | 6 0 |
| 1  | 33     | 38.403 | 21    | 50     | 47    | 5 9 |
| 2  | 62     | 20     | 27    | 64     | 52    | 5 8 |
| 3  | 91     | 36     | 33    | 78     | 58    | 5 7 |
| 4  | 73.420 | 53     | 39    | 91     | 63    | 5 6 |
| 5  | 49     | 70     | 44    | 35.905 | 68    | 5 5 |
| 6  | 78     | 87     | 50    | 18     | 73    | 5 4 |
| 7  | 73.507 | 38.503 | 56    | 32     | 79    | 5 3 |
| 8  | 37     | 20     | 62    | 45     | 84    | 5 2 |
| 9  | 66     | 37     | 68    | 59     | 89    | 5 1 |
| 10 | 95     | 53     | 74    | 73     | 94    | 5 0 |
| 11 | 73.624 | 70     | 81    | 86     | 99    | 4 9 |
| 12 | 53     | 87     | 87    | 36.000 | 6.705 | 4 8 |
| 13 | 82     | 38.603 | 93    | 13     | 10    | 4 7 |
| 14 | 73.711 | 20     | 99    | 27     | 15    | 4 6 |
| 15 | 40     | 37     | 7.205 | 40     | 20    | 4 5 |
| 16 | 69     | 54     | 11    | 54     | 26    | 4 4 |
| 17 | 98     | 70     | 17    | 68     | 31    | 4 3 |
| 18 | 73.827 | 87     | 23    | 81     | 36    | 4 2 |
| 19 | 57     | 38.704 | 29    | 95     | 41    | 4 1 |
| 20 | 86     | 21     | 35    | 36.108 | 47    | 4 0 |
| 21 | 73.915 | 37     | 41    | 22     | 52    | 3 9 |
| 22 | 44     | 54     | 47    | 35     | 57    | 3 8 |
| 23 | 73     | 71     | 53    | 49     | 62    | 3 7 |
| 24 | 74.002 | 87     | 59    | 63     | 68    | 3 6 |
| 25 | 31     | 38.804 | 65    | 76     | 73    | 3 5 |
| 26 | 60     | 21     | 71    | 90     | 78    | 3 4 |
| 27 | 89     | 38     | 77    | 36.203 | 83    | 3 3 |
| 28 | 74.118 | 54     | 83    | 17     | 89    | 3 2 |
| 29 | 47     | 71     | 89    | 30     | 94    | 3 1 |
| 30 | 76     | 88     | 95    | 44     | 99    | 3 0 |
| 31 | 74.206 | 38.905 | 7.301 | 36.257 | 6.804 | 2 9 |
| 32 | 35     | 21     | 7     | 71     | 10    | 2 8 |
| 33 | 64     | 38     | 13    | 85     | 15    | 2 7 |
| 34 | 93     | 55     | 20    | 98     | 20    | 2 6 |
| 35 | 74.322 | 72     | 26    | 36.312 | 26    | 2 5 |
| 36 | 51     | 89     | 32    | 25     | 31    | 2 4 |
| 37 | 80     | 39.005 | 38    | 39     | 36    | 2 3 |
| 38 | 74.409 | 22     | 44    | 52     | 41    | 2 2 |
| 39 | 38     | 39     | 50    | 66     | 47    | 2 1 |
| 40 | 67     | 55     | 56    | 79     | 52    | 2 0 |
| 41 | 96     | 72     | 62    | 93     | 57    | 1 9 |
| 42 | 74.526 | 89     | 68    | 36.406 | 63    | 1 8 |
| 43 | 55     | 39.106 | 74    | 20     | 68    | 1 7 |
| 44 | 84     | 23     | 81    | 33     | 73    | 1 6 |
| 45 | 74.613 | 39     | 87    | 47     | 78    | 1 5 |
| 46 | 42     | 56     | 93    | 61     | 84    | 1 4 |
| 47 | 71     | 73     | 99    | 74     | 89    | 1 3 |
| 48 | 74.700 | 90     | 7.405 | 88     | 94    | 1 2 |
| 49 | 29     | 39.206 | 11    | 36.501 | 6.900 | 1 1 |
| 50 | 58     | 23     | 17    | 15     | 5     | 1 0 |
| 51 | 87     | 40     | 23    | 28     | 10    | 9 9 |
| 52 | 74.816 | 57     | 30    | 42     | 16    | 9 8 |
| 53 | 46     | 74     | 36    | 56     | 21    | 9 7 |
| 54 | 75     | 90     | 42    | 69     | 26    | 9 6 |
| 55 | 74.904 | 39.307 | 48    | 82     | 32    | 9 5 |
| 56 | 33     | 24     | 54    | 96     | 37    | 9 4 |
| 57 | 62     | 41     | 60    | 36.609 | 42    | 9 3 |
| 58 | 91     | 57     | 66    | 23     | 48    | 9 2 |
| 59 | 75.020 | 74     | 73    | 37     | 53    | 9 1 |
| 60 | 49     | 91     | 79    | 50     | 58    | 9 0 |

## 曲線函數表

|   | L      | T      | E     | X      | Y     |   |
|---|--------|--------|-------|--------|-------|---|
| 0 | 76.049 | 39.391 | 7.479 | 38.650 | 8.956 | 0 |
| 1 | 78     | 39.408 | 85    | 64     | 64    | 0 |
| 2 | 75.107 | 25     | 91    | 77     | 69    | 0 |
| 3 | 36     | 41     | 87    | 91     | 74    | 0 |
| 4 | 86     | 58     | 7.503 | 38.704 | 80    | 0 |
| 5 | 95     | 75     | 10    | 18     | 85    | 5 |
| 6 | 75.224 | 92     | 16    | 31     | 90    | 5 |
| 7 | 53     | 39.509 | 22    | 46     | 96    | 5 |
| 8 | 82     | 26     | 28    | 58     | 7.001 | 1 |
| 9 | 75.311 | 42     | 34    | 72     | 6     | 1 |
| 0 | 40     | 59     | 40    | 85     | 12    | 0 |
| 1 | 69     | 76     | 47    | 99     | 17    | 0 |
| 2 | 98     | 93     | 53    | 38.812 | 22    | 0 |
| 3 | 75.427 | 39.610 | 59    | 26     | 28    | 0 |
| 4 | 56     | 26     | 65    | 39     | 33    | 0 |
| 5 | 85     | 43     | 71    | 53     | 38    | 4 |
| 6 | 75.515 | 60     | 78    | 66     | 44    | 4 |
| 7 | 44     | 77     | 84    | 80     | 49    | 4 |
| 8 | 73     | 94     | 90    | 94     | 55    | 4 |
| 9 | 75.602 | 39.711 | 96    | 38.907 | 60    | 4 |
| 0 | 31     | 28     | 7.602 | 21     | 65    | 0 |
| 1 | 60     | 44     | 9     | 34     | 71    | 0 |
| 2 | 89     | 61     | 15    | 48     | 76    | 0 |
| 3 | 75.718 | 78     | 21    | 61     | 81    | 0 |
| 4 | 47     | 95     | 27    | 75     | 87    | 0 |
| 5 | 76     | 39.812 | 34    | 88     | 92    | 5 |
| 6 | 75.806 | 29     | 40    | 37.002 | 98    | 5 |
| 7 | 35     | 45     | 46    | 15     | 7.103 | 5 |
| 8 | 64     | 62     | 52    | 29     | 6     | 2 |
| 9 | 93     | 79     | 59    | 42     | 14    | 1 |
| 0 | 75.922 | 96     | 65    | 56     | 19    | 0 |
| 1 | 51     | 39.913 | 71    | 69     | 24    | 0 |
| 2 | 80     | 30     | 77    | 83     | 30    | 0 |
| 3 | 76.009 | 47     | 84    | 96     | 35    | 0 |
| 4 | 38     | 63     | 90    | 37.110 | 41    | 0 |
| 5 | 67     | 80     | 96    | 23     | 46    | 5 |
| 6 | 96     | 97     | 7.702 | 37     | 51    | 5 |
| 7 | 76.123 | 40.014 | 9     | 50     | 57    | 5 |
| 8 | 55     | 31     | 15    | 64     | 62    | 5 |
| 9 | 84     | 48     | 21    | 77     | 68    | 5 |
| 0 | 76.213 | 65     | 27    | 91     | 73    | 2 |
| 1 | 42     | 82     | 34    | 37.204 | 78    | 0 |
| 2 | 71     | 98     | 40    | 18     | 84    | 0 |
| 3 | 76.300 | 40.115 | 46    | 31     | 89    | 0 |
| 4 | 29     | 32     | 53    | 45     | 95    | 1 |
| 5 | 58     | 49     | 59    | 58     | 7.200 | 1 |
| 6 | 87     | 66     | 65    | 72     | 6     | 5 |
| 7 | 76.416 | 83     | 71    | 85     | 11    | 5 |
| 8 | 45     | 40.200 | 78    | 99     | 16    | 5 |
| 9 | 75     | 17     | 84    | 37.312 | 22    | 5 |
| 0 | 76.504 | 34     | 90    | 26     | 27    | 1 |
| 1 | 33     | 50     | 97    | 39     | 33    | 0 |
| 2 | 62     | 67     | 7.803 | 53     | 38    | 0 |
| 3 | 91     | 84     | 9     | 66     | 44    | 0 |
| 4 | 76.620 | 40.301 | 15    | 80     | 49    | 0 |
| 5 | 49     | 18     | 22    | 93     | 54    | 5 |
| 6 | 78     | 35     | 28    | 37.407 | 60    | 5 |
| 7 | 76.707 | 52     | 34    | 20     | 65    | 5 |
| 8 | 36     | 69     | 41    | 34     | 71    | 5 |
| 9 | 65     | 86     | 47    | 47     | 76    | 5 |
| 0 | 94     | 40.403 | 53    | 61     | 82    | 0 |

## 曲線函數表

|    | L      | T      | E     | X      | Y     |     |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 76.794 | 40.403 | 7.853 | 37.461 | 7.282 | 8 0 |
| 1  | 76.824 | 20     | 60    | 74     | 87    | 5 9 |
| 2  | 53     | 37     | 66    | 88     | 93    | 5 8 |
| 3  | 82     | 53     | 72    | 37.501 | 98    | 5 7 |
| 4  | 76.911 | 70     | 79    | 15     | 7.303 | 5 6 |
| 5  | 40     | 87     | 85    | 28     | 9     | 5 5 |
| 6  | 69     | 40.504 | 92    | 42     | 14    | 5 4 |
| 7  | 98     | 21     | 98    | 55     | 20    | 5 3 |
| 8  | 77.027 | 38     | 7.904 | 69     | 25    | 5 2 |
| 9  | 56     | 55     | 11    | 82     | 31    | 5 1 |
| 10 | 85     | 72     | 17    | 96     | 36    | 5 0 |
| 11 | 77.114 | 89     | 23    | 37.609 | 42    | 4 9 |
| 12 | 44     | 40.606 | 30    | 22     | 47    | 4 8 |
| 13 | 73     | 23     | 36    | 36     | 53    | 4 7 |
| 14 | 77.202 | 40     | 43    | 49     | 58    | 4 6 |
| 15 | 32     | 57     | 49    | 63     | 64    | 4 5 |
| 16 | 60     | 74     | 55    | 76     | 69    | 4 4 |
| 17 | 89     | 91     | 62    | 90     | 75    | 4 3 |
| 18 | 77.318 | 40.708 | 68    | 37.703 | 80    | 4 2 |
| 19 | 47     | 24     | 74    | 17     | 86    | 4 1 |
| 20 | 76     | 41     | 81    | 30     | 91    | 4 0 |
| 1  | 77.405 | 58     | 87    | 44     | 97    | 3 9 |
| 2  | 34     | 75     | 94    | 57     | 7.402 | 3 8 |
| 3  | 64     | 92     | 8.000 | 71     | 7     | 3 7 |
| 4  | 93     | 40.809 | 7     | 84     | 13    | 3 6 |
| 5  | 77.522 | 26     | 13    | 93     | 18    | 3 5 |
| 6  | 51     | 43     | 19    | 37.811 | 24    | 3 4 |
| 7  | 80     | 60     | 26    | 25     | 29    | 3 3 |
| 8  | 77.609 | 77     | 32    | 38     | 35    | 3 2 |
| 9  | 38     | 94     | 39    | 51     | 40    | 3 1 |
| 10 | 67     | 40.911 | 45    | 65     | 46    | 3 0 |
| 11 | 96     | 28     | 51    | 78     | 52    | 2 9 |
| 12 | 77.725 | 45     | 58    | 92     | 57    | 2 8 |
| 13 | 54     | 62     | 64    | 37.905 | 63    | 2 7 |
| 14 | 84     | 79     | 71    | 19     | 68    | 2 6 |
| 15 | 77.813 | 96     | 77    | 32     | 74    | 2 5 |
| 16 | 42     | 41.013 | 84    | 46     | 79    | 2 4 |
| 17 | 71     | 30     | 90    | 59     | 85    | 2 3 |
| 18 | 77.900 | 47     | 97    | 72     | 90    | 2 2 |
| 19 | 29     | 64     | 8.103 | 86     | 96    | 2 1 |
| 40 | 58     | 81     | 9     | 99     | 7.501 | 2 0 |
| 41 | 87     | 98     | 16    | 38.013 | 7     | 1 9 |
| 42 | 78.016 | 41.115 | 22    | 26     | 12    | 1 8 |
| 43 | 45     | 32     | 29    | 40     | 18    | 1 7 |
| 44 | 74     | 49     | 35    | 53     | 23    | 1 6 |
| 45 | 78.103 | 66     | 42    | 67     | 29    | 1 5 |
| 46 | 33     | 83     | 48    | 80     | 34    | 1 4 |
| 47 | 62     | 41.200 | 55    | 94     | 40    | 1 3 |
| 48 | 91     | 17     | 61    | 38.107 | 45    | 1 2 |
| 49 | 78.220 | 34     | 68    | 20     | 51    | 1 1 |
| 50 | 49     | 51     | 74    | 34     | 57    | 1 0 |
| 51 | 78.307 | 68     | 81    | 47     | 62    | 9 9 |
| 52 | 36     | 85     | 87    | 61     | 68    | 9 8 |
| 53 | 65     | 41.302 | 94    | 74     | 73    | 9 7 |
| 54 | 94     | 19     | 8.200 | 86     | 79    | 9 6 |
| 55 | 78.423 | 36     | 7     | 38.201 | 84    | 5 4 |
| 56 | 53     | 53     | 13    | 15     | 90    | 4 3 |
| 57 | 82     | 70     | 20    | 28     | 95    | 3 2 |
| 58 | 78.511 | 87     | 26    | 41     | 7.601 | 2 1 |
| 59 | 40     | 41.404 | 33    | 56     | 6     | 1 0 |
| 60 |        | 21     | 39    | 68     | 12    | 0   |



## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '  |
|----|--------|--------|-------|--------|-------|----|
| 0  | 78.540 | 41.421 | 8.239 | 38.268 | 7.612 | 60 |
| 1  | 69     | 38     | 46    | 82     | 18    | 69 |
| 2  | 98     | 55     | 52    | 95     | 23    | 78 |
| 3  | 78.627 | 72     | 59    | 38.309 | 29    | 87 |
| 4  | 56     | 89     | 65    | 22     | 34    | 96 |
| 5  | 85     | 41.507 | 72    | 35     | 40    | 55 |
| 6  | 78.714 | 24     | 78    | 49     | 46    | 64 |
| 7  | 43     | 41     | 85    | 62     | 51    | 73 |
| 8  | 73     | 58     | 92    | 76     | 57    | 82 |
| 9  | 78.802 | 75     | 98    | 89     | 62    | 91 |
| 10 | 31     | 92     | 8.305 | 38.403 | 68    | 50 |
| 11 | 60     | 41.609 | 11    | 16     | 73    | 59 |
| 12 | 89     | 26     | 18    | 29     | 79    | 68 |
| 13 | 78.918 | 43     | 24    | 43     | 85    | 77 |
| 14 | 47     | 60     | 31    | 56     | 90    | 86 |
| 15 | 76     | 77     | 37    | 70     | 96    | 45 |
| 16 | 78.005 | 94     | 44    | 83     | 7.701 | 54 |
| 17 | 34     | 41.711 | 51    | 97     | 7     | 63 |
| 18 | 63     | 28     | 57    | 38.510 | 13    | 72 |
| 19 | 93     | 45     | 64    | 23     | 18    | 81 |
| 20 | 78.122 | 63     | 70    | 37     | 24    | 90 |
| 21 | 51     | 80     | 77    | 50     | 29    | 40 |
| 22 | 80     | 97     | 83    | 64     | 35    | 49 |
| 23 | 78.209 | 41.814 | 90    | 77     | 41    | 58 |
| 24 | 38     | 31     | 97    | 91     | 46    | 67 |
| 25 | 67     | 48     | 8.403 | 38.604 | 52    | 76 |
| 26 | 96     | 65     | 10    | 17     | 57    | 85 |
| 27 | 78.325 | 82     | 15    | 31     | 63    | 94 |
| 28 | 54     | 99     | 23    | 44     | 69    | 40 |
| 29 | 83     | 41.916 | 30    | 58     | 74    | 49 |
| 30 | 78.412 | 33     | 36    | 71     | 80    | 58 |
| 31 | 42     | 51     | 43    | 84     | 86    | 67 |
| 32 | 71     | 68     | 49    | 98     | 91    | 76 |
| 33 | 78.500 | 85     | 56    | 38.711 | 97    | 85 |
| 34 | 29     | 42.002 | 63    | 25     | 7.802 | 94 |
| 35 | 58     | 19     | 69    | 38     | 8     | 40 |
| 36 | 87     | 36     | 76    | 52     | 14    | 49 |
| 37 | 78.616 | 53     | 83    | 65     | 19    | 58 |
| 38 | 45     | 70     | 89    | 78     | 25    | 67 |
| 39 | 74     | 87     | 96    | 92     | 31    | 76 |
| 40 | 78.703 | 42.105 | 8.503 | 38.805 | 36    | 85 |
| 41 | 32     | 22     | 9     | 19     | 42    | 94 |
| 42 | 62     | 39     | 16    | 32     | 48    | 40 |
| 43 | 91     | 56     | 23    | 45     | 53    | 49 |
| 44 | 78.820 | 73     | 29    | 59     | 59    | 58 |
| 45 | 49     | 90     | 36    | 72     | 65    | 67 |
| 46 | 78     | 42.207 | 42    | 86     | 70    | 76 |
| 47 | 78.907 | 25     | 49    | 99     | 76    | 85 |
| 48 | 35     | 42     | 56    | 38.912 | 82    | 94 |
| 49 | 65     | 59     | 63    | 26     | 87    | 40 |
| 50 | 94     | 76     | 69    | 39     | 93    | 49 |
| 51 | 80.023 | 93     | 76    | 53     | 98    | 58 |
| 52 | 52     | 42.310 | 83    | 66     | 7.904 | 67 |
| 53 | 82     | 27     | 89    | 79     | 90    | 76 |
| 54 | 80.111 | 44     | 96    | 93     | 16    | 85 |
| 55 | 40     | 62     | 8.603 | 38.006 | 21    | 94 |
| 56 | 69     | 79     | 9     | 9      | 27    | 40 |
| 57 | 98     | 96     | 16    | 33     | 33    | 49 |
| 58 | 78.227 | 42.413 | 23    | 46     | 38    | 58 |
| 59 | 56     | 30     | 29    | 60     | 44    | 67 |
| 60 | 85     | 47     | 36    | 73     | 50    | 76 |

## 曲線函數表

|    | CL     | T      | E     | X      | Y     |    |
|----|--------|--------|-------|--------|-------|----|
| 0  | 80.285 | 42.447 | 8.635 | 39.073 | 7.950 | 80 |
| 1  | 80.314 | 65     | 43    | 87     | 55    | 59 |
| 2  | 43     | 82     | 50    | 39.100 | 61    | 58 |
| 3  | 72     | 99     | 56    | 13     | 67    | 57 |
| 4  | 80.402 | 42.516 | 63    | 27     | 72    | 56 |
| 5  | 31     | 33     | 70    | 40     | 76    | 55 |
| 6  | 60     | 50     | 76    | 53     | 84    | 54 |
| 7  | 89     | 68     | 83    | 67     | 89    | 53 |
| 8  | 80.518 | 85     | 90    | 80     | 95    | 52 |
| 9  | 47     | 42.602 | 97    | 94     | 8.001 | 51 |
| 10 | 76     | 19     | 8.703 | 39.207 | 6     | 50 |
| 11 | 80.605 | 36     | 10    | 20     | 12    | 49 |
| 12 | 34     | 54     | 17    | 34     | 18    | 48 |
| 13 | 63     | 71     | 24    | 47     | 24    | 47 |
| 14 | 92     | 88     | 30    | 60     | 29    | 46 |
| 15 | 80.721 | 42.705 | 37    | 74     | 35    | 45 |
| 16 | 51     | 22     | 44    | 87     | 41    | 44 |
| 17 | 80     | 40     | 51    | 39.301 | 46    | 43 |
| 18 | 80.809 | 57     | 57    | 14     | 52    | 42 |
| 19 | 38     | 74     | 64    | 27     | 58    | 41 |
| 20 | 67     | 91     | 71    | 41     | 64    | 40 |
| 21 | 96     | 42.808 | 78    | 54     | 69    | 39 |
| 22 | 80.925 | 26     | 84    | 67     | 75    | 38 |
| 23 | 54     | 43     | 91    | 81     | 81    | 37 |
| 24 | 83     | 60     | 98    | 94     | 87    | 36 |
| 25 | 81.012 | 77     | 8.805 | 39.408 | 92    | 35 |
| 26 | 41     | 94     | 12    | 21     | 98    | 34 |
| 27 | 71     | 42.912 | 18    | 34     | 8.104 | 33 |
| 28 | 81.100 | 29     | 25    | 48     | 9     | 32 |
| 29 | 59     | 45     | 32    | 61     | 15    | 31 |
| 30 | 58     | 63     | 39    | 74     | 21    | 30 |
| 31 | 87     | 81     | 46    | 88     | 27    | 29 |
| 32 | 81.216 | 98     | 52    | 39.501 | 32    | 28 |
| 33 | 45     | 43.015 | 59    | 15     | 38    | 27 |
| 34 | 74     | 32     | 66    | 28     | 44    | 26 |
| 35 | 81.303 | 50     | 73    | 41     | 50    | 25 |
| 36 | 32     | 67     | 80    | 54     | 55    | 24 |
| 37 | 61     | 84     | 86    | 68     | 61    | 23 |
| 38 | 91     | 43.101 | 93    | 81     | 67    | 22 |
| 39 | 81.420 | 18     | 8.900 | 95     | 73    | 21 |
| 40 | 49     | 35     | 7     | 39.608 | 78    | 20 |
| 41 | 78     | 53     | 14    | 21     | 84    | 19 |
| 42 | 81.507 | 70     | 21    | 35     | 90    | 18 |
| 43 | 35     | 88     | 27    | 48     | 96    | 17 |
| 44 | 65     | 43.205 | 34    | 61     | 8.202 | 16 |
| 45 | 94     | 22     | 41    | 75     | 7     | 15 |
| 46 | 81.623 | 39     | 48    | 89     | 13    | 14 |
| 47 | 52     | 57     | 55    | 39.701 | 19    | 13 |
| 48 | 81     | 74     | 62    | 15     | 25    | 12 |
| 49 | 81.710 | 91     | 69    | 28     | 30    | 11 |
| 50 | 30     | 43.308 | 75    | 41     | 36    | 10 |
| 51 | 69     | 26     | 82    | 55     | 42    | 9  |
| 52 | 98     | 43     | 89    | 68     | 48    | 8  |
| 53 | 81.827 | 90     | 96    | 82     | 53    | 7  |
| 54 | 56     | 77     | 9.003 | 95     | 59    | 6  |
| 55 | 85     | 95     | 10    | 39.808 | 65    | 5  |
| 56 | 81.914 | 43.412 | 17    | 22     | 71    | 4  |
| 57 | 43     | 29     | 23    | 35     | 77    | 3  |
| 58 | 72     | 47     | 30    | 48     | 82    | 2  |
| 59 | 82.001 | 64     | 37    | 62     | 88    | 1  |
| 60 | 30     | 81     | 44    | 75     | 94    | 0  |

## 曲線函數表

| '  | L      | T      | E     | X      | Y     | '   |
|----|--------|--------|-------|--------|-------|-----|
| 0  | 82.030 | 43.481 | 9.044 | 39.875 | 8.294 | 6 0 |
| 1  | 60     | 98     | 51    | 88     | 8.300 | 5 9 |
| 2  | 89     | 43.516 | 58    | 39.902 | 6     | 5 8 |
| 3  | 82.118 | 33     | 65    | 15     | 11    | 5 7 |
| 4  | 47     | 50     | 72    | 28     | 17    | 5 6 |
| 5  | 76     | 68     | 79    | 42     | 23    | 5 5 |
| 6  | 82.205 | 85     | 86    | 55     | 29    | 5 4 |
| 7  | 34     | 43.602 | 93    | 68     | 35    | 5 3 |
| 8  | 63     | 20     | 99    | 82     | 41    | 5 2 |
| 9  | 92     | 37     | 9.106 | 95     | 46    | 5 1 |
| 10 | 82.321 | 54     | 13    | 40.008 | 52    | 5 0 |
| 11 | 50     | 72     | 20    | 22     | 58    | 4 9 |
| 12 | 80     | 89     | 27    | 35     | 64    | 4 8 |
| 13 | 82.409 | 43.706 | 34    | 48     | 70    | 4 7 |
| 14 | 38     | 24     | 41    | 62     | 75    | 4 6 |
| 15 | 67     | 41     | 48    | 75     | 81    | 4 5 |
| 16 | 96     | 58     | 55    | 88     | 87    | 4 4 |
| 17 | 82.525 | 76     | 62    | 40.102 | 93    | 4 3 |
| 18 | 54     | 93     | 69    | 15     | 99    | 4 2 |
| 19 | 83     | 43.810 | 76    | 28     | 3.435 | 4 1 |
| 20 | 82.612 | 28     | 83    | 42     | 10    | 4 0 |
| 21 | 41     | 45     | 90    | 55     | 16    | 3 9 |
| 22 | 70     | 62     | 97    | 68     | 22    | 3 8 |
| 23 | 82.700 | 80     | 9.204 | 82     | 28    | 3 7 |
| 24 | 29     | 97     | 10    | 95     | 34    | 3 6 |
| 25 | 58     | 43.914 | 17    | 40.208 | 40    | 3 5 |
| 26 | 87     | 32     | 24    | 21     | 45    | 3 4 |
| 27 | 82.816 | 49     | 31    | 35     | 51    | 3 3 |
| 28 | 45     | 66     | 38    | 48     | 57    | 3 2 |
| 29 | 74     | 84     | 45    | 61     | 63    | 3 1 |
| 30 | 82.903 | 44.001 | 52    | 75     | 69    | 3 0 |
| 31 | 32     | 18     | 59    | 89     | 75    | 2 9 |
| 32 | 61     | 36     | 66    | 40.301 | 81    | 2 8 |
| 33 | 90     | 53     | 73    | 15     | 86    | 2 7 |
| 34 | 83.029 | 71     | 80    | 28     | 92    | 2 6 |
| 35 | 49     | 88     | 87    | 41     | 98    | 2 5 |
| 36 | 82.107 | 44.100 | 94    | 55     | 8.504 | 2 4 |
| 37 | 78     | 23     | 9     | 68     | 10    | 2 3 |
| 38 | 36     | 40     | 16    | 81     | 16    | 2 2 |
| 39 | 65     | 57     | 23    | 94     | 22    | 2 1 |
| 40 | 94     | 75     | 30    | 40.408 | 28    | 2 0 |
| 41 | 83.223 | 92     | 37    | 21     | 33    | 1 9 |
| 42 | 52     | 44.210 | 44    | 34     | 39    | 1 8 |
| 43 | 81     | 27     | 51    | 48     | 45    | 1 7 |
| 44 | 83.310 | 44     | 58    | 61     | 51    | 1 6 |
| 45 | 49     | 62     | 65    | 74     | 57    | 1 5 |
| 46 | 69     | 79     | 72    | 88     | 63    | 1 4 |
| 47 | 98     | 97     | 79    | 40.501 | 69    | 1 3 |
| 48 | 83.427 | 44.314 | 86    | 14     | 75    | 1 2 |
| 49 | 56     | 31     | 93    | 28     | 81    | 1 1 |
| 50 | 85     | 49     | 9.400 | 41     | 85    | 1 0 |
| 51 | 83.514 | 66     | 7     | 54     | 92    | 9 9 |
| 52 | 43     | 84     | 14    | 67     | 98    | 9 8 |
| 53 | 83.601 | 44.401 | 21    | 81     | 8.604 | 9 7 |
| 54 | 72     | 18     | 28    | 94     | 10    | 9 6 |
| 55 | 30     | 36     | 35    | 40.607 | 16    | 9 5 |
| 56 | 59     | 53     | 42    | 21     | 22    | 9 4 |
| 57 | 89     | 71     | 50    | 34     | 28    | 9 3 |
| 58 | 83.718 | 88     | 57    | 47     | 34    | 9 2 |
| 59 | 47     | 44.505 | 64    | 60     | 39    | 9 1 |
| 60 | 76     | 23     | 71    | 74     | 45    | 9 0 |

| '  | CL     | T      | E     | X      | Y     | '  |
|----|--------|--------|-------|--------|-------|----|
| 0  | 83.776 | 44.523 | 9.464 | 40.674 | 8.645 | 80 |
| 1  | 83.805 | 40     | 71    | 87     | 51    | 81 |
| 2  | 34     | 58     | 79    | 40.700 | 57    | 82 |
| 3  | 63     | 75     | 85    | 14     | 63    | 83 |
| 4  | 92     | 93     | 92    | 27     | 69    | 84 |
| 5  | 83.921 | 44.610 | 99    | 40     | 75    | 85 |
| 6  | 50     | 28     | 9.506 | 53     | 81    | 86 |
| 7  | 79     | 45     | 13    | 67     | 87    | 87 |
| 8  | 84.009 | 62     | 20    | 80     | 93    | 88 |
| 9  | 38     | 80     | 28    | 93     | 99    | 89 |
| 10 | 67     | 97     | 35    | 40.807 | 8.705 | 90 |
| 11 | 96     | 44.715 | 42    | 20     | 11    | 91 |
| 12 | 84.125 | 32     | 49    | 33     | 17    | 92 |
| 13 | 54     | 50     | 56    | 46     | 23    | 93 |
| 14 | 83     | 67     | 63    | 60     | 29    | 94 |
| 15 | 84.212 | 85     | 70    | 73     | 34    | 95 |
| 16 | 41     | 44.802 | 78    | 86     | 40    | 96 |
| 17 | 70     | 20     | 85    | 99     | 46    | 97 |
| 18 | 99     | 37     | 92    | 40.913 | 52    | 98 |
| 19 | 84.328 | 54     | 99    | 26     | 58    | 99 |
| 20 | 58     | 72     | 9.606 | 39     | 64    | 40 |
| 21 | 87     | 89     | 13    | 53     | 70    | 41 |
| 22 | 84.416 | 44.907 | 20    | 66     | 76    | 42 |
| 23 | 45     | 24     | 28    | 79     | 82    | 43 |
| 24 | 74     | 42     | 35    | 92     | 88    | 44 |
| 25 | 84.503 | 59     | 42    | 41.006 | 94    | 45 |
| 26 | 32     | 77     | 49    | 19     | 8.800 | 46 |
| 27 | 61     | 94     | 56    | 32     | 6     | 47 |
| 28 | 90     | 45.012 | 63    | 45     | 12    | 48 |
| 29 | 84.619 | 29     | 71    | 59     | 18    | 49 |
| 30 | 48     | 47     | 78    | 72     | 24    | 50 |
| 31 | 78     | 64     | 85    | 85     | 30    | 51 |
| 32 | 84.707 | 82     | 92    | 98     | 36    | 52 |
| 33 | 36     | 99     | 99    | 41.112 | 42    | 53 |
| 34 | 65     | 45.117 | 9.707 | 25     | 48    | 54 |
| 35 | 94     | 34     | 14    | 38     | 54    | 55 |
| 36 | 84.823 | 52     | 21    | 51     | 60    | 56 |
| 37 | 52     | 69     | 28    | 65     | 66    | 57 |
| 38 | 81     | 87     | 35    | 78     | 72    | 58 |
| 39 | 84.910 | 45.204 | 43    | 91     | 78    | 59 |
| 40 | 39     | 22     | 50    | 41.204 | 84    | 60 |
| 41 | 68     | 39     | 57    | 18     | 90    | 61 |
| 42 | 98     | 57     | 64    | 31     | 96    | 62 |
| 43 | 85.027 | 74     | 71    | 44     | 8.902 | 63 |
| 44 | 56     | 92     | 79    | 57     | 8     | 64 |
| 45 | 85     | 45.309 | 86    | 71     | 14    | 65 |
| 46 | 85.114 | 27     | 93    | 84     | 20    | 66 |
| 47 | 43     | 45     | 9.800 | 97     | 26    | 67 |
| 48 | 72     | 62     | 8     | 41.310 | 32    | 68 |
| 49 | 85.201 | 80     | 15    | 24     | 38    | 69 |
| 50 | 30     | 97     | 22    | 37     | 44    | 70 |
| 51 | 59     | 45.415 | 29    | 50     | 50    | 71 |
| 52 | 88     | 32     | 37    | 63     | 56    | 72 |
| 53 | 85.318 | 50     | 44    | 77     | 62    | 73 |
| 54 | 47     | 67     | 51    | 90     | 68    | 74 |
| 55 | 76     | 85     | 58    | 41.403 | 74    | 75 |
| 56 | 85.405 | 45.502 | 66    | 16     | 80    | 76 |
| 57 | 34     | 20     | 73    | 43     | 86    | 77 |
| 58 | 63     | 38     | 80    | 56     | 92    | 78 |
| 59 | 92     | 55     | 88    | 43     | 98    | 79 |
| 60 | 85.521 | 73     | 95    | 69     | 9.004 | 80 |

|    | L      | T      | E      | X      | Y     |    |
|----|--------|--------|--------|--------|-------|----|
| 0  | 85.521 | 45.573 | 9.895  | 41.469 | 9.004 | 60 |
| 1  | 50     | 90     | 9.902  | 83     | 10    | 59 |
| 2  | 79     | 45.608 | 9      | 96     | 16    | 58 |
| 3  | 85.608 | 25     | 17     | 41.509 | 22    | 57 |
| 4  | 37     | 43     | 24     | 22     | 28    | 56 |
| 5  | 67     | 61     | 31     | 35     | 34    | 55 |
| 6  | 96     | 78     | 39     | 49     | 40    | 54 |
| 7  | 85.725 | 96     | 46     | 62     | 46    | 53 |
| 8  | 54     | 45.713 | 53     | 75     | 52    | 52 |
| 9  | 83     | 31     | 61     | 88     | 58    | 51 |
| 10 | 85.812 | 48     | 68     | 41.602 | 64    | 50 |
| 11 | 41     | 65     | 75     | 15     | 70    | 49 |
| 12 | 70     | 84     | 82     | 28     | 76    | 48 |
| 13 | 99     | 45.901 | 90     | 41     | 82    | 47 |
| 14 | 85.928 | 19     | 97     | 54     | 89    | 46 |
| 15 | 57     | 36     | 10.004 | 68     | 95    | 45 |
| 16 | 87     | 54     | 12     | 81     | 9.101 | 44 |
| 17 | 86.016 | 72     | 19     | 94     | 7     | 43 |
| 18 | 45     | 89     | 26     | 41.707 | 13    | 42 |
| 19 | 74     | 45.907 | 34     | 21     | 19    | 41 |
| 20 | 86.103 | 24     | 41     | 34     | 25    | 40 |
| 21 | 32     | 42     | 49     | 47     | 31    | 39 |
| 22 | 61     | 60     | 56     | 60     | 37    | 38 |
| 23 | 90     | 77     | 63     | 73     | 43    | 37 |
| 24 | 86.219 | 95     | 71     | 87     | 49    | 36 |
| 25 | 48     | 46.013 | 78     | 41.800 | 55    | 35 |
| 26 | 77     | 30     | 85     | 13     | 61    | 34 |
| 27 | 86.307 | 48     | 93     | 26     | 67    | 33 |
| 28 | 36     | 65     | 10.100 | 99     | 74    | 32 |
| 29 | 65     | 83     | 7      | 53     | 80    | 31 |
| 30 | 94     | 46.101 | 15     | 66     | 86    | 30 |
| 31 | 86.423 | 18     | 22     | 79     | 92    | 29 |
| 32 | 52     | 36     | 30     | 92     | 98    | 28 |
| 33 | 81     | 54     | 37     | 41.906 | 9.204 | 27 |
| 34 | 86.510 | 71     | 44     | 19     | 10    | 26 |
| 35 | 39     | 89     | 52     | 32     | 16    | 25 |
| 36 | 68     | 46.207 | 59     | 45     | 22    | 24 |
| 37 | 97     | 24     | 67     | 58     | 28    | 23 |
| 38 | 86.627 | 42     | 74     | 72     | 35    | 22 |
| 39 | 55     | 59     | 81     | 85     | 41    | 21 |
| 40 | 85     | 77     | 89     | 98     | 47    | 20 |
| 41 | 86.714 | 95     | 96     | 42.011 | 53    | 19 |
| 42 | 43     | 46.312 | 10.204 | 24     | 59    | 18 |
| 43 | 72     | 30     | 11     | 38     | 65    | 17 |
| 44 | 86.801 | 48     | 19     | 51     | 71    | 16 |
| 45 | 30     | 65     | 26     | 64     | 77    | 15 |
| 46 | 59     | 83     | 33     | 77     | 83    | 14 |
| 47 | 88     | 46.401 | 41     | 90     | 90    | 13 |
| 48 | 86.917 | 19     | 48     | 42.104 | 96    | 12 |
| 49 | 46     | 36     | 56     | 17     | 9.302 | 11 |
| 50 | 76     | 54     | 63     | 30     | 8     | 10 |
| 51 | 87.005 | 72     | 71     | 43     | 14    | 9  |
| 52 | 34     | 89     | 78     | 56     | 20    | 8  |
| 53 | 63     | 46.507 | 86     | 70     | 26    | 7  |
| 54 | 92     | 25     | 93     | 83     | 32    | 6  |
| 55 | 87.121 | 42     | 10.300 | 96     | 39    | 5  |
| 56 | 50     | 60     | 8      | 42.209 | 45    | 4  |
| 57 | 79     | 78     | 15     | 22     | 51    | 3  |
| 58 | 87.209 | 95     | 23     | 36     | 57    | 2  |
| 59 | 37     | 46.613 | 30     | 49     | 63    | 1  |
| 60 | 66     | 21     | 38     | 62     | 69    | 0  |

| '  | L      | T      | E      | X      | Y     | '   |
|----|--------|--------|--------|--------|-------|-----|
| 0  | 87.266 | 46.631 | 10.338 | 42.262 | 9.369 | 6 0 |
| 1  | 96     | 49     | 45     | 75     | 75    | 0 9 |
| 2  | 87.325 | 66     | 53     | 88     | 81    | 9 8 |
| 3  | 54     | 84     | 60     | 42.301 | 88    | 8 7 |
| 4  | 83     | 46.702 | 68     | 15     | 94    | 5 6 |
| 5  | 87.412 | 19     | 75     | 23     | 9.400 | 5 5 |
| 6  | 41     | 37     | 83     | 41     | 6     | 4 4 |
| 7  | 70     | 55     | 90     | 54     | 12    | 5 3 |
| 8  | 99     | 73     | 98     | 67     | 19    | 5 2 |
| 9  | 87.528 | 90     | 10.405 | 80     | 25    | 5 1 |
| 10 | 57     | 46.808 | 13     | 94     | 31    | 5 0 |
| 11 | 86     | 26     | 20     | 42.407 | 37    | 4 9 |
| 12 | 87.616 | 43     | 28     | 20     | 43    | 8 8 |
| 13 | 45     | 61     | 35     | 33     | 49    | 4 7 |
| 14 | 74     | 79     | 43     | 46     | 56    | 4 6 |
| 15 | 87.703 | 97     | 50     | 60     | 62    | 4 5 |
| 16 | 32     | 46.914 | 58     | 73     | 63    | 4 4 |
| 17 | 61     | 32     | 65     | 86     | 74    | 4 3 |
| 18 | 90     | 50     | 73     | 99     | 80    | 4 2 |
| 19 | 87.819 | 68     | 81     | 42.512 | 86    | 4 1 |
| 20 | 48     | 85     | 88     | 25     | 93    | 4 0 |
| 21 | 77     | 47.003 | 96     | 33     | 99    | 9 9 |
| 22 | 87.905 | 21     | 10.503 | 52     | 9.505 | 8 8 |
| 23 | 36     | 39     | 11     | 65     | 11    | 7 7 |
| 24 | 65     | 56     | 18     | 78     | 17    | 3 6 |
| 25 | 94     | 74     | 26     | 91     | 24    | 3 5 |
| 26 | 88.023 | 92     | 34     | 42.604 | 30    | 3 4 |
| 27 | 52     | 47.110 | 41     | 17     | 36    | 3 3 |
| 28 | 81     | 27     | 49     | 31     | 42    | 2 2 |
| 29 | 88.110 | 45     | 56     | 44     | 48    | 3 1 |
| 30 | 39     | 63     | 64     | 57     | 55    | 3 0 |
| 31 | 68     | 81     | 71     | 70     | 61    | 2 9 |
| 32 | 97     | 99     | 79     | 83     | 67    | 2 8 |
| 33 | 88.226 | 47.216 | 87     | 96     | 73    | 2 7 |
| 34 | 55     | 34     | 94     | 42.710 | 79    | 2 6 |
| 35 | 85     | 52     | 10.602 | 25     | 86    | 2 5 |
| 36 | 88.314 | 70     | 9      | 36     | 92    | 2 4 |
| 37 | 43     | 88     | 17     | 49     | 98    | 2 3 |
| 38 | 72     | 47.305 | 25     | 62     | 9.604 | 2 2 |
| 39 | 88.401 | 23     | 32     | 75     | 10    | 2 1 |
| 40 | 30     | 41     | 40     | 88     | 17    | 2 0 |
| 41 | 59     | 59     | 47     | 42.801 | 23    | 1 9 |
| 42 | 88     | 77     | 55     | 15     | 29    | 1 8 |
| 43 | 88.517 | 94     | 63     | 28     | 35    | 1 7 |
| 44 | 46     | 47.412 | 70     | 41     | 42    | 1 6 |
| 45 | 75     | 30     | 78     | 54     | 48    | 1 5 |
| 46 | 88.605 | 48     | 86     | 67     | 54    | 1 4 |
| 47 | 34     | 66     | 93     | 80     | 60    | 1 3 |
| 48 | 63     | 84     | 10.701 | 93     | 67    | 1 2 |
| 49 | 92     | 47.501 | 9      | 42.907 | 73    | 1 1 |
| 50 | 88.721 | 19     | 16     | 20     | 79    | 1 0 |
| 51 | 50     | 37     | 24     | 33     | 85    | 9 9 |
| 52 | 79     | 55     | 32     | 46     | 91    | 8 8 |
| 53 | 88.808 | 73     | 39     | 59     | 98    | 8 7 |
| 54 | 37     | 91     | 47     | 72     | 9.704 | 6   |
| 55 | 66     | 47.608 | 55     | 85     | 10    | 5 4 |
| 56 | 95     | 26     | 62     | 99     | 16    | 4 4 |
| 57 | 88.925 | 44     | 70     | 43.012 | 23    | 3 3 |
| 58 | 54     | 62     | 78     | 25     | 29    | 2 2 |
| 59 | 83     | 80     | 85     | 38     | 35    | 1 1 |
| 60 | 89.012 | 98     | 93     | 51     | 41    | 0   |

## 曲線函數表

| '  | L      | T      | E      | X      | Y      | '  |
|----|--------|--------|--------|--------|--------|----|
| 0  | 89.012 | 47.698 | 10.793 | 43.051 | 9.741  | 0  |
| 1  | 41     | 47.715 | 10.801 | 64     | 48     | 59 |
| 2  | 70     | 33     | 8      | 77     | 54     | 58 |
| 3  | 99     | 51     | 16     | 90     | 60     | 57 |
| 4  | 89.128 | 69     | 24     | 43.104 | 66     | 56 |
| 5  | 57     | 87     | 31     | 17     | 73     | 55 |
| 6  | 86     | 47.805 | 39     | 30     | 79     | 54 |
| 7  | 89.215 | 23     | 47     | 43     | 85     | 53 |
| 8  | 45     | 41     | 54     | 56     | 92     | 52 |
| 9  | 74     | 58     | 62     | 69     | 98     | 51 |
| 10 | 89.303 | 76     | 70     | 82     | 9.804  | 50 |
| 11 | 32     | 94     | 78     | 95     | 10     | 49 |
| 12 | 61     | 47.912 | 85     | 43.209 | 17     | 48 |
| 13 | 90     | 30     | 93     | 22     | 23     | 47 |
| 14 | 89.419 | 48     | 10.901 | 35     | 29     | 46 |
| 15 | 48     | 66     | 9      | 48     | 36     | 45 |
| 16 | 77     | 84     | 16     | 61     | 42     | 44 |
| 17 | 89.506 | 48.001 | 24     | 74     | 48     | 43 |
| 18 | 35     | 19     | 32     | 87     | 54     | 42 |
| 19 | 64     | 37     | 40     | 43.300 | 61     | 41 |
| 20 | 94     | 55     | 47     | 14     | 67     | 40 |
| 21 | 89.623 | 73     | 55     | 27     | 73     | 39 |
| 22 | 52     | 91     | 63     | 40     | 80     | 38 |
| 23 | 81     | 48.109 | 71     | 53     | 86     | 37 |
| 24 | 89.710 | 27     | 78     | 66     | 92     | 36 |
| 25 | 39     | 45     | 86     | 79     | 99     | 35 |
| 26 | 68     | 63     | 94     | 92     | 9.905  | 34 |
| 27 | 97     | 80     | 11.002 | 43.405 | 11     | 33 |
| 28 | 89.826 | 98     | 9      | 18     | 18     | 32 |
| 29 | 55     | 48.216 | 17     | 31     | 24     | 31 |
| 30 | 84     | 34     | 25     | 45     | 30     | 30 |
| 31 | 89.914 | 52     | 33     | 58     | 37     | 29 |
| 32 | 43     | 70     | 41     | 71     | 43     | 28 |
| 33 | 72     | 88     | 48     | 84     | 49     | 27 |
| 34 | 90.001 | 48.306 | 56     | 97     | 56     | 26 |
| 35 | 30     | 24     | 64     | 43.510 | 62     | 25 |
| 36 | 59     | 42     | 72     | 23     | 68     | 24 |
| 37 | 88     | 60     | 80     | 36     | 75     | 23 |
| 38 | 90.117 | 78     | 87     | 49     | 81     | 22 |
| 39 | 46     | 96     | 95     | 62     | 87     | 21 |
| 40 | 75     | 48.414 | 11.103 | 76     | 94     | 20 |
| 41 | 90.204 | 32     | 11     | 89     | 10.000 | 19 |
| 42 | 34     | 50     | 19     | 43.602 | 6      | 18 |
| 43 | 63     | 68     | 27     | 15     | 13     | 17 |
| 44 | 92     | 86     | 34     | 28     | 19     | 16 |
| 45 | 90.321 | 48.504 | 42     | 41     | 25     | 15 |
| 46 | 50     | 21     | 50     | 54     | 32     | 14 |
| 47 | 79     | 39     | 58     | 67     | 38     | 13 |
| 48 | 90.408 | 57     | 66     | 80     | 44     | 12 |
| 49 | 37     | 75     | 74     | 93     | 51     | 11 |
| 50 | 66     | 93     | 81     | 43.706 | 57     | 10 |
| 51 | 95     | 48.611 | 89     | 19     | 63     | 9  |
| 52 | 90.524 | 29     | 97     | 33     | 70     | 8  |
| 53 | 53     | 47     | 11.205 | 46     | 76     | 7  |
| 54 | 83     | 65     | 13     | 59     | 82     | 6  |
| 55 | 90.612 | 83     | 21     | 72     | 89     | 5  |
| 56 | 41     | 48.701 | 29     | 85     | 95     | 4  |
| 57 | 70     | 19     | 36     | 98     | 10.102 | 3  |
| 58 | 99     | 37     | 44     | 43.811 | 8      | 2  |
| 59 | 90.728 | 55     | 52     | 24     | 14     | 1  |
| 60 | 57     | 73     | 60     | 37     | 21     | 0  |

| '  | L      | T      | E      | X      | Y      | '  |
|----|--------|--------|--------|--------|--------|----|
| 0  | 90.757 | 48.773 | 11.260 | 43.837 | 10.121 | 60 |
| 1  | 86     | 91     | 68     | 50     | 27     | 55 |
| 2  | 80.815 | 48.809 | 76     | 63     | 33     | 50 |
| 3  | 44     | 27     | 84     | 76     | 40     | 45 |
| 4  | 73     | 45     | 92     | 89     | 46     | 40 |
| 5  | 90.903 | 63     | 11.300 | 43.902 | 53     | 55 |
| 6  | 32     | 81     | 8      | 15     | 59     | 50 |
| 7  | 61     | 99     | 16     | 29     | 65     | 45 |
| 8  | 90     | 48.917 | 23     | 42     | 72     | 40 |
| 9  | 91.019 | 35     | 31     | 55     | 78     | 35 |
| 10 | 48     | 53     | 39     | 68     | 85     | 50 |
| 11 | 77     | 72     | 47     | 81     | 91     | 45 |
| 12 | 91.105 | 90     | 55     | 94     | 97     | 40 |
| 13 | 35     | 48.008 | 63     | 44.007 | 10.204 | 45 |
| 14 | 64     | 26     | 71     | 20     | 10     | 40 |
| 15 | 93     | 44     | 79     | 33     | 16     | 45 |
| 16 | 91.223 | 62     | 87     | 45     | 23     | 40 |
| 17 | 52     | 80     | 95     | 58     | 29     | 35 |
| 18 | 81     | 98     | 11.403 | 72     | 36     | 30 |
| 19 | 91.310 | 48.116 | 11     | 85     | 42     | 25 |
| 20 | 39     | 34     | 19     | 98     | 49     | 40 |
| 21 | 68     | 52     | 27     | 44.111 | 55     | 35 |
| 22 | 97     | 70     | 35     | 25     | 61     | 30 |
| 23 | 91.426 | 88     | 43     | 38     | 68     | 25 |
| 24 | 55     | 49.206 | 51     | 51     | 74     | 20 |
| 25 | 84     | 24     | 59     | 64     | 81     | 35 |
| 26 | 91.513 | 42     | 67     | 77     | 87     | 30 |
| 27 | 43     | 60     | 75     | 90     | 93     | 25 |
| 28 | 72     | 78     | 83     | 44.203 | 10.300 | 20 |
| 29 | 91.601 | 97     | 91     | 16     | 6      | 15 |
| 30 | 30     | 49.315 | 99     | 29     | 13     | 30 |
| 31 | 59     | 33     | 11.507 | 42     | 19     | 25 |
| 32 | 88     | 51     | 15     | 55     | 26     | 20 |
| 33 | 91.717 | 69     | 23     | 68     | 32     | 15 |
| 34 | 46     | 87     | 31     | 81     | 39     | 10 |
| 35 | 75     | 49.405 | 39     | 94     | 45     | 25 |
| 36 | 91.804 | 23     | 47     | 44.307 | 51     | 20 |
| 37 | 33     | 41     | 55     | 20     | 58     | 15 |
| 38 | 62     | 59     | 63     | 33     | 64     | 10 |
| 39 | 92     | 77     | 71     | 46     | 71     | 5  |
| 40 | 91.921 | 96     | 79     | 59     | 77     | 20 |
| 41 | 50     | 49.514 | 87     | 72     | 84     | 15 |
| 42 | 79     | 32     | 95     | 85     | 90     | 10 |
| 43 | 92.008 | 50     | 11.603 | 98     | 97     | 5  |
| 44 | 37     | 68     | 11     | 44.411 | 10.403 | 15 |
| 45 | 66     | 86     | 19     | 24     | 9      | 10 |
| 46 | 95     | 49.604 | 27     | 37     | 16     | 5  |
| 47 | 82.124 | 22     | 35     | 50     | 22     | 15 |
| 48 | 53     | 40     | 43     | 64     | 29     | 10 |
| 49 | 82     | 59     | 51     | 77     | 35     | 5  |
| 50 | 92.212 | 77     | 59     | 90     | 42     | 20 |
| 51 | 41     | 49.713 | 67     | 44.503 | 48     | 15 |
| 52 | 70     | 31     | 75     | 16     | 55     | 10 |
| 53 | 99     | 83     | 83     | 29     | 61     | 5  |
| 54 | 92.328 | 49     | 92     | 42     | 68     | 15 |
| 55 | 57     | 57     | 11.700 | 55     | 74     | 10 |
| 56 | 86     | 86     | 8      | 68     | 81     | 5  |
| 57 | 92.415 | 49.804 | 16     | 81     | 87     | 15 |
| 58 | 44     | 22     | 24     | 94     | 94     | 10 |
| 59 | 73     | 40     | 32     | 44.607 | 10.500 | 5  |
| 60 | 92.502 | 58     | 40     | 20     | 7      | 15 |



| '                | L                                     | T                                    | E                                    | X                                | Y                                | '                                    |
|------------------|---------------------------------------|--------------------------------------|--------------------------------------|----------------------------------|----------------------------------|--------------------------------------|
| 0<br>0<br>0<br>4 | 92.502<br>32<br>61<br>90<br>92.619    | 49.858<br>76<br>94<br>49.913<br>31   | 11.740<br>48<br>56<br>64<br>73       | 44.620<br>33<br>46<br>59<br>72   | 10.507<br>13<br>20<br>26<br>33   | 6<br>0<br>5<br>8<br>5<br>7<br>5<br>6 |
| 5<br>0<br>0<br>8 | 48<br>77<br>92.706<br>35<br>64        | 49<br>67<br>85<br>50.004<br>22       | 81<br>89<br>97<br>11.805<br>13       | 85<br>98<br>44.711<br>24<br>37   | 39<br>46<br>52<br>59<br>65       | 5<br>5<br>4<br>3<br>3<br>2<br>5<br>1 |
| 1<br>0<br>0<br>4 | 93<br>92.822<br>52<br>81<br>92.910    | 40<br>59<br>75<br>95<br>50.113       | 21<br>29<br>38<br>46<br>54           | 50<br>63<br>76<br>89<br>44.802   | 72<br>78<br>85<br>91<br>98       | 5<br>0<br>4<br>9<br>4<br>4<br>4<br>6 |
| 1<br>5<br>0<br>8 | 39<br>68<br>97<br>93.026<br>55        | 31<br>49<br>67<br>86<br>50.204       | 62<br>70<br>78<br>86<br>98           | 15<br>28<br>41<br>54<br>67       | 10.604<br>11<br>17<br>24<br>30   | 4<br>5<br>4<br>3<br>4<br>2<br>4<br>1 |
| 2<br>0<br>0<br>4 | 84<br>93.113<br>42<br>71<br>93.201    | 22<br>40<br>58<br>77<br>95           | 11.903<br>11<br>19<br>27<br>36       | 80<br>93<br>44.906<br>19<br>82   | 37<br>43<br>50<br>56<br>63       | 4<br>0<br>4<br>0<br>8<br>8<br>5<br>6 |
| 2<br>5<br>0<br>8 | 30<br>59<br>88<br>93.317<br>46        | 50.313<br>31<br>49<br>68<br>86       | 44<br>52<br>60<br>68<br>77           | 45<br>58<br>71<br>84<br>97       | 69<br>76<br>82<br>89<br>96       | 3<br>5<br>4<br>4<br>3<br>2<br>5<br>1 |
| 3<br>0<br>0<br>4 | 75<br>93.404<br>33<br>62<br>91        | 50.404<br>22<br>41<br>59<br>77       | 85<br>93<br>12.001<br>9<br>18        | 45.010<br>23<br>36<br>49<br>62   | 10.702<br>9<br>15<br>22<br>28    | 3<br>0<br>9<br>8<br>2<br>2<br>2<br>6 |
| 3<br>5<br>0<br>8 | 52<br>50<br>79<br>93.608<br>37        | 95<br>50.514<br>32<br>50<br>68       | 26<br>34<br>42<br>51<br>59           | 75<br>88<br>45.101<br>14<br>27   | 35<br>41<br>48<br>55<br>61       | 2<br>5<br>4<br>3<br>2<br>2<br>2<br>1 |
| 4<br>0<br>0<br>4 | 66<br>95<br>93.724<br>53<br>82        | 87<br>50.606<br>23<br>42<br>60       | 67<br>75<br>84<br>92<br>12.100       | 40<br>53<br>66<br>79<br>92       | 68<br>74<br>81<br>87<br>94       | 2<br>0<br>8<br>1<br>1<br>7<br>1<br>6 |
| 4<br>5<br>0<br>8 | 81<br>41<br>70<br>99<br>93.928        | 78<br>96<br>50.715<br>33<br>51       | 8<br>17<br>25<br>33<br>41            | 45.205<br>18<br>30<br>43<br>56   | 10.801<br>7<br>14<br>20<br>27    | 1<br>5<br>1<br>4<br>1<br>3<br>1<br>1 |
| 5<br>0<br>0<br>4 | 57<br>86<br>94.015<br>44<br>73        | 70<br>88<br>50.806<br>24<br>43       | 50<br>58<br>66<br>75<br>83           | 69<br>82<br>96<br>45.308<br>21   | 33<br>40<br>47<br>53<br>60       | 1<br>0<br>8<br>8<br>7<br>6           |
| 5<br>5<br>0<br>8 | 102<br>31<br>61<br>90<br>94.219<br>48 | 61<br>79<br>98<br>50.916<br>34<br>53 | 91<br>99<br>12.208<br>16<br>24<br>33 | 34<br>47<br>60<br>73<br>86<br>98 | 66<br>73<br>79<br>86<br>93<br>99 | 5<br>4<br>3<br>2<br>1<br>0           |

## 曲線函數表

|            | L      | T      | E      | X      | Y      |            |
|------------|--------|--------|--------|--------|--------|------------|
| 0000000000 | 94.248 | 50.953 | 12.233 | 45.399 | 10.899 | 8 0        |
| 0000000000 | 77     | 71     | 41     | 45.412 | 10.906 | 0000000000 |
| 0000000000 | 94.306 | 89     | 49     | 25     | 13     | 0000000000 |
| 0000000000 | 35     | 61.008 | 58     | 38     | 19     | 0000000000 |
| 0000000000 | 64     | 26     | 66     | 51     | 26     | 0000000000 |
| 0000000000 | 93     | 44     | 74     | 64     | 32     | 0000000000 |
| 0000000000 | 94.422 | 63     | 83     | 77     | 39     | 0000000000 |
| 0000000000 | 51     | 81     | 91     | 90     | 46     | 0000000000 |
| 0000000000 | 80     | 99     | 99     | 45.503 | 52     | 0000000000 |
| 0000000000 | 94.510 | 51.118 | 12.308 | 16     | 58     | 0000000000 |
| 0000000000 | 39     | 26     | 16     | 29     | 65     | 0000000000 |
| 0000000000 | 68     | 54     | 24     | 41     | 72     | 0000000000 |
| 0000000000 | 97     | 73     | 33     | 54     | 79     | 0000000000 |
| 0000000000 | 94.626 | 91     | 41     | 67     | 85     | 0000000000 |
| 0000000000 | 56     | 51.209 | 49     | 80     | 92     | 0000000000 |
| 0000000000 | 84     | 28     | 58     | 93     | 99     | 0000000000 |
| 0000000000 | 94.713 | 46     | 66     | 45.606 | 11.005 | 0000000000 |
| 0000000000 | 42     | 64     | 75     | 19     | 12     | 0000000000 |
| 0000000000 | 71     | 83     | 83     | 32     | 18     | 0000000000 |
| 0000000000 | 94.800 | 51.301 | 91     | 45     | 25     | 0000000000 |
| 0000000000 | 30     | 20     | 12.400 | 68     | 32     | 0000000000 |
| 0000000000 | 59     | 38     | 8      | 71     | 38     | 0000000000 |
| 0000000000 | 88     | 56     | 17     | 84     | 45     | 0000000000 |
| 0000000000 | 94.917 | 76     | 25     | 97     | 52     | 0000000000 |
| 0000000000 | 46     | 23     | 33     | 45.710 | 58     | 0000000000 |
| 0000000000 | 75     | 51.411 | 42     | 23     | 65     | 0000000000 |
| 0000000000 | 95.004 | 30     | 50     | 36     | 72     | 0000000000 |
| 0000000000 | 33     | 48     | 59     | 49     | 78     | 0000000000 |
| 0000000000 | 62     | 67     | 67     | 61     | 85     | 0000000000 |
| 0000000000 | 91     | 85     | 75     | 74     | 92     | 0000000000 |
| 0000000000 | 95.120 | 51.503 | 84     | 87     | 98     | 0000000000 |
| 0000000000 | 50     | 22     | 92     | 45.800 | 11.105 | 0000000000 |
| 0000000000 | 79     | 40     | 12.501 | 13     | 12     | 0000000000 |
| 0000000000 | 95.208 | 59     | 9      | 26     | 18     | 0000000000 |
| 0000000000 | 37     | 77     | 18     | 39     | 25     | 0000000000 |
| 0000000000 | 66     | 95     | 26     | 52     | 32     | 0000000000 |
| 0000000000 | 95.324 | 51.614 | 34     | 65     | 38     | 0000000000 |
| 0000000000 | 53     | 32     | 43     | 78     | 45     | 0000000000 |
| 0000000000 | 82     | 51     | 51     | 91     | 52     | 0000000000 |
| 0000000000 | 95.411 | 69     | 60     | 45.904 | 58     | 0000000000 |
| 0000000000 | 40     | 88     | 68     | 17     | 65     | 0000000000 |
| 0000000000 | 70     | 51.706 | 77     | 30     | 72     | 0000000000 |
| 0000000000 | 99     | 24     | 85     | 42     | 78     | 0000000000 |
| 0000000000 | 95.523 | 43     | 94     | 55     | 85     | 0000000000 |
| 0000000000 | 61     | 61     | 12.602 | 68     | 92     | 0000000000 |
| 0000000000 | 57     | 80     | 11     | 81     | 98     | 0000000000 |
| 0000000000 | 95.615 | 98     | 19     | 94     | 11.205 | 0000000000 |
| 0000000000 | 44     | 51.817 | 28     | 46.007 | 12     | 0000000000 |
| 0000000000 | 73     | 35     | 36     | 20     | 19     | 0000000000 |
| 0000000000 | 95.702 | 54     | 45     | 33     | 25     | 0000000000 |
| 0000000000 | 31     | 72     | 53     | 46     | 32     | 0000000000 |
| 0000000000 | 60     | 91     | 62     | 59     | 39     | 0000000000 |
| 0000000000 | 99     | 51.909 | 70     | 72     | 45     | 0000000000 |
| 0000000000 | 95.819 | 27     | 79     | 84     | 52     | 0000000000 |
| 0000000000 | 46     | 46     | 87     | 97     | 59     | 0000000000 |
| 0000000000 | 48     | 64     | 96     | 46.110 | 65     | 0000000000 |
| 0000000000 | 77     | 83     | 12.704 | 23     | 72     | 0000000000 |
| 0000000000 | 95.905 | 52.001 | 13     | 36     | 79     | 0000000000 |
| 0000000000 | 35     | 20     | 21     | 49     | 86     | 0000000000 |
| 0000000000 | 64     | 38     | 30     | 62     | 92     | 0000000000 |
| 0000000000 | 93     | 57     | 38     | 75     | 99     | 0000000000 |

## 曲線函數表

| '  | L      | T      | E      | X      | Y      | '   |
|----|--------|--------|--------|--------|--------|-----|
| 0  | 95.993 | 52.057 | 12.738 | 46.175 | 11.299 | 8 0 |
| 1  | 96.022 | 75     | 47     | 88     | 11.306 | 0 0 |
| 2  | 51     | 94     | 55     | 46.201 | 12     | 0 0 |
| 3  | 80     | 52.112 | 64     | 14     | 19     | 0 0 |
| 4  | 96.109 | 31     | 72     | 26     | 26     | 0 0 |
| 5  | 39     | 49     | 81     | 39     | 33     | 5 5 |
| 6  | 63     | 68     | 90     | 52     | 39     | 5 5 |
| 7  | 97     | 86     | 98     | 65     | 46     | 5 5 |
| 8  | 96.225 | 52.205 | 12.807 | 78     | 53     | 5 5 |
| 9  | 55     | 23     | 15     | 91     | 59     | 5 5 |
| 10 | 84     | 42     | 24     | 46.304 | 66     | 0 0 |
| 11 | 96.313 | 60     | 32     | 17     | 73     | 0 0 |
| 12 | 42     | 79     | 41     | 30     | 80     | 0 0 |
| 13 | 71     | 97     | 50     | 42     | 86     | 0 0 |
| 14 | 96.400 | 52.316 | 58     | 55     | 93     | 0 0 |
| 15 | 29     | 34     | 67     | 68     | 11.400 | 4 5 |
| 16 | 59     | 53     | 75     | 81     | 7      | 4 5 |
| 17 | 98     | 71     | 84     | 94     | 13     | 4 5 |
| 18 | 96.517 | 90     | 92     | 46.407 | 20     | 4 5 |
| 19 | 46     | 52.408 | 12.901 | 20     | 27     | 4 5 |
| 20 | 75     | 27     | 10     | 33     | 34     | 4 0 |
| 21 | 96.604 | 46     | 18     | 46     | 40     | 4 0 |
| 22 | 33     | 64     | 27     | 58     | 47     | 0 0 |
| 23 | 62     | 83     | 36     | 71     | 54     | 0 0 |
| 24 | 91     | 52.501 | 44     | 84     | 61     | 0 0 |
| 25 | 96.720 | 20     | 53     | 97     | 67     | 5 5 |
| 26 | 49     | 38     | 61     | 46.510 | 74     | 5 5 |
| 27 | 79     | 57     | 70     | 23     | 81     | 5 5 |
| 28 | 96.808 | 75     | 79     | 36     | 88     | 5 5 |
| 29 | 37     | 94     | 87     | 49     | 94     | 5 5 |
| 30 | 66     | 52.613 | 96     | 61     | 11.501 | 3 0 |
| 31 | 95     | 31     | 13.005 | 74     | 8      | 0 0 |
| 32 | 96.924 | 50     | 13     | 87     | 15     | 0 0 |
| 33 | 53     | 68     | 22     | 46.600 | 22     | 0 0 |
| 34 | 82     | 87     | 31     | 13     | 28     | 2 6 |
| 35 | 97.011 | 52.705 | 39     | 26     | 35     | 2 5 |
| 36 | 40     | 24     | 48     | 39     | 42     | 4 4 |
| 37 | 69     | 43     | 57     | 51     | 49     | 5 3 |
| 38 | 98     | 61     | 65     | 64     | 55     | 5 2 |
| 39 | 97.128 | 80     | 74     | 77     | 62     | 2 1 |
| 40 | 57     | 98     | 83     | 90     | 69     | 2 0 |
| 41 | 86     | 52.817 | 91     | 46.703 | 76     | 1 9 |
| 42 | 97.215 | 36     | 13.100 | 16     | 83     | 1 8 |
| 43 | 44     | 54     | 9      | 29     | 89     | 1 7 |
| 44 | 73     | 73     | 17     | 42     | 96     | 1 6 |
| 45 | 97.302 | 91     | 26     | 54     | 11.603 | 1 5 |
| 46 | 31     | 52.910 | 35     | 67     | 10     | 1 4 |
| 47 | 60     | 29     | 44     | 80     | 17     | 1 3 |
| 48 | 89     | 47     | 52     | 93     | 23     | 1 2 |
| 49 | 97.412 | 66     | 61     | 46.806 | 30     | 1 1 |
| 50 | 48     | 85     | 70     | 19     | 37     | 1 0 |
| 51 | 77     | 53.003 | 78     | 31     | 44     | 0 0 |
| 52 | 97.506 | 22     | 87     | 44     | 51     | 0 0 |
| 53 | 35     | 40     | 96     | 57     | 57     | 0 0 |
| 54 | 64     | 59     | 13.205 | 70     | 64     | 0 0 |
| 55 | 93     | 78     | 13     | 83     | 71     | 6   |
| 56 | 97.622 | 96     | 22     | 96     | 78     | 4   |
| 57 | 51     | 53.115 | 31     | 46.909 | 85     | 3   |
| 58 | 80     | 34     | 40     | 21     | 92     | 3   |
| 59 | 97.709 | 52     | 48     | 34     | 98     | 2   |
| 60 | 38     | 71     | 57     | 47     | 11.705 | 1 9 |

| '  | L      | T      | E      | X      | Y      | '   |
|----|--------|--------|--------|--------|--------|-----|
| 0  | 97.733 | 53.171 | 13.257 | 46.947 | 11.705 | 6 0 |
| 1  | 68     | 90     | 66     | 60     | 12     | 5 9 |
| 2  | 97     | 53.208 | 75     | 73     | 19     | 5 8 |
| 3  | 97.826 | 27     | 83     | 86     | 26     | 5 7 |
| 4  | 55     | 46     | 92     | 98     | 33     | 5 6 |
| 5  | 84     | 64     | 13.301 | 47.011 | 39     | 5 5 |
| 6  | 97.913 | 83     | 10     | 24     | 46     | 5 4 |
| 7  | 42     | 53.302 | 18     | 37     | 53     | 5 3 |
| 8  | 71     | 20     | 27     | 50     | 60     | 5 2 |
| 9  | 98.000 | 39     | 36     | 63     | 67     | 5 1 |
| 10 | 29     | 53     | 45     | 76     | 74     | 5 0 |
| 11 | 58     | 76     | 54     | 88     | 81     | 4 9 |
| 12 | 88     | 95     | 62     | 47.101 | 87     | 4 8 |
| 13 | 98.117 | 53.414 | 71     | 14     | 94     | 4 7 |
| 14 | 46     | 32     | 80     | 27     | 11.801 | 4 6 |
| 15 | 75     | 51     | 89     | 40     | 8      | 4 5 |
| 16 | 98.204 | 70     | 98     | 52     | 15     | 4 4 |
| 17 | 33     | 89     | 13.406 | 65     | 22     | 4 3 |
| 18 | 62     | 53.507 | 15     | 78     | 29     | 4 2 |
| 19 | 91     | 26     | 24     | 91     | 35     | 4 1 |
| 20 | 98.320 | 45     | 33     | 47.204 | 42     | 4 0 |
| 21 | 49     | 63     | 42     | 17     | 49     | 3 9 |
| 22 | 78     | 82     | 51     | 29     | 56     | 3 8 |
| 23 | 98.407 | 53.601 | 59     | 42     | 63     | 3 7 |
| 24 | 37     | 20     | 68     | 55     | 70     | 3 6 |
| 25 | 66     | 38     | 77     | 68     | 77     | 3 5 |
| 26 | 95     | 57     | 86     | 81     | 83     | 3 4 |
| 27 | 98.524 | 76     | 95     | 93     | 90     | 3 3 |
| 28 | 53     | 95     | 13.504 | 47.306 | 97     | 3 2 |
| 29 | 82     | 53.713 | 13     | 19     | 11.904 | 3 1 |
| 30 | 98.611 | 32     | 21     | 32     | 11     | 3 0 |
| 31 | 40     | 51     | 30     | 45     | 18     | 2 9 |
| 32 | 69     | 69     | 39     | 58     | 25     | 2 8 |
| 33 | 98     | 88     | 48     | 70     | 32     | 2 7 |
| 34 | 98.727 | 53.807 | 57     | 83     | 39     | 2 6 |
| 35 | 57     | 26     | 66     | 96     | 45     | 2 5 |
| 36 | 86     | 44     | 75     | 47.409 | 52     | 2 4 |
| 37 | 98.815 | 63     | 84     | 22     | 59     | 2 3 |
| 38 | 44     | 82     | 92     | 34     | 66     | 2 2 |
| 39 | 73     | 53.901 | 13.601 | 47     | 73     | 2 1 |
| 40 | 98.902 | 20     | 10     | 60     | 80     | 2 0 |
| 41 | 31     | 38     | 19     | 73     | 87     | 1 9 |
| 42 | 60     | 57     | 28     | 86     | 94     | 1 8 |
| 43 | 89     | 76     | 37     | 98     | 12.001 | 1 7 |
| 44 | 99.018 | 95     | 46     | 47.511 | 8      | 1 6 |
| 45 | 47     | 54.013 | 55     | 24     | 14     | 1 5 |
| 46 | 77     | 32     | 64     | 37     | 21     | 1 4 |
| 47 | 99.106 | 51     | 73     | 50     | 28     | 1 3 |
| 48 | 35     | 70     | 82     | 62     | 35     | 1 2 |
| 49 | 64     | 89     | 91     | 75     | 42     | 1 1 |
| 50 | 93     | 54.107 | 13.700 | 88     | 49     | 1 0 |
| 51 | 99.222 | 26     | 9      | 47.601 | 56     | 9 9 |
| 52 | 51     | 45     | 17     | 14     | 63     | 9 8 |
| 53 | 80     | 64     | 26     | 26     | 70     | 9 7 |
| 54 | 99.309 | 83     | 35     | 39     | 77     | 9 6 |
| 55 | 38     | 54.202 | 44     | 52     | 84     | 9 5 |
| 56 | 67     | 20     | 53     | 65     | 90     | 9 4 |
| 57 | 97     | 39     | 62     | 78     | 97     | 9 3 |
| 58 | 99.426 | 58     | 71     | 90     | 12.104 | 9 2 |
| 59 | 55     | 77     | 80     | 47.703 | 11     | 9 1 |
| 60 | 84     | 96     | 89     | 16     | 18     | 9 0 |

## 曲線函數表

| '   | L       | T      | E      | X      | Y      | '   |
|-----|---------|--------|--------|--------|--------|-----|
| 0 1 | 99.484  | 54.296 | 13.789 | 47.716 | 12.118 | 6 0 |
| 1 2 | 99.513  | 54.314 | 98     | 29     | 25     | 5 9 |
| 2 3 | 42      | 33     | 13.807 | 41     | 32     | 5 8 |
| 3 4 | 71      | 52     | 16     | 54     | 39     | 5 7 |
| 4   | 99.600  | 71     | 25     | 67     | 46     | 5 6 |
| 5   | 29      | 90     | 34     | 80     | 53     | 5 5 |
| 6   | 58      | 54.409 | 43     | 93     | 60     | 5 4 |
| 7   | 87      | 28     | 52     | 47.805 | 67     | 5 3 |
| 8   | 99.716  | 46     | 61     | 18     | 74     | 5 2 |
| 9   | 46      | 65     | 70     | 31     | 81     | 5 1 |
| 1 0 | 75      | 84     | 79     | 44     | 88     | 5 0 |
| 1 1 | 99.804  | 54.503 | 88     | 56     | 95     | 4 9 |
| 2   | 33      | 22     | 97     | 69     | 12.202 | 4 8 |
| 3   | 62      | 41     | 13.907 | 82     | 9      | 4 7 |
| 4   | 91      | 60     | 16     | 95     | 16     | 4 6 |
| 1 5 | 99.920  | 78     | 25     | 47.903 | 23     | 4 5 |
| 1 6 | 49      | 97     | 34     | 20     | 30     | 4 4 |
| 1 7 | 78      | 54.616 | 43     | 33     | 36     | 4 3 |
| 1 8 | 100.007 | 35     | 52     | 45     | 43     | 4 2 |
| 1 9 | 36      | 54     | 61     | 59     | 50     | 4 1 |
| 2 0 | 66      | 73     | 70     | 71     | 57     | 4 0 |
| 2 1 | 95      | 92     | 79     | 84     | 64     | 3 9 |
| 2 2 | 100.124 | 54.711 | 88     | 97     | 71     | 3 8 |
| 3   | 53      | 30     | 97     | 48.010 | 78     | 3 7 |
| 4   | 82      | 48     | 14.006 | 22     | 85     | 3 6 |
| 2 5 | 100.211 | 67     | 15     | 35     | 92     | 3 5 |
| 2 6 | 40      | 86     | 24     | 48     | 99     | 3 4 |
| 2 7 | 69      | 54.805 | 33     | 61     | 12.306 | 3 3 |
| 2 8 | 98      | 24     | 42     | 74     | 13     | 3 2 |
| 2 9 | 100.327 | 43     | 52     | 86     | 20     | 3 1 |
| 3 0 | 56      | 62     | 61     | 99     | 27     | 3 0 |
| 3 1 | 86      | 81     | 70     | 48.112 | 34     | 2 9 |
| 3 2 | 100.415 | 54.900 | 79     | 24     | 41     | 2 8 |
| 3 3 | 44      | 19     | 88     | 37     | 48     | 2 7 |
| 3 4 | 73      | 38     | 97     | 50     | 55     | 2 6 |
| 3 5 | 100.502 | 57     | 14.106 | 63     | 62     | 2 5 |
| 3 6 | 31      | 76     | 15     | 75     | 69     | 2 4 |
| 3 7 | 60      | 94     | 24     | 88     | 76     | 2 3 |
| 3 8 | 89      | 55.013 | 34     | 48.201 | 83     | 2 2 |
| 3 9 | 100.618 | 32     | 43     | 14     | 90     | 2 1 |
| 4 0 | 47      | 51     | 52     | 26     | 97     | 2 0 |
| 4 1 | 76      | 70     | 61     | 39     | 12.404 | 1 9 |
| 4 2 | 100.705 | 69     | 70     | 52     | 11     | 1 8 |
| 4 3 | 35      | 55.108 | 79     | 65     | 18     | 1 7 |
| 4 4 | 64      | 27     | 88     | 77     | 25     | 1 6 |
| 4 5 | 93      | 46     | 98     | 90     | 32     | 1 5 |
| 4 6 | 100.822 | 65     | 14.207 | 48.303 | 39     | 1 4 |
| 4 7 | 51      | 84     | 16     | 15     | 47     | 1 3 |
| 4 8 | 80      | 55.203 | 25     | 28     | 54     | 1 2 |
| 4 9 | 100.909 | 22     | 34     | 41     | 61     | 1 1 |
| 5 0 | 38      | 41     | 43     | 54     | 68     | 1 0 |
| 5 1 | 67      | 60     | 53     | 66     | 75     | 9 9 |
| 5 2 | 96      | 79     | 62     | 79     | 82     | 9 8 |
| 5 3 | 101.025 | 98     | 71     | 92     | 89     | 9 7 |
| 5 4 | 55      | 55.317 | 80     | 48.405 | 96     | 9 6 |
| 5 5 | 84      | 36     | 89     | 17     | 12.503 | 9 5 |
| 5 6 | 101.113 | 55     | 99     | 30     | 10     | 9 4 |
| 5 7 | 42      | 74     | 14.308 | 43     | 17     | 9 3 |
| 5 8 | 71      | 93     | 17     | 55     | 24     | 9 2 |
| 5 9 | 101.200 | 55.412 | 26     | 68     | 31     | 9 1 |
| 6 0 | 29      | 31     | 35     | 81     | 38     | 9 0 |

## 曲線函數表

|    | L       | T      | E      | X      | Y      |     |
|----|---------|--------|--------|--------|--------|-----|
| 0  | 101.229 | 55.431 | 14.335 | 48.481 | 12.538 | 60  |
| 1  | 58      | 50     | 45     | 94     | 45     | 61  |
| 2  | 87      | 69     | 54     | 48.506 | 52     | 62  |
| 3  | 101.316 | 88     | 63     | 19     | 59     | 63  |
| 4  | 45      | 55.507 | 72     | 32     | 66     | 64  |
| 5  | 75      | 26     | 81     | 45     | 73     | 65  |
| 6  | 101.404 | 45     | 91     | 57     | 80     | 66  |
| 7  | 33      | 64     | 14.400 | 70     | 87     | 67  |
| 8  | 62      | 83     | 9      | 83     | 95     | 68  |
| 9  | 91      | 55.602 | 19     | 95     | 12.602 | 69  |
| 10 | 101.520 | 21     | 28     | 48.608 | 9      | 70  |
| 11 | 49      | 40     | 37     | 21     | 16     | 71  |
| 12 | 78      | 59     | 45     | 33     | 23     | 72  |
| 13 | 101.607 | 78     | 56     | 46     | 30     | 73  |
| 14 | 35      | 97     | 65     | 59     | 37     | 74  |
| 15 | 65      | 55.717 | 74     | 72     | 44     | 75  |
| 16 | 95      | 36     | 83     | 84     | 51     | 76  |
| 17 | 101.724 | 55     | 93     | 97     | 58     | 77  |
| 18 | 53      | 74     | 14.502 | 48.710 | 65     | 78  |
| 19 | 82      | 93     | 11     | 22     | 72     | 79  |
| 20 | 101.811 | 55.812 | 21     | 35     | 79     | 80  |
| 21 | 40      | 31     | 30     | 48     | 86     | 81  |
| 22 | 69      | 50     | 39     | 61     | 94     | 82  |
| 23 | 98      | 69     | 49     | 73     | 12.701 | 83  |
| 24 | 101.927 | 88     | 58     | 86     | 8      | 84  |
| 25 | 56      | 55.907 | 67     | 99     | 15     | 85  |
| 26 | 85      | 26     | 76     | 48.811 | 22     | 86  |
| 27 | 102.014 | 45     | 86     | 24     | 29     | 87  |
| 28 | 44      | 65     | 95     | 37     | 36     | 88  |
| 29 | 73      | 84     | 14.604 | 49     | 43     | 89  |
| 30 | 102.102 | 56.003 | 14     | 62     | 50     | 90  |
| 31 | 31      | 22     | 23     | 75     | 57     | 91  |
| 32 | 60      | 41     | 32     | 87     | 65     | 92  |
| 33 | 89      | 60     | 42     | 48.900 | 72     | 93  |
| 34 | 102.218 | 79     | 51     | 13     | 79     | 94  |
| 35 | 47      | 98     | 60     | 26     | 86     | 95  |
| 36 | 76      | 56.117 | 70     | 38     | 93     | 96  |
| 37 | 102.305 | 37     | 79     | 51     | 12.800 | 97  |
| 38 | 34      | 56     | 89     | 64     | 7      | 98  |
| 39 | 64      | 75     | 98     | 76     | 14     | 99  |
| 40 | 93      | 94     | 14.707 | 89     | 22     | 100 |
| 41 | 102.422 | 56.213 | 17     | 48.002 | 29     | 1   |
| 42 | 51      | 26     | 26     | 14     | 36     | 2   |
| 43 | 80      | 32     | 35     | 27     | 43     | 3   |
| 44 | 102.509 | 71     | 45     | 40     | 50     | 4   |
| 45 | 38      | 90     | 54     | 52     | 57     | 5   |
| 46 | 67      | 56.309 | 64     | 65     | 64     | 6   |
| 47 | 96      | 28     | 73     | 78     | 71     | 7   |
| 48 | 102.625 | 47     | 82     | 90     | 79     | 8   |
| 49 | 54      | 66     | 92     | 48.103 | 86     | 9   |
| 50 | 84      | 85     | 14.801 | 16     | 93     | 10  |
| 51 | 102.713 | 56.405 | 11     | 28     | 12.900 | 11  |
| 52 | 42      | 24     | 20     | 41     | 7      | 12  |
| 53 | 71      | 43     | 30     | 54     | 14     | 13  |
| 54 | 102.800 | 62     | 39     | 66     | 21     | 14  |
| 55 | 29      | 81     | 48     | 79     | 29     | 15  |
| 56 | 58      | 56.500 | 58     | 92     | 36     | 16  |
| 57 | 67      | 20     | 67     | 48.204 | 43     | 17  |
| 58 | 102.916 | 39     | 77     | 17     | 50     | 18  |
| 59 | 45      | 58     | 86     | 30     | 57     | 19  |
| 60 | 74      | 77     | 96     | 42     | 64     | 20  |

| '  | L       | T      | E      | X      | Y      | '      |
|----|---------|--------|--------|--------|--------|--------|
| 0  | 102.974 | 56.577 | 14.896 | 49.242 | 12.964 | 80.000 |
| 1  | 103.004 | 56.96  | 14.905 | 55     | 72     | 80.000 |
| 2  | 33      | 56.616 | 15     | 68     | 79     | 80.000 |
| 3  | 62      | 35     | 24     | 80     | 86     | 80.000 |
| 4  | 91      | 54     | 33     | 93     | 93     | 80.000 |
| 5  | 103.120 | 73     | 43     | 49.306 | 13.000 | 50.000 |
| 6  | 49      | 93     | 52     | 18     | 7      | 50.000 |
| 7  | 78      | 56.712 | 62     | 31     | 15     | 50.000 |
| 8  | 103.207 | 31     | 71     | 44     | 22     | 50.000 |
| 9  | 38      | 50     | 81     | 56     | 29     | 50.000 |
| 10 | 65      | 69     | 90     | 69     | 36     | 50.000 |
| 11 | 94      | 89     | 15.000 | 82     | 43     | 50.000 |
| 12 | 103.323 | 56.808 | 9      | 94     | 51     | 44.8   |
| 13 | 53      | 27     | 19     | 49.407 | 58     | 44.7   |
| 14 | 82      | 46     | 28     | 20     | 65     | 44.6   |
| 15 | 103.411 | 66     | 38     | 32     | 72     | 44.5   |
| 16 | 40      | 85     | 47     | 45     | 79     | 44.4   |
| 17 | 69      | 56.904 | 57     | 57     | 86     | 44.3   |
| 18 | 98      | 23     | 66     | 70     | 94     | 44.2   |
| 19 | 103.527 | 43     | 76     | 83     | 13.101 | 44.1   |
| 20 | 56      | 62     | 85     | 95     | 8      | 44.0   |
| 21 | 82      | 81     | 95     | 49.508 | 15     | 44.0   |
| 22 | 103.614 | 57.000 | 15.105 | 21     | 22     | 44.0   |
| 23 | 43      | 20     | 14     | 33     | 30     | 44.0   |
| 24 | 73      | 39     | 24     | 46     | 37     | 44.0   |
| 25 | 103.702 | 56     | 33     | 59     | 44     | 44.0   |
| 26 | 31      | 78     | 43     | 71     | 51     | 44.0   |
| 27 | 60      | 97     | 52     | 84     | 59     | 44.0   |
| 28 | 89      | 57.116 | 62     | 96     | 66     | 44.0   |
| 29 | 103.818 | 35     | 71     | 49.609 | 73     | 44.0   |
| 30 | 47      | 55     | 81     | 22     | 80     | 44.0   |
| 31 | 76      | 74     | 91     | 34     | 87     | 44.0   |
| 32 | 103.905 | 93     | 15.200 | 47     | 95     | 44.0   |
| 33 | 34      | 57.213 | 10     | 60     | 13.202 | 44.0   |
| 34 | 63      | 32     | 19     | 72     | 9      | 44.0   |
| 35 | 93      | 51     | 29     | 85     | 16     | 44.0   |
| 36 | 104.022 | 71     | 39     | 97     | 23     | 44.0   |
| 37 | 51      | 90     | 48     | 49.710 | 31     | 44.0   |
| 38 | 80      | 57.309 | 58     | 23     | 38     | 44.0   |
| 39 | 104.109 | 29     | 67     | 35     | 45     | 44.0   |
| 40 | 38      | 48     | 77     | 48     | 52     | 44.0   |
| 41 | 67      | 67     | 87     | 61     | 60     | 44.0   |
| 42 | 96      | 87     | 96     | 73     | 67     | 44.0   |
| 43 | 104.225 | 57.406 | 15.306 | 86     | 74     | 44.0   |
| 44 | 54      | 25     | 15     | 98     | 81     | 44.0   |
| 45 | 83      | 45     | 25     | 49.811 | 89     | 44.0   |
| 46 | 104.313 | 64     | 35     | 24     | 96     | 44.0   |
| 47 | 42      | 83     | 44     | 36     | 13.303 | 44.0   |
| 48 | 71      | 57.503 | 54     | 49     | 10     | 44.0   |
| 49 | 104.400 | 22     | 64     | 61     | 18     | 44.0   |
| 50 | 24      | 41     | 73     | 74     | 25     | 44.0   |
| 51 | 58      | 61     | 83     | 87     | 32     | 44.0   |
| 52 | 87      | 80     | 93     | 99     | 39     | 44.0   |
| 53 | 104.516 | 99     | 15.402 | 49.912 | 47     | 44.0   |
| 54 | 45      | 57.619 | 12     | 24     | 54     | 44.0   |
| 55 | 74      | 38     | 22     | 37     | 61     | 44.0   |
| 56 | 104.603 | 58     | 31     | 50     | 68     | 44.0   |
| 57 | 32      | 77     | 41     | 62     | 76     | 44.0   |
| 58 | 62      | 96     | 51     | 75     | 83     | 44.0   |
| 59 | 91      | 57.716 | 60     | 87     | 90     | 44.0   |
| 60 | 104.720 | 35     | 70     | 50.000 | 97     | 44.0   |

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## 曲線函數表

| '   | L       | T      | E      | X      | Y      | '      |
|-----|---------|--------|--------|--------|--------|--------|
| 0 1 | 104.720 | 57.735 | 15.470 | 50.000 | 13.397 | 58.910 |
| 2 2 | 49      | 54     | 80     | 13     | 13.405 | 58.900 |
| 3 3 | 78      | 74     | 89     | 25     | 12     | 58.887 |
| 4 4 | 104.807 | 93     | 99     | 38     | 19     | 58.870 |
|     | 36      | 57.813 | 15.509 | 50     | 27     | 58.856 |
| 5 5 | 65      | 32     | 19     | 63     | 34     | 58.841 |
| 6 6 | 94      | 51     | 28     | 76     | 41     | 58.826 |
| 7 7 | 104.923 | 71     | 38     | 88     | 48     | 58.811 |
| 8 8 | 52      | 90     | 48     | 50.101 | 56     | 58.796 |
| 9 9 | 82      | 57.910 | 58     | 13     | 63     | 58.781 |
| 1 0 | 105.011 | 29     | 67     | 26     | 70     | 58.766 |
| 1 1 | 40      | 49     | 77     | 38     | 78     | 58.751 |
| 2 2 | 69      | 68     | 87     | 51     | 85     | 58.736 |
| 3 3 | 98      | 87     | 97     | 64     | 92     | 58.721 |
| 4 4 | 105.127 | 58.007 | 15.606 | 76     | 99     | 58.706 |
| 1 5 | 56      | 26     | 16     | 89     | 13.507 | 58.691 |
| 2 5 | 85      | 46     | 26     | 50.201 | 14     | 58.676 |
| 3 5 | 105.214 | 65     | 36     | 14     | 21     | 58.661 |
| 4 5 | 43      | 85     | 45     | 26     | 29     | 58.646 |
| 5 5 | 72      | 58.104 | 55     | 39     | 36     | 58.631 |
| 2 0 | 105.302 | 24     | 65     | 52     | 43     | 58.616 |
| 3 0 | 31      | 43     | 75     | 64     | 51     | 58.601 |
| 4 0 | 60      | 62     | 84     | 77     | 59     | 58.586 |
| 5 0 | 89      | 82     | 94     | 89     | 66     | 58.571 |
|     | 105.418 | 58.201 | 15.704 | 50.302 | 72     | 58.556 |
| 2 5 | 47      | 21     | 14     | 15     | 80     | 58.541 |
| 3 5 | 76      | 40     | 24     | 27     | 87     | 58.526 |
| 4 5 | 105.505 | 60     | 33     | 40     | 94     | 58.511 |
| 5 5 | 34      | 79     | 43     | 52     | 13.602 | 58.496 |
|     | 63      | 99     | 53     | 65     | 9      | 58.481 |
| 3 0 | 92      | 58.318 | 63     | 77     | 16     | 58.466 |
| 4 0 | 105.622 | 38     | 73     | 90     | 24     | 58.451 |
| 5 0 | 51      | 57     | 82     | 50.402 | 31     | 58.436 |
|     | 80      | 77     | 92     | 15     | 38     | 58.421 |
|     | 105.709 | 96     | 15.802 | 28     | 45     | 58.406 |
| 4 5 | 38      | 58.416 | 12     | 40     | 53     | 58.391 |
| 5 5 | 67      | 35     | 22     | 53     | 60     | 58.376 |
|     | 96      | 55     | 32     | 65     | 68     | 58.361 |
|     | 105.825 | 74     | 42     | 78     | 75     | 58.346 |
|     | 54      | 94     | 51     | 90     | 82     | 58.331 |
| 4 0 | 83      | 58.513 | 61     | 58.503 | 90     | 58.316 |
| 5 0 | 105.912 | 33     | 71     | 15     | 97     | 58.301 |
|     | 41      | 52     | 81     | 28     | 13.704 | 58.286 |
|     | 71      | 72     | 91     | 41     | 12     | 58.271 |
|     | 106.000 | 91     | 15.901 | 53     | 19     | 58.256 |
| 4 5 | 29      | 58.611 | 10     | 66     | 27     | 58.241 |
| 5 5 | 58      | 31     | 20     | 78     | 34     | 58.226 |
|     | 87      | 50     | 30     | 90     | 41     | 58.211 |
|     | 106.116 | 70     | 40     | 50.603 | 49     | 58.196 |
|     | 45      | 89     | 50     | 16     | 56     | 58.181 |
| 5 0 | 74      | 58.709 | 60     | 28     | 63     | 58.166 |
| 1 1 | 106.203 | 28     | 70     | 41     | 71     | 58.151 |
| 2 1 | 32      | 48     | 80     | 54     | 78     | 58.136 |
| 3 1 | 61      | 67     | 90     | 66     | 86     | 58.121 |
| 4 1 | 91      | 87     | 15.000 | 79     | 93     | 58.106 |
| 5 5 | 106.320 | 58.807 | 10     | 91     | 13.800 | 58.091 |
| 6 5 | 49      | 26     | 19     | 50.704 | 8      | 58.076 |
| 7 5 | 78      | 46     | 29     | 16     | 15     | 58.061 |
| 8 5 | 106.407 | 65     | 39     | 29     | 22     | 58.046 |
| 9 5 | 36      | 85     | 49     | 41     | 30     | 58.031 |
|     | 65      | 58.904 | 59     | 54     | 37     | 58.016 |

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| '   | L       | T      | E      | X      | Y      | '   |
|-----|---------|--------|--------|--------|--------|-----|
| 0   | 106.465 | 58.904 | 16.059 | 50.754 | 13.837 | 6 0 |
| 1   | 94      | 24     | 69     | 66     | 44     | 5 9 |
| 2   | 106.523 | 44     | 79     | 79     | 52     | 5 8 |
| 3   | 52      | 63     | 89     | 91     | 59     | 5 7 |
| 4   | 81      | 83     | 99     | 50.804 | 67     | 5 6 |
| 5   | 106.611 | 59.002 | 16.109 | 16     | 74     | 5 5 |
| 6   | 40      | 22     | 19     | 29     | 81     | 5 4 |
| 7   | 69      | 42     | 29     | 41     | 89     | 5 3 |
| 8   | 98      | 61     | 39     | 54     | 96     | 5 2 |
| 9   | 106.727 | 81     | 49     | 67     | 13.904 | 5 1 |
| 1 0 | 56      | 59.101 | 59     | 79     | 11     | 5 0 |
| 1 1 | 85      | 20     | 69     | 92     | 18     | 4 9 |
| 1 2 | 106.814 | 40     | 79     | 50.904 | 26     | 4 8 |
| 1 3 | 43      | 60     | 89     | 17     | 33     | 4 7 |
| 1 4 | 72      | 79     | 99     | 29     | 41     | 4 6 |
| 1 5 | 106.901 | 99     | 16.209 | 42     | 48     | 4 5 |
| 1 6 | 31      | 59.218 | 19     | 54     | 55     | 4 4 |
| 1 7 | 60      | 33     | 29     | 67     | 63     | 4 3 |
| 1 8 | 89      | 53     | 39     | 79     | 70     | 4 2 |
| 1 9 | 107.018 | 77     | 49     | 92     | 78     | 4 1 |
| 2 0 | 47      | 97     | 59     | 51.004 | 85     | 4 0 |
| 2 1 | 76      | 59.317 | 69     | 17     | 92     | 3 9 |
| 2 2 | 107.105 | 36     | 79     | 29     | 14.000 | 3 8 |
| 2 3 | 34      | 56     | 89     | 42     | 7      | 3 7 |
| 2 4 | 63      | 76     | 99     | 54     | 15     | 3 6 |
| 2 5 | 92      | 95     | 16.309 | 67     | 22     | 3 5 |
| 2 6 | 107.221 | 59.415 | 19     | 79     | 30     | 3 4 |
| 2 7 | 50      | 35     | 29     | 92     | 37     | 3 3 |
| 2 8 | 80      | 54     | 39     | 51.104 | 44     | 3 2 |
| 2 9 | 107.339 | 74     | 49     | 17     | 52     | 3 1 |
| 3 0 | 38      | 94     | 59     | 29     | 59     | 3 0 |
| 3 1 | 67      | 59.513 | 69     | 42     | 67     | 2 9 |
| 3 2 | 96      | 33     | 79     | 54     | 74     | 2 8 |
| 3 3 | 107.425 | 53     | 90     | 67     | 82     | 2 7 |
| 3 4 | 54      | 73     | 16.400 | 79     | 89     | 2 6 |
| 3 5 | 83      | 92     | 10     | 92     | 97     | 2 5 |
| 3 6 | 107.512 | 59.612 | 20     | 51.204 | 14.104 | 2 4 |
| 3 7 | 41      | 32     | 30     | 17     | 11     | 2 3 |
| 3 8 | 70      | 51     | 40     | 29     | 19     | 2 2 |
| 3 9 | 107.600 | 71     | 50     | 42     | 26     | 2 1 |
| 4 0 | 29      | 91     | 60     | 54     | 34     | 2 0 |
| 4 1 | 58      | 59.711 | 70     | 67     | 41     | 1 9 |
| 4 2 | 87      | 30     | 80     | 79     | 49     | 1 8 |
| 4 3 | 107.716 | 50     | 91     | 92     | 56     | 1 7 |
| 4 4 | 45      | 70     | 16.501 | 51.304 | 64     | 1 6 |
| 4 5 | 74      | 99     | 11     | 17     | 71     | 1 5 |
| 4 6 | 107.803 | 59.809 | 21     | 29     | 79     | 1 4 |
| 4 7 | 32      | 29     | 31     | 42     | 86     | 1 3 |
| 4 8 | 61      | 49     | 41     | 54     | 93     | 1 2 |
| 4 9 | 90      | 69     | 51     | 67     | 14.201 | 1 1 |
| 5 0 | 107.920 | 88     | 62     | 79     | 8      | 1 0 |
| 5 1 | 49      | 59.908 | 72     | 92     | 16     | 9 9 |
| 5 2 | 78      | 28     | 82     | 51.404 | 23     | 9 8 |
| 5 3 | 108.007 | 48     | 92     | 16     | 31     | 9 7 |
| 5 4 | 36      | 67     | 16.602 | 29     | 38     | 9 6 |
| 5 5 | 65      | 87     | 12     | 41     | 46     | 5   |
| 5 6 | 94      | 60.007 | 23     | 54     | 53     | 4   |
| 5 7 | 108.123 | 27     | 33     | 56     | 61     | 3   |
| 5 8 | 52      | 46     | 43     | 79     | 68     | 2   |
| 5 9 | 81      | 66     | 53     | 91     | 76     | 1   |
| 6 0 | 108.210 | 86     | 63     | 51.504 | 83     | 0   |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 108.210 | 60.086 | 16.663 | 51.504 | 14.283 | 80 |
| 1  | 40      | 60.106 | 73     | 16     | 91     | 90 |
| 2  | 69      | 26     | 84     | 29     | 98     | 00 |
| 3  | 98      | 45     | 94     | 41     | 14.306 | 10 |
| 4  | 108.327 | 65     | 16.704 | 54     | 12     | 20 |
| 5  | 56      | 85     | 14     | 66     | 21     | 30 |
| 6  | 85      | 60.205 | 25     | 79     | 28     | 40 |
| 7  | 108.414 | 25     | 35     | 91     | 36     | 50 |
| 8  | 43      | 45     | 45     | 51.603 | 43     | 60 |
| 9  | 72      | 64     | 55     | 16     | 51     | 70 |
| 10 | 108.501 | 84     | 66     | 28     | 58     | 80 |
| 11 | 30      | 60.304 | 76     | 41     | 66     | 90 |
| 12 | 59      | 24     | 86     | 53     | 73     | 00 |
| 13 | 89      | 44     | 96     | 66     | 81     | 10 |
| 14 | 108.618 | 64     | 16.807 | 78     | 83     | 20 |
| 15 | 47      | 83     | 17     | 91     | 96     | 30 |
| 16 | 76      | 60.403 | 27     | 51.703 | 14.403 | 40 |
| 17 | 108.705 | 23     | 37     | 16     | 11     | 50 |
| 18 | 34      | 43     | 48     | 28     | 18     | 60 |
| 19 | 63      | 63     | 58     | 40     | 26     | 70 |
| 20 | 92      | 83     | 68     | 53     | 34     | 80 |
| 21 | 108.821 | 60.502 | 78     | 65     | 41     | 90 |
| 22 | 50      | 22     | 89     | 78     | 49     | 00 |
| 23 | 79      | 42     | 99     | 90     | 56     | 10 |
| 24 | 108.909 | 62     | 16.909 | 51.803 | 64     | 20 |
| 25 | 38      | 82     | 20     | 15     | 71     | 30 |
| 26 | 67      | 60.602 | 30     | 28     | 79     | 40 |
| 27 | 96      | 22     | 40     | 40     | 86     | 50 |
| 28 | 109.025 | 42     | 51     | 52     | 94     | 60 |
| 29 | 54      | 62     | 61     | 65     | 14.501 | 70 |
| 30 | 83      | 82     | 71     | 77     | 9      | 80 |
| 31 | 109.112 | 60.701 | 81     | 90     | 16     | 90 |
| 32 | 41      | 21     | 92     | 51.902 | 24     | 00 |
| 33 | 70      | 41     | 17.002 | 15     | 32     | 10 |
| 34 | 99      | 61     | 12     | 27     | 39     | 20 |
| 35 | 109.229 | 81     | 23     | 39     | 47     | 30 |
| 36 | 58      | 60.801 | 33     | 52     | 54     | 40 |
| 37 | 87      | 21     | 44     | 64     | 62     | 50 |
| 38 | 109.316 | 41     | 54     | 77     | 69     | 60 |
| 39 | 45      | 61     | 64     | 89     | 77     | 70 |
| 40 | 74      | 81     | 75     | 52.002 | 84     | 80 |
| 41 | 109.403 | 60.901 | 85     | 14     | 92     | 90 |
| 42 | 32      | 21     | 95     | 26     | 14.600 | 00 |
| 43 | 61      | 41     | 17.106 | 39     | 7      | 10 |
| 44 | 90      | 60     | 16     | 51     | 15     | 20 |
| 45 | 109.519 | 80     | 27     | 64     | 22     | 30 |
| 46 | 48      | 61.000 | 37     | 76     | 30     | 40 |
| 47 | 78      | 20     | 47     | 88     | 37     | 50 |
| 48 | 109.607 | 40     | 58     | 52.101 | 45     | 60 |
| 49 | 36      | 60     | 68     | 13     | 53     | 70 |
| 50 | 65      | 80     | 78     | 26     | 60     | 80 |
| 51 | 94      | 61.100 | 89     | 38     | 68     | 90 |
| 52 | 109.723 | 20     | 99     | 51     | 75     | 00 |
| 53 | 52      | 40     | 17.210 | 63     | 83     | 10 |
| 54 | 81      | 60     | 20     | 75     | 90     | 20 |
| 55 | 109.810 | 80     | 31     | 88     | 98     | 30 |
| 56 | 39      | 61.200 | 41     | 52.200 | 14.706 | 40 |
| 57 | 68      | 20     | 51     | 13     | 13     | 50 |
| 58 | 98      | 40     | 62     | 25     | 21     | 60 |
| 59 | 109.927 | 60     | 72     | 37     | 28     | 70 |
| 60 | 56      | 80     | 83     | 50     | 36     | 80 |

## 曲線函數表

|    | L       | T      | E      | X      | Y      |     |
|----|---------|--------|--------|--------|--------|-----|
| 0  | 109.956 | 61.280 | 17.283 | 52.250 | 14.736 | 6 0 |
| 1  | 85      | 61.300 | 93     | 62     | 44     | 9 8 |
| 2  | 110.014 | 20     | 17.304 | 75     | 51     | 5 8 |
| 3  | 43      | 40     | 14     | 87     | 59     | 7 6 |
| 4  | 72      | 60     | 25     | 99     | 66     | 5 6 |
| 5  | 110.101 | 80     | 35     | 52.312 | 74     | 5 5 |
| 6  | 30      | 61.400 | 46     | 24     | 82     | 4 3 |
| 7  | 59      | 20     | 56     | 37     | 89     | 5 3 |
| 8  | 88      | 40     | 67     | 49     | 97     | 3 2 |
| 9  | 110.218 | 60     | 77     | 61     | 14.804 | 5 1 |
| 10 | 47      | 80     | 88     | 74     | 12     | 5 0 |
| 11 | 76      | 61.500 | 98     | 86     | 20     | 4 9 |
| 12 | 110.336 | 20     | 17.409 | 99     | 27     | 4 8 |
| 13 | 34      | 41     | 19     | 52.411 | 35     | 4 7 |
| 14 | 63      | 61     | 30     | 23     | 43     | 4 6 |
| 15 | 92      | 81     | 40     | 36     | 50     | 4 5 |
| 16 | 110.421 | 61.601 | 51     | 48     | 58     | 4 4 |
| 17 | 50      | 21     | 61     | 61     | 65     | 4 3 |
| 18 | 79      | 41     | 72     | 73     | 73     | 4 2 |
| 19 | 110.508 | 61     | 82     | 85     | 81     | 4 1 |
| 20 | 38      | 81     | 93     | 98     | 88     | 4 0 |
| 21 | 67      | 61.701 | 17.503 | 52.510 | 96     | 3 3 |
| 22 | 96      | 21     | 14     | 22     | 14.904 | 9 8 |
| 23 | 110.625 | 41     | 24     | 35     | 11     | 7 6 |
| 24 | 54      | 61     | 35     | 47     | 19     | 6 6 |
| 25 | 83      | 81     | 45     | 59     | 27     | 5 5 |
| 26 | 110.712 | 61.801 | 56     | 72     | 34     | 4 4 |
| 27 | 41      | 22     | 67     | 84     | 42     | 3 3 |
| 28 | 70      | 42     | 77     | 97     | 50     | 2 2 |
| 29 | 99      | 62     | 88     | 52.609 | 57     | 1 1 |
| 30 | 110.828 | 82     | 98     | 21     | 65     | 3 0 |
| 31 | 57      | 61.902 | 17.609 | 34     | 72     | 2 9 |
| 32 | 87      | 22     | 19     | 46     | 80     | 2 8 |
| 33 | 110.916 | 42     | 30     | 58     | 88     | 2 7 |
| 34 | 45      | 62     | 41     | 71     | 95     | 2 6 |
| 35 | 74      | 83     | 51     | 83     | 15.003 | 2 5 |
| 36 | 111.003 | 62.003 | 62     | 96     | 11     | 4 4 |
| 37 | 32      | 23     | 73     | 52.708 | 18     | 3 3 |
| 38 | 61      | 43     | 83     | 20     | 26     | 2 2 |
| 39 | 90      | 63     | 94     | 33     | 34     | 1 1 |
| 40 | 111.119 | 83     | 17.704 | 45     | 41     | 2 0 |
| 41 | 48      | 62.103 | 15     | 57     | 49     | 1 9 |
| 42 | 77      | 24     | 26     | 70     | 57     | 1 8 |
| 43 | 111.207 | 44     | 36     | 82     | 64     | 1 7 |
| 44 | 36      | 64     | 47     | 94     | 72     | 1 6 |
| 45 | 65      | 84     | 58     | 52.807 | 80     | 1 5 |
| 46 | 94      | 62.204 | 68     | 19     | 88     | 1 4 |
| 47 | 111.323 | 24     | 79     | 31     | 95     | 1 3 |
| 48 | 52      | 45     | 90     | 44     | 15.103 | 1 2 |
| 49 | 81      | 66     | 17.800 | 56     | 11     | 1 1 |
| 50 | 111.410 | 85     | 11     | 68     | 18     | 1 0 |
| 51 | 39      | 62.305 | 22     | 81     | 26     | 9 9 |
| 52 | 68      | 25     | 32     | 93     | 34     | 8 8 |
| 53 | 97      | 46     | 43     | 52.906 | 41     | 7 7 |
| 54 | 111.527 | 66     | 54     | 18     | 49     | 6 6 |
| 55 | 56      | 86     | 64     | 30     | 57     | 5 5 |
| 56 | 85      | 62.406 | 75     | 43     | 64     | 4 4 |
| 57 | 111.614 | 26     | 86     | 55     | 72     | 3 3 |
| 58 | 43      | 47     | 96     | 67     | 80     | 2 2 |
| 59 | 72      | 67     | 17.907 | 80     | 87     | 1 1 |
| 60 | 111.701 | 87     | 18     | 92     | 95     | 0 0 |

## 曲線函數表

|                           | L  | T  | E                                | X                                    | Y                                  |  |
|---------------------------|--|--|----------------------------------|--------------------------------------|------------------------------------|--|
| 0 1 1 2 3 4               | 111.701<br>30<br>59<br>88<br>111.817       | 62.487<br>62.507<br>27<br>48<br>68       | 17.918<br>29<br>39<br>50<br>61   | 52.992<br>53.004<br>17<br>29<br>41   | 15.195<br>15.203<br>11<br>18<br>26 | 6 0<br>9 9<br>5 8<br>5 7<br>5 6        |
| 5 6 7 8 9                 | 47<br>76<br>111.905<br>34<br>63            | 88<br>62.608<br>29<br>49<br>69           | 72<br>82<br>93<br>18.004<br>15   | 54<br>66<br>78<br>91<br>53.103       | 34<br>41<br>49<br>57<br>65         | 5 5<br>5 4<br>5 3<br>5 2<br>5 1        |
| 1 0 1 1 2 3 4             | 92<br>112.021<br>50<br>79<br>112.108       | 89<br>62.710<br>30<br>50<br>70           | 25<br>36<br>47<br>58<br>68       | 15<br>27<br>40<br>52<br>64           | 72<br>80<br>88<br>95<br>15.303     | 5 0<br>4 9<br>4 8<br>4 7<br>4 6        |
| 1 5 1 1 2 3 4 5 6 7 8 9   | 37<br>66<br>96<br>112.225<br>54            | 91<br>62.811<br>31<br>52<br>72           | 79<br>90<br>18.101<br>12<br>22   | 77<br>89<br>53.201<br>14<br>26       | 11<br>19<br>26<br>34<br>42         | 4 5<br>4 4<br>4 3<br>4 2<br>4 1        |
| 2 0 2 0 1 2 3 4 5 6 7 8 9 | 83<br>112.312<br>41<br>70<br>99            | 92<br>62.913<br>32<br>53<br>73           | 33<br>44<br>55<br>66<br>76       | 38<br>51<br>63<br>75<br>88           | 50<br>57<br>65<br>73<br>81         | 4 0<br>3 9<br>3 8<br>3 7<br>3 6        |
| 2 5 2 5 1 2 3 4 5 6 7 8 9 | 112.428<br>57<br>86<br>112.516<br>45       | 94<br>63.014<br>34<br>55<br>75           | 87<br>98<br>18.209<br>20<br>30   | 53.300<br>12<br>24<br>37<br>49       | 88<br>96<br>15.404<br>12<br>19     | 3 5<br>3 4<br>3 3<br>3 2<br>3 1        |
| 3 0 3 0 1 2 3 4 5 6 7 8 9 | 74<br>112.603<br>32<br>61<br>90            | 95<br>63.116<br>36<br>56<br>77           | 41<br>52<br>63<br>74<br>85       | 61<br>74<br>86<br>98<br>53.411       | 27<br>35<br>43<br>50<br>58         | 3 0<br>2 9<br>2 8<br>2 7<br>2 6        |
| 3 5 3 5 1 2 3 4 5 6 7 8 9 | 112.719<br>48<br>77<br>112.806<br>36       | 97<br>63.217<br>38<br>58<br>79           | 96<br>18.307<br>17<br>28<br>39   | 23<br>35<br>47<br>60<br>72           | 66<br>74<br>82<br>89<br>97         | 2 5<br>2 4<br>2 3<br>2 2<br>2 1        |
| 4 0 4 0 1 2 3 4 5 6 7 8 9 | 65<br>94<br>112.923<br>62<br>81            | 99<br>63.319<br>40<br>60<br>80           | 50<br>61<br>72<br>83<br>94       | 84<br>97<br>53.509<br>21<br>33       | 15.505<br>13<br>21<br>28<br>36     | 2 0<br>1 9<br>1 8<br>1 7<br>1 6        |
| 4 5 4 5 1 2 3 4 5 6 7 8 9 | 113.010<br>39<br>68<br>97<br>113.126       | 63.401<br>21<br>42<br>62<br>82           | 18.405<br>16<br>27<br>37<br>48   | 46<br>58<br>70<br>83<br>95           | 44<br>52<br>59<br>67<br>75         | 1 5<br>1 4<br>1 3<br>1 2<br>1 1        |
| 5 0 5 0 1 2 3 4 5 6 7 8 9 | 56<br>85<br>113.214<br>43<br>72            | 63.503<br>23<br>44<br>64<br>84           | 59<br>70<br>81<br>92<br>18.508   | 53.607<br>19<br>32<br>44<br>56       | 83<br>91<br>98<br>15.606<br>14     | 1 0<br>9 9<br>8 8<br>7 7<br>6 6        |
| 5 5 5 5 1 2 3 4 5 6 7 8 9 | 113.301<br>30<br>59<br>88<br>113.417<br>46 | 63.605<br>25<br>46<br>66<br>87<br>63.707 | 14<br>25<br>36<br>47<br>58<br>69 | 69<br>81<br>93<br>53.705<br>18<br>30 | 22<br>30<br>37<br>45<br>53<br>61   | 5 5<br>4 4<br>3 3<br>2 2<br>1 1<br>0 0 |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '   |
|----|---------|--------|--------|--------|--------|-----|
| 0  | 113.449 | 63.707 | 18.569 | 53.730 | 15.661 | 68  |
| 1  | 75      | 27     | 80     | 42     | 69     | 69  |
| 2  | 113.505 | 48     | 91     | 54     | 77     | 70  |
| 3  | 34      | 68     | 18.602 | 67     | 84     | 71  |
| 4  | 63      | 89     | 13     | 79     | 92     | 72  |
| 5  | 92      | 63.879 | 24     | 91     | 15.700 | 73  |
| 6  | 113.621 | 30     | 35     | 53.803 | 8      | 74  |
| 7  | 50      | 50     | 46     | 16     | 16     | 75  |
| 8  | 79      | 71     | 57     | 28     | 23     | 76  |
| 9  | 113.708 | 91     | 68     | 40     | 31     | 77  |
| 10 | 37      | 63.912 | 79     | 53     | 39     | 78  |
| 11 | 66      | 32     | 90     | 65     | 47     | 79  |
| 12 | 95      | 53     | 18.701 | 77     | 55     | 80  |
| 13 | 113.825 | 73     | 12     | 89     | 63     | 81  |
| 14 | 54      | 94     | 23     | 53.902 | 70     | 82  |
| 15 | 83      | 64.014 | 34     | 14     | 78     | 83  |
| 16 | 113.912 | 35     | 45     | 26     | 85     | 84  |
| 17 | 41      | 55     | 56     | 38     | 94     | 85  |
| 18 | 70      | 76     | 67     | 51     | 15.802 | 86  |
| 19 | 99      | 95     | 78     | 63     | 10     | 87  |
| 20 | 114.028 | 64.117 | 90     | 75     | 18     | 88  |
| 1  | 57      | 37     | 18.801 | 87     | 25     | 89  |
| 2  | 85      | 58     | 12     | 99     | 33     | 90  |
| 3  | 114.115 | 78     | 23     | 54.012 | 41     | 91  |
| 4  | 45      | 99     | 34     | 24     | 49     | 92  |
| 5  | 74      | 64.219 | 45     | 36     | 57     | 93  |
| 6  | 114.203 | 40     | 56     | 48     | 65     | 94  |
| 7  | 32      | 60     | 67     | 61     | 72     | 95  |
| 8  | 61      | 81     | 78     | 73     | 80     | 96  |
| 9  | 90      | 64.322 | 89     | 85     | 88     | 97  |
| 10 | 114.319 | 22     | 18.901 | 97     | 96     | 98  |
| 11 | 48      | 43     | 12     | 54.110 | 15.904 | 99  |
| 12 | 77      | 63     | 23     | 22     | 12     | 100 |
| 13 | 114.405 | 84     | 34     | 34     | 20     | 101 |
| 14 | 35      | 64.404 | 45     | 46     | 28     | 102 |
| 15 | 65      | 25     | 56     | 59     | 35     | 103 |
| 16 | 94      | 45     | 67     | 71     | 43     | 104 |
| 17 | 114.523 | 66     | 79     | 83     | 51     | 105 |
| 18 | 52      | 87     | 90     | 95     | 59     | 106 |
| 19 | 81      | 64.507 | 19.001 | 54.207 | 67     | 107 |
| 20 | 114.610 | 28     | 12     | 20     | 75     | 108 |
| 1  | 39      | 49     | 23     | 32     | 83     | 109 |
| 2  | 68      | 69     | 34     | 44     | 91     | 110 |
| 3  | 97      | 90     | 46     | 56     | 99     | 111 |
| 4  | 114.726 | 64.610 | 57     | 69     | 16.006 | 112 |
| 5  | 55      | 31     | 68     | 81     | 14     | 113 |
| 6  | 84      | 52     | 79     | 93     | 22     | 114 |
| 7  | 114.814 | 72     | 90     | 54.305 | 30     | 115 |
| 8  | 43      | 93     | 19.102 | 17     | 38     | 116 |
| 9  | 72      | 64.714 | 13     | 30     | 46     | 117 |
| 10 | 114.901 | 34     | 24     | 42     | 54     | 118 |
| 11 | 30      | 55     | 35     | 54     | 62     | 119 |
| 12 | 59      | 76     | 46     | 66     | 70     | 120 |
| 13 | 88      | 96     | 58     | 78     | 78     | 121 |
| 14 | 115.017 | 64.817 | 69     | 91     | 86     | 122 |
| 15 | 46      | 37     | 80     | 54.403 | 93     | 123 |
| 16 | 75      | 58     | 91     | 15     | 16.101 | 124 |
| 17 | 115.104 | 79     | 19.203 | 27     | 9      | 125 |
| 18 | 34      | 99     | 14     | 39     | 17     | 126 |
| 19 | 63      | 64.920 | 25     | 52     | 25     | 127 |
| 20 | 92      | 41     | 35     | 64     | 33     | 128 |

## 曲線函數表

| °  | L       | T      | E      | X      | Y      | °  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 115.192 | 64.941 | 19.236 | 54.464 | 16.133 | 60 |
| 1  | 115.221 | 61     | 48     | 76     | 41     | 59 |
| 2  | 50      | 62     | 59     | 88     | 49     | 58 |
| 3  | 79      | 65.003 | 70     | 54.501 | 57     | 57 |
| 4  | 115.308 | 24     | 81     | 13     | 65     | 56 |
| 5  | 37      | 44     | 93     | 25     | 73     | 55 |
| 6  | 66      | 65     | 19.304 | 37     | 81     | 54 |
| 7  | 95      | 86     | 15     | 49     | 88     | 53 |
| 8  | 115.424 | 65.106 | 27     | 61     | 96     | 52 |
| 9  | 54      | 27     | 38     | 74     | 16.204 | 51 |
| 10 | 83      | 48     | 49     | 86     | 12     | 50 |
| 11 | 115.512 | 69     | 61     | 98     | 20     | 49 |
| 12 | 41      | 89     | 72     | 54.610 | 28     | 48 |
| 13 | 70      | 65.210 | 83     | 22     | 36     | 47 |
| 14 | 99      | 31     | 95     | 35     | 44     | 46 |
| 15 | 115.628 | 51     | 19.406 | 47     | 52     | 45 |
| 16 | 57      | 72     | 17     | 59     | 60     | 44 |
| 17 | 86      | 93     | 29     | 71     | 68     | 43 |
| 18 | 115.715 | 65.314 | 40     | 83     | 76     | 42 |
| 19 | 44      | 34     | 51     | 96     | 84     | 41 |
| 20 | 74      | 55     | 63     | 54.708 | 92     | 40 |
| 21 | 115.803 | 76     | 74     | 20     | 16.300 | 39 |
| 22 | 32      | 97     | 85     | 32     | 8      | 38 |
| 23 | 61      | 65.417 | 97     | 44     | 16     | 37 |
| 24 | 90      | 38     | 19.508 | 56     | 24     | 36 |
| 25 | 115.919 | 59     | 19     | 68     | 31     | 35 |
| 26 | 48      | 80     | 31     | 81     | 39     | 34 |
| 27 | 77      | 65.501 | 42     | 93     | 47     | 33 |
| 28 | 116.006 | 21     | 53     | 54.805 | 55     | 32 |
| 29 | 35      | 42     | 65     | 17     | 63     | 31 |
| 30 | 64      | 63     | 76     | 29     | 71     | 30 |
| 31 | 93      | 84     | 88     | 41     | 79     | 29 |
| 32 | 116.123 | 65.605 | 99     | 54     | 87     | 28 |
| 33 | 52      | 25     | 19.610 | 66     | 95     | 27 |
| 34 | 81      | 46     | 22     | 78     | 16.403 | 26 |
| 35 | 116.210 | 67     | 33     | 90     | 11     | 25 |
| 36 | 39      | 88     | 45     | 54.902 | 19     | 24 |
| 37 | 68      | 65.709 | 56     | 14     | 27     | 23 |
| 38 | 97      | 29     | 68     | 27     | 35     | 22 |
| 39 | 116.326 | 50     | 79     | 39     | 43     | 21 |
| 40 | 55      | 71     | 91     | 51     | 51     | 20 |
| 41 | 84      | 92     | 19.702 | 63     | 59     | 19 |
| 42 | 116.413 | 65.813 | 14     | 75     | 67     | 18 |
| 43 | 43      | 34     | 25     | 87     | 75     | 17 |
| 44 | 72      | 54     | 36     | 99     | 83     | 16 |
| 45 | 116.501 | 75     | 48     | 55.012 | 91     | 15 |
| 46 | 30      | 96     | 59     | 24     | 99     | 14 |
| 47 | 59      | 65.917 | 71     | 36     | 16.507 | 13 |
| 48 | 88      | 38     | 82     | 48     | 15     | 12 |
| 49 | 116.617 | 59     | 94     | 60     | 23     | 11 |
| 50 | 46      | 80     | 19.805 | 72     | 31     | 10 |
| 51 | 75      | 66.001 | 17     | 85     | 39     | 9  |
| 52 | 116.704 | 21     | 28     | 97     | 47     | 8  |
| 53 | 33      | 42     | 40     | 55.109 | 55     | 7  |
| 54 | 63      | 63     | 51     | 21     | 63     | 6  |
| 55 | 92      | 84     | 63     | 33     | 71     | 5  |
| 56 | 116.821 | 66.105 | 74     | 45     | 79     | 4  |
| 57 | 50      | 26     | 86     | 57     | 87     | 3  |
| 58 | 79      | 47     | 97     | 69     | 95     | 2  |
| 59 | 116.908 | 68     | 19.909 | 82     | 16.603 | 1  |
| 60 | 37      | 89     | 20     | 94     | 11     | 0  |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '   |
|----|---------|--------|--------|--------|--------|-----|
| 0  | 116.937 | 66.189 | 19.920 | 55.194 | 16.611 | 6 0 |
| 1  | 66      | 65.210 | 32     | 55.206 | 19     | 9 9 |
| 2  | 95      | 30     | 44     | 18     | 27     | 5 8 |
| 3  | 117.024 | 51     | 55     | 30     | 35     | 5 7 |
| 4  | 53      | 72     | 67     | 42     | 44     | 5 6 |
| 5  | 83      | 93     | 78     | 54     | 52     | 5 5 |
| 6  | 117.112 | 66.314 | 90     | 66     | 60     | 4 4 |
| 7  | 41      | 35     | 20.001 | 79     | 68     | 5 3 |
| 8  | 70      | 56     | 13     | 91     | 76     | 5 2 |
| 9  | 99      | 77     | 25     | 55.303 | 84     | 5 1 |
| 10 | 117.228 | 98     | 36     | 15     | 92     | 5 0 |
| 11 | 57      | 66.419 | 48     | 27     | 16.700 | 4 9 |
| 12 | 86      | 40     | 59     | 39     | 8      | 4 8 |
| 13 | 117.315 | 61     | 71     | 51     | 16     | 4 7 |
| 14 | 44      | 82     | 83     | 63     | 24     | 4 6 |
| 15 | 73      | 66.503 | 94     | 75     | 32     | 4 5 |
| 16 | 117.402 | 24     | 20.106 | 88     | 40     | 4 4 |
| 17 | 32      | 45     | 17     | 55.400 | 48     | 4 3 |
| 18 | 61      | 66     | 29     | 12     | 56     | 4 2 |
| 19 | 90      | 87     | 41     | 24     | 64     | 4 1 |
| 20 | 117.519 | 66.608 | 52     | 36     | 72     | 4 0 |
| 21 | 48      | 29     | 64     | 48     | 80     | 3 9 |
| 22 | 77      | 50     | 76     | 60     | 89     | 3 8 |
| 23 | 117.606 | 71     | 87     | 72     | 97     | 3 7 |
| 24 | 35      | 92     | 99     | 84     | 16.805 | 3 6 |
| 25 | 64      | 66.713 | 20.211 | 96     | 13     | 3 5 |
| 26 | 93      | 34     | 22     | 55.509 | 21     | 3 4 |
| 27 | 117.722 | 55     | 34     | 21     | 29     | 3 3 |
| 28 | 52      | 76     | 46     | 33     | 37     | 3 2 |
| 29 | 81      | 97     | 57     | 45     | 45     | 3 1 |
| 30 | 117.810 | 66.818 | 69     | 57     | 53     | 3 0 |
| 31 | 39      | 39     | 81     | 69     | 61     | 2 9 |
| 32 | 68      | 60     | 92     | 81     | 69     | 2 8 |
| 33 | 97      | 91     | 20.304 | 93     | 77     | 2 7 |
| 34 | 117.926 | 56.902 | 16     | 55.605 | 85     | 2 6 |
| 35 | 55      | 23     | 28     | 17     | 93     | 2 5 |
| 36 | 84      | 44     | 39     | 30     | 16.902 | 2 4 |
| 37 | 118.013 | 65     | 51     | 42     | 10     | 2 3 |
| 38 | 42      | 86     | 63     | 54     | 18     | 2 2 |
| 39 | 72      | 67.007 | 74     | 66     | 26     | 2 1 |
| 40 | 118.101 | 28     | 86     | 78     | 34     | 2 0 |
| 41 | 30      | 50     | 98     | 90     | 42     | 1 9 |
| 42 | 59      | 71     | 20.410 | 55.702 | 50     | 1 8 |
| 43 | 88      | 92     | 21     | 14     | 58     | 1 7 |
| 44 | 118.217 | 67.113 | 33     | 26     | 66     | 1 6 |
| 45 | 46      | 34     | 45     | 38     | 74     | 1 5 |
| 46 | 75      | 55     | 57     | 50     | 83     | 1 4 |
| 47 | 118.304 | 76     | 68     | 62     | 91     | 1 3 |
| 48 | 33      | 97     | 80     | 74     | 99     | 1 2 |
| 49 | 62      | 67.218 | 92     | 87     | 17.007 | 1 1 |
| 50 | 92      | 39     | 20.504 | 99     | 15     | 1 0 |
| 51 | 118.421 | 61     | 15     | 55.811 | 23     | 9 9 |
| 52 | 50      | 82     | 27     | 23     | 31     | 9 8 |
| 53 | 79      | 67.303 | 39     | 35     | 39     | 9 7 |
| 54 | 118.508 | 24     | 51     | 47     | 47     | 9 6 |
| 55 | 37      | 45     | 63     | 59     | 56     | 5 4 |
| 56 | 66      | 66     | 75     | 71     | 64     | 4 4 |
| 57 | 95      | 87     | 86     | 83     | 72     | 3 3 |
| 58 | 118.624 | 67.409 | 98     | 95     | 80     | 2 2 |
| 59 | 53      | 30     | 20.610 | 55.907 | 88     | 1 1 |
| 60 | 82      | 51     | 22     | 19     | 96     | 0 0 |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '   |
|----|---------|--------|--------|--------|--------|-----|
| 0  | 118.682 | 67.451 | 20.622 | 55.919 | 17.086 | 60  |
| 1  | 118.711 | 72     | 34     | 31     | 17.104 | 61  |
| 2  | 41      | 93     | 46     | 43     | 13     | 62  |
| 3  | 70      | 67.514 | 57     | 55     | 21     | 63  |
| 4  | 99      | 36     | 69     | 67     | 29     | 64  |
| 5  | 118.828 | 57     | 81     | 80     | 37     | 65  |
| 6  | 57      | 78     | 93     | 92     | 45     | 66  |
| 7  | 86      | 99     | 20.705 | 56.004 | 53     | 67  |
| 8  | 118.915 | 67.620 | 17     | 16     | 61     | 68  |
| 9  | 44      | 42     | 29     | 28     | 70     | 69  |
| 10 | 73      | 63     | 40     | 40     | 78     | 70  |
| 11 | 119.002 | 84     | 52     | 52     | 86     | 71  |
| 12 | 31      | 67.705 | 64     | 64     | 94     | 72  |
| 13 | 61      | 25     | 76     | 76     | 17.202 | 73  |
| 14 | 90      | 48     | 88     | 88     | 10     | 74  |
| 15 | 119.119 | 69     | 20.800 | 56.100 | 18     | 75  |
| 16 | 48      | 90     | 12     | 12     | 27     | 76  |
| 17 | 77      | 67.811 | 24     | 24     | 35     | 77  |
| 18 | 119.206 | 32     | 36     | 36     | 43     | 78  |
| 19 | 35      | 54     | 48     | 48     | 51     | 79  |
| 20 | 64      | 75     | 59     | 60     | 59     | 80  |
| 21 | 93      | 95     | 71     | 72     | 67     | 81  |
| 22 | 119.322 | 67.917 | 83     | 84     | 76     | 82  |
| 23 | 51      | 39     | 95     | 96     | 84     | 83  |
| 24 | 81      | 60     | 20.907 | 56.208 | 92     | 84  |
| 25 | 119.410 | 81     | 19     | 20     | 17.300 | 85  |
| 26 | 39      | 68.003 | 31     | 32     | 8      | 86  |
| 27 | 68      | 24     | 43     | 44     | 17     | 87  |
| 28 | 97      | 45     | 55     | 56     | 25     | 88  |
| 29 | 119.526 | 66     | 67     | 68     | 33     | 89  |
| 30 | 55      | 88     | 79     | 80     | 41     | 90  |
| 31 | 84      | 68.109 | 91     | 92     | 49     | 91  |
| 32 | 119.613 | 30     | 21.003 | 56.304 | 57     | 92  |
| 33 | 42      | 52     | 15     | 17     | 66     | 93  |
| 34 | 71      | 73     | 27     | 29     | 74     | 94  |
| 35 | 119.700 | 94     | 39     | 41     | 82     | 95  |
| 36 | 30      | 68.215 | 51     | 53     | 90     | 96  |
| 37 | 59      | 37     | 63     | 65     | 98     | 97  |
| 38 | 88      | 58     | 75     | 77     | 17.407 | 98  |
| 39 | 119.817 | 79     | 87     | 89     | 15     | 99  |
| 40 | 46      | 68.301 | 99     | 56.401 | 23     | 100 |
| 41 | 75      | 22     | 21.111 | 13     | 31     | 101 |
| 42 | 119.904 | 43     | 23     | 25     | 39     | 102 |
| 43 | 33      | 65     | 35     | 37     | 48     | 103 |
| 44 | 62      | 85     | 47     | 49     | 56     | 104 |
| 45 | 91      | 68.407 | 59     | 61     | 64     | 105 |
| 46 | 120.020 | 29     | 71     | 73     | 72     | 106 |
| 47 | 50      | 50     | 83     | 85     | 80     | 107 |
| 48 | 79      | 71     | 95     | 97     | 89     | 108 |
| 49 | 120.108 | 93     | 21.208 | 56.509 | 97     | 109 |
| 50 | 37      | 68.514 | 20     | 21     | 17.505 | 110 |
| 51 | 66      | 36     | 32     | 33     | 13     | 111 |
| 52 | 95      | 57     | 44     | 45     | 21     | 112 |
| 53 | 120.224 | 78     | 56     | 57     | 30     | 113 |
| 54 | 53      | 68.600 | 68     | 69     | 38     | 114 |
| 55 | 82      | 21     | 80     | 81     | 46     | 115 |
| 56 | 120.311 | 43     | 92     | 93     | 54     | 116 |
| 57 | 40      | 64     | 21.304 | 56.605 | 63     | 117 |
| 58 | 70      | 85     | 16     | 17     | 71     | 118 |
| 59 | 99      | 68.707 | 29     | 29     | 79     | 119 |
| 60 | 120.428 | 28     | 41     | 41     | 87     | 120 |



## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 120.428 | 68.728 | 21.341 | 56.641 | 17.587 | 60 |
| 1  | 57      | 49     | 53     | 53     | 96     | 69 |
| 2  | 86      | 71     | 65     | 65     | 17.604 | 68 |
| 3  | 120.515 | 92     | 77     | 77     | 12     | 67 |
| 4  | 44      | 68.814 | 89     | 89     | 20     | 66 |
| 5  | 73      | 35     | 21.401 | 56.701 | 29     | 55 |
| 6  | 120.602 | 57     | 14     | 13     | 37     | 44 |
| 7  | 31      | 78     | 26     | 25     | 45     | 65 |
| 8  | 60      | 99     | 38     | 37     | 53     | 53 |
| 9  | 90      | 68.921 | 50     | 49     | 62     | 51 |
| 10 | 120.719 | 42     | 62     | 60     | 70     | 50 |
| 11 | 48      | 64     | 74     | 72     | 78     | 49 |
| 12 | 77      | 85     | 87     | 84     | 86     | 48 |
| 13 | 120.806 | 69.027 | 99     | 96     | 95     | 47 |
| 14 | 35      | 28     | 21.511 | 56.608 | 17.703 | 46 |
| 15 | 64      | 50     | 23     | 20     | 11     | 45 |
| 16 | 93      | 71     | 35     | 32     | 19     | 44 |
| 17 | 120.922 | 93     | 48     | 44     | 28     | 43 |
| 18 | 51      | 69.114 | 60     | 56     | 36     | 42 |
| 19 | 80      | 36     | 72     | 68     | 44     | 41 |
| 20 | 121.009 | 57     | 84     | 80     | 52     | 40 |
| 21 | 39      | 79     | 97     | 92     | 61     | 39 |
| 22 | 68      | 69.200 | 21.609 | 56.904 | 69     | 38 |
| 23 | 97      | 22     | 21     | 16     | 77     | 37 |
| 24 | 121.126 | 43     | 33     | 28     | 86     | 36 |
| 25 | 55      | 65     | 45     | 40     | 94     | 35 |
| 26 | 84      | 86     | 58     | 52     | 17.802 | 34 |
| 27 | 121.213 | 69.306 | 70     | 64     | 10     | 33 |
| 28 | 42      | 29     | 82     | 76     | 19     | 32 |
| 28 | 71      | 51     | 95     | 88     | 27     | 31 |
| 30 | 121.300 | 72     | 21.707 | 57.000 | 35     | 30 |
| 31 | 29      | 94     | 19     | 12     | 44     | 29 |
| 32 | 59      | 69.416 | 31     | 24     | 52     | 28 |
| 33 | 88      | 37     | 44     | 36     | 60     | 27 |
| 34 | 121.417 | 59     | 56     | 48     | 68     | 26 |
| 35 | 46      | 80     | 68     | 59     | 77     | 25 |
| 36 | 75      | 69.502 | 81     | 71     | 85     | 24 |
| 37 | 121.504 | 23     | 93     | 83     | 93     | 23 |
| 38 | 33      | 45     | 21.805 | 57.107 | 17.902 | 22 |
| 39 | 62      | 66     | 16     | 15     | 10     | 21 |
| 40 | 91      | 88     | 30     | 19     | 18     | 20 |
| 41 | 121.620 | 69.610 | 42     | 31     | 27     | 19 |
| 42 | 49      | 31     | 55     | 43     | 35     | 18 |
| 43 | 79      | 53     | 67     | 55     | 43     | 17 |
| 44 | 121.708 | 74     | 79     | 67     | 52     | 16 |
| 45 | 37      | 96     | 92     | 79     | 60     | 15 |
| 46 | 66      | 69.718 | 21.904 | 57.208 | 68     | 14 |
| 47 | 95      | 39     | 16     | 15     | 77     | 13 |
| 48 | 121.824 | 61     | 29     | 29     | 85     | 12 |
| 49 | 53      | 83     | 41     | 27     | 93     | 11 |
| 50 | 82      | 69.804 | 53     | 38     | 18.002 | 10 |
| 51 | 121.911 | 26     | 66     | 50     | 10     | 9  |
| 52 | 40      | 48     | 79     | 62     | 18     | 8  |
| 53 | 69      | 69     | 91     | 74     | 26     | 7  |
| 54 | 99      | 91     | 22.003 | 86     | 35     | 6  |
| 55 | 122.028 | 69.912 | 15     | 98     | 43     | 5  |
| 56 | 57      | 34     | 28     | 57.310 | 51     | 4  |
| 57 | 86      | 56     | 40     | 22     | 60     | 3  |
| 58 | 122.115 | 77     | 53     | 34     | 68     | 2  |
| 59 | 44      | 99     | 65     | 46     | 76     | 1  |
| 60 | 73      | 70.021 | 77     | 58     | 85     | 0  |

|    | L       | T      | E      | X      | Y      |   |
|----|---------|--------|--------|--------|--------|---|
| 0  | 122.173 | 70.021 | 22.077 | 57.358 | 18.085 | 6 |
| 1  | 122.222 | 42     | 22.070 | 70     | 93     | 9 |
| 2  | 31      | 64     | 22.102 | 82     | 18.102 | 5 |
| 3  | 60      | 86     | 15     | 93     | 10     | 5 |
| 4  | 89      | 70.108 | 27     | 57.405 | 18     | 5 |
| 5  | 122.318 | 29     | 40     | 17     | 27     | 5 |
| 6  | 48      | 51     | 52     | 29     | 35     | 4 |
| 7  | 77      | 73     | 65     | 41     | 43     | 5 |
| 8  | 122.406 | 94     | 77     | 53     | 52     | 5 |
| 9  | 35      | 70.216 | 90     | 65     | 60     | 5 |
| 10 | 64      | 38     | 22.202 | 77     | 68     | 5 |
| 11 | 93      | 60     | 15     | 89     | 77     | 9 |
| 12 | 122.522 | 81     | 27     | 57.501 | 85     | 4 |
| 13 | 51      | 70.303 | 40     | 12     | 93     | 7 |
| 14 | 80      | 25     | 52     | 24     | 18.202 | 4 |
| 15 | 122.609 | 46     | 65     | 36     | 10     | 4 |
| 16 | 38      | 68     | 77     | 48     | 19     | 4 |
| 17 | 68      | 90     | 90     | 60     | 27     | 4 |
| 18 | 97      | 70.412 | 22.302 | 72     | 35     | 4 |
| 19 | 122.726 | 33     | 15     | 84     | 44     | 4 |
| 20 | 55      | 55     | 27     | 96     | 52     | 4 |
| 21 | 84      | 77     | 40     | 57.608 | 60     | 3 |
| 22 | 122.813 | 99     | 52     | 20     | 69     | 3 |
| 23 | 42      | 70.521 | 65     | 31     | 77     | 3 |
| 24 | 71      | 42     | 77     | 43     | 86     | 3 |
| 25 | 122.900 | 64     | 90     | 55     | 94     | 3 |
| 26 | 29      | 86     | 22.402 | 67     | 18.302 | 3 |
| 27 | 58      | 70.608 | 15     | 79     | 11     | 3 |
| 28 | 88      | 29     | 28     | 91     | 19     | 3 |
| 29 | 123.017 | 51     | 40     | 57.703 | 28     | 3 |
| 30 | 46      | 73     | 53     | 15     | 36     | 3 |
| 31 | 75      | 95     | 66     | 26     | 44     | 2 |
| 32 | 123.104 | 70.717 | 78     | 38     | 53     | 2 |
| 33 | 33      | 39     | 91     | 50     | 61     | 2 |
| 34 | 62      | 60     | 22.503 | 62     | 69     | 2 |
| 35 | 91      | 82     | 16     | 74     | 78     | 2 |
| 36 | 123.220 | 70.804 | 28     | 86     | 86     | 2 |
| 37 | 49      | 26     | 41     | 98     | 95     | 2 |
| 38 | 78      | 48     | 54     | 57.810 | 18.403 | 2 |
| 39 | 123.308 | 70     | 66     | 21     | 12     | 2 |
| 40 | 37      | 91     | 79     | 33     | 20     | 2 |
| 41 | 66      | 70.913 | 92     | 45     | 28     | 1 |
| 42 | 95      | 35     | 22.604 | 57     | 37     | 1 |
| 43 | 123.424 | 57     | 17     | 69     | 45     | 1 |
| 44 | 53      | 79     | 30     | 81     | 54     | 1 |
| 45 | 82      | 71.001 | 42     | 92     | 62     | 1 |
| 46 | 123.511 | 23     | 55     | 57.904 | 70     | 1 |
| 47 | 40      | 44     | 68     | 16     | 79     | 1 |
| 48 | 69      | 66     | 80     | 28     | 87     | 1 |
| 49 | 98      | 88     | 93     | 40     | 96     | 1 |
| 50 | 123.627 | 71.110 | 22.706 | 52     | 18.504 | 1 |
| 51 | 57      | 32     | 18     | 64     | 12     | 9 |
| 52 | 86      | 54     | 31     | 75     | 21     | 9 |
| 53 | 123.715 | 76     | 44     | 87     | 29     | 8 |
| 54 | 44      | 98     | 56     | 99     | 38     | 7 |
| 55 | 73      | 71.220 | 69     | 58.011 | 46     | 5 |
| 56 | 123.802 | 42     | 82     | 23     | 55     | 4 |
| 57 | 31      | 63     | 95     | 35     | 63     | 3 |
| 58 | 60      | 85     | 22.807 | 47     | 72     | 2 |
| 59 | 89      | 71.307 | 20     | 58     | 80     | 1 |
| 60 | 123.918 | 29     | 33     | 70     | 88     | 0 |

| '   | L       | T      | E      | X      | Y      | '   |
|-----|---------|--------|--------|--------|--------|-----|
| 0   | 123.918 | 71.329 | 22.833 | 58.070 | 18.588 | 6 0 |
| 1   | 47      | 51     | 45     | 82     | 97     | 6 1 |
| 2   | 77      | 73     | 58     | 94     | 18.605 | 6 2 |
| 3   | 124.006 | 95     | 71     | 58.106 | 14     | 6 3 |
| 4   | 35      | 71.417 | 84     | 18     | 22     | 6 4 |
| 5   | 64      | 39     | 97     | 29     | 31     | 6 5 |
| 6   | 93      | 61     | 22.909 | 41     | 39     | 6 6 |
| 7   | 124.122 | 83     | 22     | 53     | 48     | 6 7 |
| 8   | 51      | 71.505 | 35     | 65     | 56     | 6 8 |
| 9   | 80      | 27     | 48     | 77     | 64     | 6 9 |
| 1 0 | 124.209 | 49     | 60     | 89     | 73     | 5 0 |
| 1 1 | 38      | 71     | 73     | 58.200 | 81     | 5 1 |
| 1 2 | 67      | 93     | 86     | 12     | 90     | 5 2 |
| 1 3 | 97      | 71.615 | 99     | 24     | 98     | 5 3 |
| 1 4 | 124.326 | 37     | 23.012 | 36     | 18.707 | 5 4 |
| 1 5 | 55      | 59     | 24     | 48     | 15     | 4 5 |
| 1 6 | 84      | 81     | 37     | 60     | 24     | 4 4 |
| 1 7 | 124.413 | 71.703 | 50     | 71     | 32     | 4 3 |
| 1 8 | 42      | 25     | 63     | 83     | 41     | 4 2 |
| 1 9 | 71      | 47     | 76     | 95     | 49     | 4 1 |
| 2 0 | 124.500 | 69     | 89     | 58.307 | 58     | 4 0 |
| 2 1 | 29      | 91     | 23.102 | 19     | 66     | 3 9 |
| 2 2 | 58      | 71.813 | 14     | 30     | 75     | 3 8 |
| 2 3 | 87      | 35     | 27     | 42     | 83     | 3 7 |
| 2 4 | 124.617 | 57     | 40     | 54     | 92     | 3 6 |
| 2 5 | 46      | 79     | 53     | 66     | 18.800 | 3 5 |
| 2 6 | 75      | 71.901 | 66     | 78     | 9      | 3 4 |
| 2 7 | 124.704 | 24     | 79     | 90     | 17     | 3 3 |
| 2 8 | 33      | 46     | 92     | 58.401 | 26     | 3 2 |
| 2 9 | 62      | 68     | 23.204 | 13     | 34     | 3 1 |
| 3 0 | 91      | 93     | 17     | 25     | 43     | 3 0 |
| 3 1 | 124.820 | 72.012 | 30     | 37     | 51     | 2 9 |
| 3 2 | 49      | 34     | 43     | 49     | 60     | 2 8 |
| 3 3 | 78      | 56     | 56     | 60     | 68     | 2 7 |
| 3 4 | 124.907 | 78     | 69     | 72     | 77     | 2 6 |
| 3 5 | 36      | 72.100 | 82     | 84     | 85     | 2 5 |
| 3 6 | 66      | 22     | 95     | 96     | 94     | 2 4 |
| 3 7 | 95      | 44     | 23.308 | 58.508 | 18.902 | 2 3 |
| 3 8 | 125.024 | 67     | 21     | 19     | 11     | 2 2 |
| 3 9 | 53      | 89     | 34     | 31     | 19     | 2 1 |
| 4 0 | 82      | 72.211 | 47     | 43     | 28     | 2 0 |
| 4 1 | 125.111 | 33     | 60     | 55     | 36     | 1 9 |
| 4 2 | 40      | 55     | 73     | 67     | 45     | 1 8 |
| 4 3 | 69      | 77     | 86     | 78     | 53     | 1 7 |
| 4 4 | 96      | 59     | 99     | 90     | 62     | 1 6 |
| 4 5 | 125.227 | 72.322 | 23.412 | 58.602 | 70     | 1 5 |
| 4 6 | 56      | 44     | 25     | 14     | 79     | 1 4 |
| 4 7 | 86      | 66     | 37     | 26     | 87     | 1 3 |
| 4 8 | 125.315 | 88     | 50     | 37     | 96     | 1 2 |
| 4 9 | 44      | 72.410 | 63     | 49     | 19.004 | 1 1 |
| 5 0 | 73      | 32     | 76     | 61     | 13     | 1 0 |
| 5 1 | 125.402 | 55     | 90     | 73     | 21     | 9 9 |
| 5 2 | 31      | 77     | 23.503 | 84     | 30     | 9 8 |
| 5 3 | 60      | 99     | 16     | 96     | 38     | 9 7 |
| 5 4 | 89      | 72.521 | 29     | 58.708 | 47     | 9 6 |
| 5 5 | 125.518 | 43     | 42     | 20     | 56     | 5 5 |
| 5 6 | 47      | 65     | 55     | 31     | 64     | 5 4 |
| 5 7 | 76      | 88     | 69     | 43     | 73     | 5 3 |
| 5 8 | 125.606 | 72.610 | 81     | 55     | 81     | 5 2 |
| 5 9 | 35      | 32     | 94     | 67     | 90     | 5 1 |
| 6 0 | 64      | 54     | 23.607 | 79     | 98     | 5 0 |

|    | L       | T      | E      | X      | Y      |    |
|----|---------|--------|--------|--------|--------|----|
| 0  | 125.664 | 72.654 | 23.607 | 58.779 | 19.098 | 60 |
| 1  | 93      | 76     | 20     | 90     | 19.107 | 59 |
| 2  | 125.722 | 72.721 | 33     | 58.802 | 15     | 58 |
| 3  | 51      | 46     | 14     | 26     | 24     | 57 |
| 4  | 80      | 43     | 59     |        | 32     | 56 |
| 5  | 125.808 | 65     | 72     | 37     | 41     | 55 |
| 6  | 36      | 88     | 85     | 49     | 50     | 54 |
| 7  | 67      | 72.810 | 98     | 61     | 58     | 53 |
| 8  | 96      | 32     | 23.712 | 73     | 67     | 52 |
| 9  | 125.926 | 54     | 25     | 84     | 75     | 51 |
| 10 | 55      | 77     | 38     | 96     | 84     | 50 |
| 11 | 84      | 99     | 51     | 58.908 | 92     | 49 |
| 12 | 126.013 | 72.921 | 64     | 20     | 19.201 | 48 |
| 13 | 42      | 44     | 77     | 31     | 10     | 47 |
| 14 | 71      | 66     | 90     | 43     | 18     | 46 |
| 15 | 126.100 | 88     | 23.803 | 55     | 27     | 45 |
| 16 | 29      | 73.010 | 17     | 67     | 35     | 44 |
| 17 | 58      | 33     | 30     | 78     | 44     | 43 |
| 18 | 87      | 55     | 43     | 90     | 53     | 42 |
| 19 | 126.216 | 77     | 56     | 59.002 | 61     | 41 |
| 20 | 45      | 73.100 | 69     | 14     | 70     | 40 |
| 1  | 75      | 22     | 82     | 25     | 78     | 39 |
| 2  | 126.304 | 44     | 96     | 37     | 87     | 38 |
| 3  | 63      | 67     | 23.909 | 49     | 95     | 37 |
| 4  | 32      | 89     | 22     | 61     | 19.304 | 36 |
| 5  | 91      | 73.211 | 35     | 72     | 13     | 35 |
| 6  | 126.420 | 34     | 48     | 84     | 21     | 34 |
| 7  | 49      | 56     | 61     | 96     | 30     | 33 |
| 8  | 78      | 78     | 75     | 59.107 | 38     | 32 |
| 9  | 126.507 | 73.301 | 88     | 19     | 47     | 31 |
| 0  | 36      | 23     | 24.001 | 31     | 56     | 30 |
| 1  | 65      | 45     | 14     | 43     | 64     | 29 |
| 2  | 95      | 68     | 28     | 54     | 73     | 28 |
| 3  | 126.624 | 90     | 41     | 66     | 81     | 27 |
| 4  | 53      | 73.413 | 54     | 78     | 90     | 26 |
| 5  | 82      | 35     | 67     | 90     | 99     | 25 |
| 6  | 126.711 | 57     | 81     | 59.201 | 19.407 | 24 |
| 7  | 40      | 80     | 94     | 13     | 16     | 23 |
| 8  | 69      | 73.502 | 24.107 | 25     | 24     | 22 |
| 9  | 98      | 25     | 20     | 36     | 33     | 21 |
| 0  | 126.827 | 47     | 34     | 48     | 42     | 20 |
| 1  | 56      | 69     | 47     | 60     | 50     | 19 |
| 2  | 85      | 92     | 60     | 72     | 59     | 18 |
| 3  | 126.915 | 73.614 | 74     | 83     | 68     | 17 |
| 4  | 44      | 37     | 87     | 95     | 76     | 16 |
| 5  | 73      | 59     | 24.200 | 59.307 | 85     | 15 |
| 6  | 127.002 | 82     | 13     | 18     | 93     | 14 |
| 7  | 31      | 73.704 | 27     | 30     | 19.502 | 13 |
| 8  | 60      | 26     | 40     | 42     | 11     | 12 |
| 9  | 89      | 49     | 53     | 54     | 19     | 11 |
| 0  | 127.118 | 71     | 67     | 65     | 28     | 10 |
| 1  | 47      | 94     | 80     | 77     | 37     | 9  |
| 2  | 76      | 73.816 | 93     | 89     | 45     | 8  |
| 3  | 127.205 | 39     | 24.307 | 59.400 | 54     | 7  |
| 4  | 35      | 61     | 20     | 12     | 62     | 6  |
| 5  | 64      | 84     | 33     | 24     | 71     | 5  |
| 6  | 93      | 73.906 | 47     | 35     | 80     | 4  |
| 7  | 127.322 | 29     | 60     | 47     | 88     | 3  |
| 8  | 51      | 51     | 74     | 59     | 97     | 2  |
| 9  | 80      | 74     | 87     | 71     | 19.606 | 1  |
| 0  | 127.409 | 96     | 24.400 | 82     | 14     | 0  |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '   |
|----|---------|--------|--------|--------|--------|-----|
| 0  | 127.409 | 73.996 | 24.400 | 59.482 | 19.614 | 6 0 |
| 1  | 38      | 74.019 | 14     | 94     | 23     | 5 9 |
| 2  | 67      | 41     | 27     | 59.506 | 32     | 5 8 |
| 3  | 96      | 64     | 40     | 17     | 40     | 5 7 |
| 4  | 127.525 | 86     | 54     | 29     | 49     | 5 6 |
| 5  |         |        |        |        |        |     |
| 6  | 54      | 74.109 | 67     | 41     | 58     | 5 5 |
| 7  | 84      | 31     | 81     | 52     | 66     | 5 4 |
| 8  | 127.613 | 54     | 94     | 64     | 75     | 5 3 |
| 9  | 42      | 76     | 24.568 | 76     | 84     | 5 2 |
|    | 71      | 99     | 21     | 87     | 92     | 5 1 |
| 10 | 127.700 | 74.221 | 34     | 99     | 19.701 | 5 0 |
| 11 | 29      | 44     | 48     | 59.611 | 10     | 4 9 |
| 12 | 58      | 67     | 61     | 22     | 18     | 4 8 |
| 13 | 87      | 89     | 75     | 34     | 27     | 4 7 |
| 14 | 127.816 | 74.312 | 88     | 46     | 36     | 4 6 |
| 15 |         |        |        |        |        |     |
| 16 | 45      | 34     | 24.602 | 57     | 44     | 4 5 |
| 17 | 74      | 57     | 15     | 69     | 53     | 4 4 |
| 18 | 127.904 | 80     | 29     | 81     | 62     | 4 3 |
| 19 | 33      | 74.402 | 42     | 92     | 70     | 4 2 |
|    | 62      | 25     | 56     | 59.704 | 79     | 4 1 |
| 20 |         |        |        |        |        |     |
| 21 | 91      | 47     | 69     | 16     | 88     | 4 0 |
| 22 | 128.020 | 70     | 83     | 27     | 96     | 3 9 |
| 23 | 49      | 93     | 96     | 39     |        | 3 8 |
| 24 | 128.107 | 74.515 | 24.710 | 51     | 19.805 | 3 7 |
|    |         | 38     | 23     | 62     | 22     | 3 6 |
| 25 |         |        |        |        |        |     |
| 26 | 36      | 60     | 37     | 74     | 31     | 3 5 |
| 27 | 65      | 83     | 50     | 86     | 40     | 3 4 |
| 28 | 94      | 74.606 | 64     | 97     | 49     | 3 3 |
| 29 | 128.224 | 28     | 77     | 59.809 | 57     | 3 2 |
|    | 53      | 51     | 91     | 21     | 66     | 3 1 |
| 30 |         |        |        |        |        |     |
| 31 | 82      | 74     | 24.804 | 32     | 75     | 3 0 |
| 32 | 128.311 | 96     | 18     | 44     | 83     | 2 9 |
| 33 | 40      | 74.719 | 31     | 56     | 92     | 2 8 |
| 34 | 69      | 42     | 45     | 67     |        | 2 7 |
| 35 | 98      | 64     | 59     | 79     | 19.901 | 2 6 |
| 36 |         |        |        |        |        |     |
| 37 | 128.427 | 87     | 72     | 91     | 18     | 2 5 |
| 38 | 56      | 74.810 | 85     | 59.902 | 27     | 2 4 |
| 39 | 85      | 32     | 99     | 14     | 36     | 2 3 |
| 40 | 128.514 | 55     | 24.913 | 26     | 44     | 2 2 |
| 41 | 43      | 78     | 27     | 37     | 53     | 2 1 |
| 42 |         |        |        |        |        |     |
| 43 | 73      | 74.900 | 40     | 49     | 62     | 2 0 |
| 44 | 128.602 | 23     | 54     | 61     | 70     | 1 9 |
| 45 | 31      | 46     | 68     | 72     | 79     | 1 8 |
| 46 | 60      | 69     | 81     | 84     | 88     | 1 7 |
| 47 | 89      | 91     | 95     | 95     | 97     | 1 6 |
| 48 |         |        |        |        |        |     |
| 49 | 128.718 | 75.014 | 25.008 | 60.007 | 20.005 | 1 5 |
| 50 | 47      | 37     | 22     | 19     | 14     | 1 4 |
| 51 | 76      | 59     | 36     | 30     | 23     | 1 3 |
| 52 | 128.805 | 82     | 49     | 42     | 32     | 1 2 |
| 53 | 34      | 75.105 | 63     | 54     | 40     | 1 1 |
| 54 |         |        |        |        |        |     |
| 55 | 63      | 28     | 77     | 65     | 49     | 1 0 |
| 56 | 93      | 50     | 90     | 77     | 58     | 9   |
| 57 | 128.922 | 73     | 25.104 | 88     | 66     | 8   |
| 58 | 51      | 96     | 18     | 60.100 | 75     | 7   |
| 59 | 80      | 75.219 | 31     | 12     | 84     | 6   |
| 60 |         |        |        |        |        |     |
| 61 | 129.009 | 41     | 45     | 23     | 93     | 5   |
| 62 | 38      | 64     | 59     | 35     | 20.101 | 4   |
| 63 | 67      | 87     | 72     | 47     | 10     | 3   |
| 64 | 96      | 75.310 | 86     | 58     | 19     | 2   |
| 65 | 129.125 | 33     | 25.200 | 70     | 28     | 1   |
| 66 | 54      | 55     | 14     | 81     | 36     | 0   |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 129.154 | 75.355 | 25.214 | 60.181 | 20.136 | 60 |
| 1  | 83      | 78     | 27     | 93     | 45     | 59 |
| 2  | 129.213 | 75.401 | 41     | 60.205 | 54     | 58 |
| 3  | 42      | 24     | 55     | 16     | 63     | 57 |
| 4  | 71      | 47     | 69     | 23     | 71     | 56 |
| 5  | 129.300 | 69     | 82     | 40     | 80     | 55 |
| 6  | 29      | 92     | 96     | 51     | 89     | 54 |
| 7  | 53      | 75.515 | 25.310 | 63     | 98     | 53 |
| 8  | 87      | 38     | 24     | 74     | 20.205 | 52 |
| 9  | 129.416 | 61     | 37     | 86     | 15     | 51 |
| 10 | 45      | 84     | 51     | 98     | 24     | 50 |
| 11 | 74      | 75.607 | 65     | 60.309 | 33     | 49 |
| 12 | 129.503 | 29     | 79     | 21     | 42     | 48 |
| 13 | 33      | 52     | 92     | 32     | 50     | 47 |
| 14 | 62      | 75     | 25.406 | 44     | 59     | 46 |
| 15 | 91      | 98     | 20     | 56     | 68     | 45 |
| 16 | 129.620 | 75.721 | 34     | 67     | 77     | 44 |
| 17 | 49      | 44     | 48     | 79     | 86     | 43 |
| 18 | 78      | 67     | 62     | 90     | 94     | 42 |
| 19 | 129.707 | 90     | 75     | 60.402 | 20.303 | 41 |
| 20 | 36      | 75.813 | 89     | 14     | 12     | 40 |
| 21 | 65      | 35     | 25.503 | 25     | 21     | 39 |
| 22 | 94      | 58     | 17     | 37     | 29     | 38 |
| 23 | 129.823 | 81     | 31     | 48     | 38     | 37 |
| 24 | 52      | 75.904 | 45     | 60     | 47     | 36 |
| 25 | 82      | 27     | 53     | 71     | 56     | 35 |
| 26 | 129.911 | 50     | 72     | 83     | 65     | 34 |
| 27 | 40      | 73     | 86     | 95     | 73     | 33 |
| 28 | 69      | 96     | 25.600 | 60.505 | 82     | 32 |
| 29 | 98      | 76.019 | 14     | 18     | 91     | 31 |
| 30 | 130.027 | 42     | 28     | 29     | 20.400 | 30 |
| 31 | 56      | 65     | 42     | 41     | 9      | 29 |
| 32 | 85      | 88     | 56     | 52     | 17     | 28 |
| 33 | 130.114 | 76.111 | 70     | 64     | 25     | 27 |
| 34 | 43      | 34     | 83     | 76     | 35     | 26 |
| 35 | 72      | 57     | 97     | 87     | 44     | 25 |
| 36 | 130.202 | 80     | 25.711 | 99     | 53     | 24 |
| 37 | 31      | 76.203 | 25     | 60.610 | 62     | 23 |
| 38 | 60      | 25     | 39     | 22     | 70     | 22 |
| 39 | 89      | 49     | 53     | 33     | 79     | 21 |
| 40 | 130.318 | 72     | 67     | 45     | 88     | 20 |
| 41 | 47      | 95     | 81     | 57     | 97     | 19 |
| 42 | 76      | 76.318 | 95     | 68     | 20.506 | 18 |
| 43 | 130.405 | 41     | 25.809 | 80     | 14     | 17 |
| 44 | 34      | 64     | 23     | 91     | 23     | 16 |
| 45 | 63      | 87     | 37     | 60.703 | 32     | 15 |
| 46 | 92      | 76.410 | 51     | 14     | 41     | 14 |
| 47 | 130.522 | 33     | 65     | 26     | 50     | 13 |
| 48 | 51      | 56     | 79     | 38     | 59     | 12 |
| 49 | 80      | 79     | 93     | 49     | 67     | 11 |
| 50 | 130.609 | 76.502 | 25.907 | 61     | 76     | 10 |
| 51 | 38      | 25     | 21     | 72     | 85     | 9  |
| 52 | 67      | 43     | 35     | 84     | 94     | 8  |
| 53 | 96      | 71     | 49     | 95     | 20.603 | 7  |
| 54 | 130.725 | 94     | 63     | 60.807 | 12     | 6  |
| 55 | 54      | 76.617 | 77     | 18     | 20     | 5  |
| 56 | 83      | 40     | 91     | 30     | 29     | 4  |
| 57 | 130.812 | 63     | 26.005 | 41     | 38     | 3  |
| 58 | 42      | 87     | 19     | 53     | 47     | 2  |
| 59 | 71      | 76.710 | 33     | 65     | 56     | 1  |
| 60 | 130.900 | 33     | 47     | 76     | 65     | 0  |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 130.900 | 76.733 | 26.047 | 60.876 | 20.665 | 60 |
| 1  | 29      | 56     | 61     | 88     | 74     | 99 |
| 2  | 58      | 79     | 75     | 89     | 82     | 89 |
| 3  | 87      | 76.802 | 90     | 60.911 | 91     | 79 |
| 4  | 131.016 | 25     | 26.104 | 22     | 20.700 | 68 |
| 5  | 45      | 48     | 18     | 34     | 9      | 55 |
| 6  | 74      | 71     | 32     | 45     | 18     | 44 |
| 7  | 131.103 | 95     | 46     | 57     | 27     | 33 |
| 8  | 32      | 76.918 | 60     | 68     | 36     | 23 |
| 9  | 61      | 41     | 74     | 80     | 44     | 13 |
| 10 | 91      | 64     | 88     | 91     | 53     | 0  |
| 11 | 131.220 | 87     | 26.202 | 61.003 | 62     | 99 |
| 12 | 49      | 77.010 | 17     | 14     | 71     | 89 |
| 13 | 78      | 34     | 31     | 26     | 80     | 79 |
| 14 | 131.307 | 57     | 45     | 38     | 89     | 68 |
| 15 | 36      | 80     | 59     | 49     | 98     | 58 |
| 16 | 65      | 77.103 | 73     | 61     | 20.807 | 47 |
| 17 | 94      | 26     | 87     | 72     | 15     | 37 |
| 18 | 131.423 | 50     | 26.301 | 84     | 24     | 27 |
| 19 | 52      | 73     | 16     | 95     | 33     | 17 |
| 20 | 81      | 96     | 30     | 61.107 | 42     | 0  |
| 21 | 131.511 | 77.219 | 44     | 18     | 51     | 99 |
| 22 | 40      | 42     | 58     | 30     | 60     | 89 |
| 23 | 69      | 66     | 72     | 41     | 69     | 79 |
| 24 | 98      | 89     | 87     | 53     | 78     | 68 |
| 25 | 131.627 | 77.312 | 26.401 | 64     | 87     | 58 |
| 26 | 56      | 35     | 15     | 76     | 95     | 47 |
| 27 | 85      | 59     | 29     | 87     | 20.904 | 37 |
| 28 | 131.714 | 82     | 43     | 99     | 13     | 27 |
| 29 | 43      | 77.405 | 58     | 61.210 | 22     | 17 |
| 30 | 72      | 28     | 72     | 22     | 31     | 0  |
| 31 | 131.801 | 51     | 86     | 33     | 40     | 99 |
| 32 | 31      | 75     | 26.500 | 45     | 49     | 89 |
| 33 | 60      | 98     | 15     | 56     | 58     | 79 |
| 34 | 89      | 77.521 | 29     | 68     | 67     | 68 |
| 35 | 131.918 | 45     | 43     | 79     | 76     | 58 |
| 36 | 47      | 68     | 57     | 91     | 85     | 47 |
| 37 | 76      | 91     | 72     | 61.302 | 93     | 37 |
| 38 | 132.005 | 77.615 | 86     | 14     | 21.002 | 27 |
| 39 | 34      | 38     | 26.600 | 25     | 11     | 17 |
| 40 | 63      | 61     | 15     | 37     | 20     | 0  |
| 41 | 92      | 85     | 29     | 48     | 29     | 99 |
| 42 | 132.121 | 77.708 | 43     | 60     | 38     | 89 |
| 43 | 51      | 31     | 58     | 71     | 47     | 79 |
| 44 | 80      | 55     | 72     | 83     | 56     | 68 |
| 45 | 132.209 | 78     | 86     | 94     | 65     | 58 |
| 46 | 38      | 77.801 | 26.701 | 61.406 | 74     | 47 |
| 47 | 67      | 25     | 15     | 17     | 83     | 37 |
| 48 | 96      | 48     | 29     | 28     | 92     | 27 |
| 49 | 132.325 | 71     | 44     | 40     | 21.101 | 17 |
| 50 | 54      | 95     | 58     | 51     | 10     | 0  |
| 51 | 83      | 77.918 | 72     | 63     | 18     | 99 |
| 52 | 132.412 | 41     | 87     | 74     | 27     | 89 |
| 53 | 41      | 65     | 26.801 | 86     | 36     | 79 |
| 54 | 70      | 89     | 15     | 97     | 45     | 68 |
| 55 | 132.500 | 78.012 | 30     | 61.509 | 54     | 58 |
| 56 | 29      | 35     | 44     | 20     | 63     | 47 |
| 57 | 58      | 59     | 59     | 32     | 72     | 37 |
| 58 | 87      | 82     | 73     | 43     | 81     | 27 |
| 59 | 132.616 | 78.105 | 87     | 55     | 90     | 17 |
| 60 | 45      | 29     | 26.902 | 66     | 99     | 0  |

| '  | L       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 132.645 | 78.129 | 26.902 | 61.566 | 21.199 | 60 |
| 1  | 74      | 52     | 16     | 78     | 21.208 | 9  |
| 2  | 132.703 | 75     | 31     | 89     | 17     | 8  |
| 3  | 32      | 99     | 45     | 61.601 | 26     | 7  |
| 4  | 61      | 78.222 | 60     | 12     | 35     | 6  |
| 5  | 90      | 46     | 74     | 23     | 44     | 5  |
| 6  | 132.820 | 69     | 88     | 35     | 53     | 4  |
| 7  | 49      | 93     | 27.003 | 46     | 62     | 3  |
| 8  | 78      | 78.316 | 17     | 58     | 71     | 2  |
| 9  | 132.907 | 40     | 32     | 69     | 80     | 1  |
| 10 | 36      | 62     | 46     | 81     | 89     | 0  |
| 11 | 65      | 87     | 61     | 92     | 98     | 9  |
| 12 | 94      | 78.410 | 75     | 61.704 | 21.307 | 8  |
| 13 | 133.023 | 34     | 90     | 15     | 16     | 7  |
| 14 | 52      | 57     | 27.104 | 26     | 25     | 6  |
| 15 | 81      | 81     | 19     | 38     | 33     | 5  |
| 16 | 133.110 | 78.504 | 33     | 49     | 42     | 4  |
| 17 | 40      | 28     | 48     | 61     | 51     | 3  |
| 18 | 69      | 51     | 62     | 72     | 60     | 2  |
| 19 | 98      | 75     | 77     | 84     | 69     | 1  |
| 20 | 133.227 | 98     | 91     | 95     | 78     | 0  |
| 21 | 56      | 78.622 | 27.206 | 61.806 | 87     | 9  |
| 22 | 85      | 45     | 21     | 18     | 96     | 8  |
| 23 | 133.314 | 69     | 35     | 29     | 21.405 | 7  |
| 24 | 43      | 92     | 50     | 41     | 14     | 6  |
| 25 | 72      | 78.716 | 64     | 52     | 23     | 5  |
| 26 | 133.401 | 39     | 79     | 64     | 32     | 4  |
| 27 | 30      | 63     | 93     | 75     | 41     | 3  |
| 28 | 60      | 87     | 27.308 | 86     | 50     | 2  |
| 29 | 89      | 78.810 | 22     | 98     | 59     | 1  |
| 30 | 133.518 | 34     | 37     | 61.909 | 68     | 0  |
| 31 | 47      | 57     | 52     | 21     | 77     | 9  |
| 32 | 76      | 81     | 65     | 32     | 86     | 8  |
| 33 | 133.605 | 78.904 | 81     | 44     | 95     | 7  |
| 34 | 34      | 28     | 96     | 55     | 21.504 | 6  |
| 35 | 63      | 52     | 27.410 | 66     | 13     | 5  |
| 36 | 92      | 75     | 25     | 78     | 22     | 4  |
| 37 | 133.721 | 99     | 40     | 89     | 31     | 3  |
| 38 | 50      | 79.023 | 54     | 62.001 | 40     | 2  |
| 39 | 79      | 46     | 69     | 12     | 49     | 1  |
| 40 | 133.809 | 70     | 83     | 23     | 58     | 0  |
| 41 | 38      | 93     | 98     | 35     | 67     | 9  |
| 42 | 67      | 79.117 | 27.513 | 46     | 76     | 8  |
| 43 | 96      | 41     | 27     | 58     | 85     | 7  |
| 44 | 133.925 | 64     | 42     | 69     | 94     | 6  |
| 45 | 54      | 88     | 57     | 81     | 21.604 | 5  |
| 46 | 83      | 79.212 | 72     | 32     | 13     | 4  |
| 47 | 134.012 | 35     | 85     | 62.103 | 22     | 3  |
| 48 | 41      | 59     | 27.601 | 15     | 31     | 2  |
| 49 | 70      | 83     | 16     | 26     | 40     | 1  |
| 50 | 99      | 79.305 | 30     | 38     | 49     | 0  |
| 51 | 134.129 | 37     | 45     | 49     | 58     | 9  |
| 52 | 58      | 54     | 60     | 60     | 67     | 8  |
| 53 | 87      | 78     | 75     | 72     | 76     | 7  |
| 54 | 134.216 | 79.401 | 89     | 83     | 85     | 6  |
| 55 | 45      | 25     | 27.704 | 94     | 94     | 5  |
| 56 | 74      | 49     | 19     | 62.206 | 21.703 | 4  |
| 57 | 134.303 | 72     | 34     | 17     | 12     | 3  |
| 58 | 32      | 96     | 48     | 29     | 21     | 2  |
| 59 | 61      | 79.520 | 63     | 40     | 30     | 1  |
| 60 | 90      | 44     | 78     | 51     | 39     | 0  |



## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 134.390 | 79.544 | 27.778 | 62.251 | 21.739 | 60 |
| 1  | 134.419 | 67     | 93     | 63     | 48     | 9  |
| 2  | 49      | 91     | 27.807 | 74     | 57     | 8  |
| 3  | 78      | 79.615 | 22     | 85     | 66     | 7  |
| 4  | 134.507 | 39     | 37     | 97     | 75     | 6  |
| 5  | 36      | 62     | 52     | 62.308 | 84     | 5  |
| 6  | 65      | 86     | 67     | 20     | 94     | 4  |
| 7  | 94      | 79.710 | 82     | 31     | 21.803 | 3  |
| 8  | 134.623 | 34     | 96     | 42     | 12     | 2  |
| 9  | 52      | 58     | 27.911 | 54     | 21     | 1  |
| 10 | 81      | 81     | 26     | 65     | 30     | 0  |
| 11 | 134.710 | 79.805 | 41     | 77     | 39     | 9  |
| 12 | 39      | 29     | 56     | 88     | 48     | 8  |
| 13 | 69      | 53     | 71     | 99     | 57     | 7  |
| 14 | 98      | 77     | 85     | 62.411 | 66     | 6  |
| 15 | 134.827 | 79.900 | 28.000 | 22     | 75     | 5  |
| 16 | 56      | 24     | 15     | 33     | 84     | 4  |
| 17 | 85      | 48     | 30     | 45     | 93     | 3  |
| 18 | 134.914 | 72     | 45     | 56     | 21.902 | 2  |
| 19 | 43      | 96     | 60     | 67     | 12     | 1  |
| 20 | 72      | 80.020 | 75     | 79     | 21     | 0  |
| 21 | 135.001 | 44     | 90     | 90     | 30     | 9  |
| 22 | 30      | 67     | 28.105 | 62.502 | 39     | 8  |
| 23 | 59      | 91     | 20     | 13     | 48     | 7  |
| 24 | 88      | 80.115 | 34     | 24     | 57     | 6  |
| 25 | 135.118 | 39     | 49     | 36     | 66     | 5  |
| 26 | 47      | 63     | 64     | 47     | 75     | 4  |
| 27 | 76      | 87     | 79     | 58     | 84     | 3  |
| 28 | 135.205 | 80.211 | 94     | 70     | 93     | 2  |
| 29 | 34      | 35     | 28.209 | 81     | 22.002 | 1  |
| 30 | 63      | 58     | 24     | 92     | 12     | 0  |
| 31 | 92      | 82     | 39     | 62.604 | 21     | 9  |
| 32 | 135.301 | 80.306 | 54     | 15     | 30     | 8  |
| 33 | 50      | 30     | 69     | 26     | 39     | 7  |
| 34 | 79      | 54     | 84     | 38     | 48     | 6  |
| 35 | 135.408 | 78     | 99     | 49     | 57     | 5  |
| 36 | 38      | 80.402 | 28.314 | 60     | 66     | 4  |
| 37 | 67      | 26     | 29     | 72     | 75     | 3  |
| 38 | 96      | 50     | 44     | 83     | 84     | 2  |
| 39 | 135.525 | 74     | 59     | 94     | 94     | 1  |
| 40 | 54      | 98     | 74     | 62.706 | 22.103 | 0  |
| 41 | 83      | 80.522 | 89     | 17     | 12     | 9  |
| 42 | 135.612 | 46     | 28.404 | 28     | 21     | 8  |
| 43 | 41      | 70     | 19     | 40     | 30     | 7  |
| 44 | 70      | 54     | 34     | 51     | 39     | 6  |
| 45 | 99      | 80.618 | 49     | 62     | 48     | 5  |
| 46 | 135.728 | 42     | 64     | 74     | 57     | 4  |
| 47 | 58      | 66     | 80     | 85     | 67     | 3  |
| 48 | 87      | 90     | 95     | 96     | 76     | 2  |
| 49 | 135.816 | 80.714 | 28.510 | 62.808 | 85     | 1  |
| 50 | 45      | 38     | 25     | 19     | 94     | 0  |
| 51 | 74      | 62     | 40     | 30     | 22.203 | 9  |
| 52 | 135.903 | 86     | 55     | 42     | 12     | 8  |
| 53 | 32      | 80.810 | 70     | 53     | 21     | 7  |
| 54 | 61      | 34     | 95     | 64     | 30     | 6  |
| 55 | 90      | 58     | 28.600 | 75     | 40     | 5  |
| 56 | 136.019 | 82     | 15     | 87     | 49     | 4  |
| 57 | 48      | 80.906 | 31     | 98     | 58     | 3  |
| 58 | 78      | 30     | 46     | 62.909 | 67     | 2  |
| 59 | 136.107 | 54     | 61     | 21     | 76     | 1  |
| 60 | 36      | 78     | 76     | 32     | 85     | 0  |

| '  | L       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 136.136 | 80.978 | 28.676 | 63.932 | 22.285 | 60 |
| 1  | 65      | 81.002 | 91     | 43     | 95     | 59 |
| 2  | 94      | 27     | 28.706 | 55     | 22.304 | 58 |
| 3  | 136.223 | 51     | 22     | 66     | 13     | 57 |
| 4  | 52      | 75     | 37     | 77     | 22     | 56 |
| 5  | 81      | 99     | 52     | 88     | 31     | 55 |
| 6  | 136.310 | 81.123 | 67     | 63.000 | 40     | 55 |
| 7  | 39      | 47     | 82     | 11     | 49     | 54 |
| 8  | 68      | 71     | 97     | 22     | 59     | 53 |
| 9  | 97      | 95     | 28.813 | 34     | 68     | 52 |
| 10 | 136.427 | 81.220 | 28     | 45     | 77     | 50 |
| 11 | 56      | 44     | 43     | 56     | 86     | 49 |
| 12 | 85      | 68     | 58     | 68     | 95     | 48 |
| 13 | 136.514 | 92     | 74     | 79     | 22.405 | 47 |
| 14 | 43      | 81.316 | 89     | 90     | 14     | 46 |
| 15 | 72      | 40     | 28.904 | 63.101 | 23     | 45 |
| 16 | 136.601 | 64     | 19     | 13     | 32     | 44 |
| 17 | 30      | 89     | 35     | 24     | 41     | 43 |
| 18 | 59      | 81.413 | 50     | 35     | 50     | 42 |
| 19 | 88      | 37     | 65     | 47     | 60     | 41 |
| 20 | 136.717 | 61     | 80     | 58     | 69     | 40 |
| 21 | 47      | 85     | 95     | 69     | 78     | 39 |
| 22 | 76      | 81.510 | 29.011 | 80     | 87     | 38 |
| 23 | 136.805 | 34     | 25     | 92     | 95     | 37 |
| 24 | 34      | 58     | 42     | 63.203 | 22.506 | 36 |
| 25 | 63      | 82     | 57     | 14     | 15     | 35 |
| 26 | 92      | 81.625 | 72     | 25     | 24     | 34 |
| 27 | 136.921 | 31     | 87     | 37     | 33     | 33 |
| 28 | 50      | 55     | 29.103 | 48     | 42     | 32 |
| 29 | 79      | 79     | 18     | 59     | 52     | 31 |
| 30 | 137.008 | 81.703 | 33     | 71     | 61     | 30 |
| 31 | 37      | 23     | 49     | 82     | 70     | 29 |
| 32 | 67      | 52     | 64     | 93     | 79     | 28 |
| 33 | 137.125 | 76     | 79     | 63.304 | 88     | 27 |
| 34 | 44      | 81.800 | 95     | 15     | 96     | 26 |
| 35 | 54      | 25     | 29.210 | 27     | 22.607 | 25 |
| 36 | 83      | 49     | 26     | 38     | 16     | 24 |
| 37 | 137.212 | 73     | 41     | 49     | 25     | 23 |
| 38 | 41      | 93     | 56     | 61     | 34     | 22 |
| 39 | 70      | 81.922 | 72     | 72     | 44     | 21 |
| 40 | 99      | 46     | 87     | 83     | 53     | 20 |
| 41 | 137.328 | 71     | 29.303 | 94     | 62     | 19 |
| 42 | 57      | 95     | 18     | 63.406 | 71     | 18 |
| 43 | 87      | 82.019 | 34     | 17     | 81     | 17 |
| 44 | 137.416 | 44     | 49     | 23     | 90     | 16 |
| 45 | 45      | 69     | 64     | 39     | 99     | 15 |
| 46 | 74      | 92     | 80     | 51     | 22.708 | 14 |
| 47 | 137.503 | 82.117 | 95     | 62     | 17     | 13 |
| 48 | 32      | 41     | 29.411 | 73     | 27     | 12 |
| 49 | 61      | 65     | 26     | 84     | 36     | 11 |
| 50 | 90      | 90     | 42     | 96     | 45     | 10 |
| 51 | 137.619 | 82.214 | 57     | 63.507 | 54     | 9  |
| 52 | 48      | 38     | 73     | 19     | 64     | 8  |
| 53 | 77      | 63     | 88     | 29     | 73     | 7  |
| 54 | 137.706 | 87     | 29.504 | 41     | 82     | 6  |
| 55 | 35      | 82.312 | 19     | 52     | 91     | 5  |
| 56 | 65      | 36     | 35     | 63     | 22.801 | 4  |
| 57 | 94      | 60     | 50     | 74     | 10     | 3  |
| 58 | 137.823 | 85     | 66     | 85     | 19     | 2  |
| 59 | 52      | 82.409 | 81     | 97     | 28     | 1  |
| 60 | 81      | 34     | 97     | 63.608 | 38     | 0  |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '   |
|----|---------|--------|--------|--------|--------|-----|
| 0  | 137.891 | 82.434 | 29.597 | 63.608 | 22.833 | 6 0 |
| 1  | 137.910 | 82.438 | 29.612 | 63.619 | 22.847 | 0 9 |
| 2  |         | 82.443 | 29.623 | 63.630 | 22.856 | 0 8 |
| 3  |         | 82.507 | 29.643 | 63.642 | 22.865 | 0 7 |
| 4  |         | 82.531 | 29.659 | 63.653 | 22.875 | 0 6 |
| 5  | 138.026 | 82.556 | 29.675 | 63.664 | 22.884 | 5 5 |
| 6  |         | 82.580 | 29.690 | 63.675 | 22.893 | 5 4 |
| 7  |         | 82.605 | 29.706 | 63.686 | 22.902 | 5 3 |
| 8  | 138.114 | 82.629 | 29.721 | 63.698 | 22.912 | 5 2 |
| 9  |         | 82.654 | 29.737 | 63.709 | 22.921 | 5 1 |
| 10 |         | 82.678 | 29.752 | 63.720 | 22.930 | 0 0 |
| 11 | 138.201 | 82.703 | 29.768 | 63.731 | 22.939 | 0 9 |
| 12 |         | 82.727 | 29.784 | 63.742 | 22.949 | 0 8 |
| 13 |         | 82.752 | 29.799 | 63.754 | 22.958 | 0 7 |
| 14 |         | 82.776 | 29.815 | 63.765 | 22.967 | 0 6 |
| 15 | 138.317 | 82.801 | 29.831 | 63.776 | 22.977 | 4 5 |
| 16 |         | 82.825 | 29.846 | 63.787 | 22.986 | 4 4 |
| 17 |         | 82.850 | 29.862 | 63.798 | 22.995 | 4 3 |
| 18 | 138.405 | 82.874 | 29.877 | 63.810 | 23.004 | 4 2 |
| 19 |         | 82.899 | 29.893 | 63.821 | 23.014 | 4 1 |
| 20 |         | 82.923 | 29.909 | 63.832 | 23.023 | 4 0 |
| 21 |         | 82.948 | 29.924 | 63.843 | 23.032 | 0 9 |
| 22 | 138.521 | 82.973 | 29.940 | 63.854 | 23.042 | 0 8 |
| 23 |         | 82.997 | 29.956 | 63.866 | 23.051 | 0 7 |
| 24 |         | 83.022 | 29.972 | 63.877 | 23.060 | 0 6 |
| 25 | 138.608 | 83.046 | 29.987 | 63.888 | 23.069 | 5 5 |
| 26 |         | 83.071 | 30.003 | 63.899 | 23.079 | 5 4 |
| 27 |         | 83.096 | 30.019 | 63.910 | 23.088 | 5 3 |
| 28 |         | 83.120 | 30.034 | 63.922 | 23.097 | 5 2 |
| 29 | 138.725 | 83.144 | 30.050 | 63.933 | 23.107 | 5 1 |
| 30 |         | 83.169 | 30.066 | 63.944 | 23.116 | 0 0 |
| 31 |         | 83.194 | 30.082 | 63.955 | 23.125 | 0 9 |
| 32 | 138.812 | 83.218 | 30.097 | 63.966 | 23.134 | 0 8 |
| 33 |         | 83.243 | 30.113 | 63.977 | 23.144 | 0 7 |
| 34 |         | 83.268 | 30.129 | 63.989 | 23.153 | 0 6 |
| 35 |         | 83.292 | 30.145 | 64.000 | 23.162 | 5 5 |
| 36 | 138.928 | 83.317 | 30.160 | 64.011 | 23.172 | 5 4 |
| 37 |         | 83.342 | 30.176 | 64.022 | 23.181 | 5 3 |
| 38 |         | 83.366 | 30.192 | 64.033 | 23.190 | 5 2 |
| 39 | 139.015 | 83.391 | 30.208 | 64.045 | 23.200 | 5 1 |
| 40 |         | 83.416 | 30.223 | 64.056 | 23.209 | 0 0 |
| 41 |         | 83.440 | 30.239 | 64.067 | 23.218 | 0 9 |
| 42 | 139.103 | 83.465 | 30.255 | 64.078 | 23.228 | 0 8 |
| 43 |         | 83.490 | 30.271 | 64.089 | 23.237 | 0 7 |
| 44 |         | 83.514 | 30.287 | 64.100 | 23.246 | 0 6 |
| 45 |         | 83.539 | 30.303 | 64.112 | 23.256 | 5 5 |
| 46 | 139.219 | 83.564 | 30.318 | 64.123 | 23.265 | 5 4 |
| 47 |         | 83.588 | 30.334 | 64.134 | 23.274 | 5 3 |
| 48 |         | 83.613 | 30.350 | 64.145 | 23.284 | 5 2 |
| 49 | 139.306 | 83.638 | 30.366 | 64.156 | 23.293 | 5 1 |
| 50 |         | 83.662 | 30.382 | 64.167 | 23.302 | 0 0 |
| 51 |         | 83.687 | 30.398 | 64.178 | 23.312 | 0 9 |
| 52 | 139.423 | 83.712 | 30.414 | 64.190 | 23.321 | 0 8 |
| 53 |         | 83.737 | 30.429 | 64.201 | 23.330 | 0 7 |
| 54 |         | 83.761 | 30.445 | 64.212 | 23.340 | 0 6 |
| 55 |         | 83.786 | 30.461 | 64.223 | 23.349 | 5 5 |
| 56 | 139.510 | 83.811 | 30.477 | 64.234 | 23.358 | 5 4 |
| 57 |         | 83.836 | 30.493 | 64.245 | 23.368 | 5 3 |
| 58 |         | 83.860 | 30.509 | 64.257 | 23.377 | 5 2 |
| 59 |         | 83.885 | 30.525 | 64.268 | 23.386 | 5 1 |
| 60 | 139.626 | 83.910 | 30.541 | 64.279 | 23.396 | 0 0 |

## 曲線函數表

|    | L       | T      | E      | X      | Y      |    |
|----|---------|--------|--------|--------|--------|----|
| 0  | 139.626 | 83.910 | 30.541 | 64.279 | 23.396 | 60 |
| 1  | 55      | 35     | 57     | 90     | 23.405 | 59 |
| 2  | 85      | 60     | 73     | 64.301 | 14     | 58 |
| 3  | 139.714 | 84     | 89     | 12     | 24     | 57 |
| 4  | 43      | 84.009 | 30.605 | 23     | 33     | 56 |
| 5  | 72      | 34     | 21     | 34     | 42     | 55 |
| 6  | 139.801 | 59     | 35     | 46     | 52     | 54 |
| 7  | 30      | 84     | 52     | 57     | 61     | 53 |
| 8  | 59      | 84.108 | 68     | 68     | 70     | 52 |
| 9  | 88      | 33     | 84     | 79     | 80     | 51 |
| 10 | 139.917 | 58     | 30.700 | 90     | 89     | 50 |
| 11 | 46      | 83     | 16     | 64.401 | 99     | 49 |
| 12 | 75      | 84.208 | 32     | 12     | 23.506 | 48 |
| 13 | 140.004 | 33     | 46     | 23     | 17     | 47 |
| 14 | 34      | 58     | 64     | 35     | 27     | 46 |
| 15 | 63      | 82     | 81     | 46     | 36     | 45 |
| 16 | 92      | 84.307 | 97     | 57     | 45     | 44 |
| 17 | 140.121 | 32     | 30.813 | 68     | 55     | 43 |
| 18 | 50      | 57     | 29     | 79     | 64     | 42 |
| 19 | 79      | 82     | 45     | 90     | 74     | 41 |
| 20 | 140.208 | 84.407 | 61     | 64.501 | 83     | 40 |
| 21 | 37      | 32     | 77     | 12     | 92     | 39 |
| 22 | 66      | 57     | 93     | 23     | 23.602 | 38 |
| 23 | 95      | 82     | 30.909 | 35     | 11     | 37 |
| 24 | 140.324 | 84.507 | 25     | 46     | 20     | 36 |
| 25 | 54      | 32     | 41     | 57     | 30     | 35 |
| 26 | 83      | 56     | 57     | 68     | 39     | 34 |
| 27 | 140.412 | 81     | 73     | 79     | 49     | 33 |
| 28 | 41      | 84.606 | 89     | 90     | 58     | 32 |
| 29 | 70      | 31     | 31.006 | 64.601 | 67     | 31 |
| 30 | 99      | 56     | 22     | 12     | 77     | 30 |
| 31 | 140.528 | 81     | 38     | 23     | 86     | 29 |
| 32 | 57      | 84.706 | 54     | 35     | 96     | 28 |
| 33 | 86      | 31     | 70     | 46     | 23.705 | 27 |
| 34 | 140.615 | 56     | 85     | 57     | 14     | 26 |
| 35 | 44      | 81     | 31.102 | 68     | 24     | 25 |
| 36 | 74      | 84.806 | 19     | 79     | 33     | 24 |
| 37 | 140.703 | 31     | 35     | 90     | 43     | 23 |
| 38 | 32      | 56     | 51     | 64.701 | 52     | 22 |
| 39 | 61      | 81     | 67     | 12     | 61     | 21 |
| 40 | 90      | 84.906 | 83     | 23     | 71     | 20 |
| 41 | 140.819 | 31     | 31.200 | 34     | 80     | 19 |
| 42 | 46      | 56     | 16     | 45     | 90     | 18 |
| 43 | 77      | 81     | 32     | 57     | 99     | 17 |
| 44 | 140.906 | 85.006 | 48     | 68     | 23.809 | 16 |
| 45 | 35      | 32     | 64     | 79     | 18     | 15 |
| 46 | 64      | 57     | 81     | 90     | 27     | 14 |
| 47 | 94      | 82     | 97     | 64.801 | 37     | 13 |
| 48 | 141.023 | 85.107 | 31.313 | 12     | 46     | 12 |
| 49 | 52      | 32     | 29     | 23     | 56     | 11 |
| 50 | 81      | 57     | 46     | 34     | 65     | 10 |
| 51 | 141.110 | 82     | 62     | 45     | 74     | 9  |
| 52 | 39      | 85.207 | 78     | 56     | 84     | 8  |
| 53 | 68      | 32     | 95     | 67     | 93     | 7  |
| 54 | 97      | 57     | 31.411 | 78     | 23.903 | 6  |
| 55 | 141.226 | 82     | 27     | 89     | 12     | 5  |
| 56 | 56      | 85.308 | 43     | 64.901 | 22     | 4  |
| 57 | 84      | 33     | 60     | 12     | 31     | 3  |
| 58 | 141.313 | 58     | 76     | 23     | 40     | 2  |
| 59 | 43      | 88     | 92     | 34     | 50     | 1  |
| 60 | 72      | 85.408 | 31.509 | 45     | 59     | 0  |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 141.372 | 85.408 | 31.509 | 64.945 | 23.959 | 60 |
| 1  | 141.401 | 33     | 25     | 56     | 69     | 59 |
| 2  | 30      | 58     | 41     | 67     | 78     | 58 |
| 3  | 59      | 84     | 58     | 78     | 88     | 57 |
| 4  | 88      | 85.509 | 74     | 89     | 97     | 56 |
| 5  | 141.517 | 34     | 91     | 65.000 | 24.007 | 55 |
| 6  | 46      | 59     | 31.607 | 11     | 16     | 54 |
| 7  | 75      | 84     | 23     | 22     | 26     | 53 |
| 8  | 141.604 | 85.610 | 40     | 33     | 35     | 52 |
| 9  | 33      | 35     | 56     | 44     | 44     | 51 |
| 10 | 63      | 60     | 72     | 55     | 54     | 50 |
| 11 | 92      | 85     | 89     | 66     | 63     | 49 |
| 12 | 141.721 | 85.710 | 31.705 | 77     | 73     | 48 |
| 13 | 50      | 36     | 22     | 88     | 82     | 47 |
| 14 | 79      | 61     | 38     | 99     | 92     | 46 |
| 15 | 141.808 | 86     | 55     | 65.110 | 24.101 | 45 |
| 16 | 37      | 85.811 | 71     | 22     | 11     | 44 |
| 17 | 66      | 37     | 87     | 33     | 20     | 43 |
| 18 | 95      | 62     | 31.804 | 44     | 30     | 42 |
| 19 | 141.924 | 87     | 20     | 55     | 39     | 41 |
| 20 | 53      | 85.912 | 37     | 66     | 49     | 40 |
| 21 | 83      | 38     | 53     | 77     | 58     | 39 |
| 22 | 142.012 | 63     | 70     | 88     | 68     | 38 |
| 23 | 41      | 88     | 85     | 99     | 77     | 37 |
| 24 | 70      | 86.014 | 31.903 | 65.210 | 87     | 36 |
| 25 | 99      | 39     | 19     | 21     | 96     | 35 |
| 26 | 142.128 | 64     | 35     | 32     | 24.205 | 34 |
| 27 | 57      | 90     | 52     | 43     | 15     | 33 |
| 28 | 86      | 86.115 | 69     | 54     | 25     | 32 |
| 29 | 112.215 | 40     | 85     | 65     | 34     | 31 |
| 30 | 44      | 66     | 32.002 | 76     | 44     | 30 |
| 31 | 73      | 91     | 19     | 87     | 53     | 29 |
| 32 | 142.303 | 86.216 | 35     | 98     | 63     | 28 |
| 33 | 32      | 42     | 52     | 65.309 | 72     | 27 |
| 34 | 61      | 67     | 69     | 20     | 82     | 26 |
| 35 | 90      | 92     | 85     | 31     | 91     | 25 |
| 36 | 142.419 | 86.318 | 32.101 | 42     | 24.301 | 24 |
| 37 | 48      | 43     | 16     | 53     | 10     | 23 |
| 38 | 77      | 69     | 34     | 64     | 20     | 22 |
| 39 | 142.505 | 94     | 51     | 75     | 29     | 21 |
| 40 | 35      | 86.419 | 63     | 85     | 39     | 20 |
| 41 | 64      | 45     | 84     | 97     | 48     | 19 |
| 42 | 93      | 70     | 32.201 | 65.408 | 58     | 18 |
| 43 | 142.622 | 96     | 16     | 19     | 67     | 17 |
| 44 | 52      | 86.521 | 34     | 30     | 77     | 16 |
| 45 | 81      | 46     | 51     | 41     | 86     | 15 |
| 46 | 142.710 | 72     | 67     | 52     | 96     | 14 |
| 47 | 39      | 97     | 84     | 63     | 24.405 | 13 |
| 48 | 68      | 86.623 | 32.301 | 75     | 15     | 12 |
| 49 | 97      | 48     | 17     | 85     | 24     | 11 |
| 50 | 142.826 | 74     | 34     | 96     | 34     | 10 |
| 51 | 55      | 99     | 51     | 65.507 | 43     | 9  |
| 52 | 84      | 86.725 | 68     | 18     | 53     | 8  |
| 53 | 142.913 | 50     | 84     | 29     | 62     | 7  |
| 54 | 42      | 76     | 32.401 | 40     | 72     | 6  |
| 55 | 72      | 86.801 | 18     | 51     | 81     | 5  |
| 56 | 143.001 | 27     | 34     | 62     | 91     | 4  |
| 57 | 30      | 52     | 51     | 73     | 24.500 | 3  |
| 58 | 59      | 73     | 68     | 84     | 10     | 2  |
| 59 | 88      | 86.903 | 85     | 95     | 19     | 1  |
| 60 | 143.117 | 29     | 32.501 | 65.606 | 29     | 0  |

## 曲線函數表

|    | L       | T      | E      | X      | Y      |   |
|----|---------|--------|--------|--------|--------|---|
| 0  | 143.117 | 66.929 | 32.501 | 65.606 | 24.529 | 0 |
| 1  | 46      | 54     | 18     | 17     | 39     | 1 |
| 2  | 75      | 80     | 35     | 28     | 48     | 2 |
| 3  | 143.204 | 87.005 | 52     | 39     | 58     | 3 |
| 4  | 33      | 31     | 68     | 50     | 67     | 4 |
| 5  | 62      | 56     | 85     | 61     | 77     | 5 |
| 6  | 92      | 82     | 32.602 | 72     | 86     | 6 |
| 7  | 143.321 | 87.108 | 19     | 83     | 95     | 7 |
| 8  | 50      | 33     | 36     | 94     | 24.605 | 8 |
| 9  | 79      | 59     | 52     | 65.705 | 15     | 9 |
| 10 | 143.408 | 84     | 69     | 16     | 25     | 0 |
| 11 | 37      | 87.210 | 86     | 27     | 34     | 1 |
| 12 | 66      | 36     | 32.703 | 38     | 44     | 2 |
| 13 | 95      | 61     | 20     | 49     | 53     | 3 |
| 14 | 143.524 | 87     | 37     | 59     | 63     | 4 |
| 15 | 53      | 87.312 | 53     | 70     | 72     | 5 |
| 16 | 82      | 33     | 70     | 81     | 82     | 6 |
| 17 | 143.612 | 87.415 | 87     | 92     | 92     | 7 |
| 18 | 41      | 89     | 32.804 | 65.803 | 24.701 | 8 |
| 19 | 70      | 21     | 21     | 14     | 11     | 9 |
| 20 | 99      | 41     | 38     | 25     | 20     | 0 |
| 21 | 143.728 | 87.518 | 55     | 36     | 30     | 1 |
| 22 | 57      | 92     | 72     | 47     | 39     | 2 |
| 23 | 86      | 87.621 | 89     | 58     | 49     | 3 |
| 24 | 143.815 | 43     | 32.906 | 69     | 59     | 4 |
| 25 | 44      | 69     | 22     | 80     | 68     | 5 |
| 26 | 73      | 95     | 39     | 91     | 78     | 6 |
| 27 | 143.902 | 87.621 | 56     | 65.902 | 87     | 7 |
| 28 | 31      | 46     | 73     | 13     | 97     | 8 |
| 29 | 61      | 72     | 90     | 24     | 24.806 | 9 |
| 30 | 90      | 98     | 33.007 | 35     | 16     | 0 |
| 31 | 144.019 | 87.723 | 24     | 46     | 26     | 1 |
| 32 | 48      | 49     | 41     | 56     | 35     | 2 |
| 33 | 77      | 75     | 58     | 67     | 45     | 3 |
| 34 | 144.106 | 87.801 | 75     | 78     | 54     | 4 |
| 35 | 35      | 26     | 92     | 89     | 64     | 5 |
| 36 | 64      | 52     | 33.109 | 66.000 | 74     | 6 |
| 37 | 93      | 78     | 26     | 11     | 83     | 7 |
| 38 | 144.222 | 87.904 | 43     | 22     | 93     | 8 |
| 39 | 51      | 30     | 60     | 33     | 24.902 | 9 |
| 40 | 81      | 55     | 77     | 44     | 12     | 0 |
| 41 | 144.310 | 88.007 | 94     | 55     | 22     | 1 |
| 42 | 39      | 33     | 33.211 | 66     | 31     | 2 |
| 43 | 68      | 59     | 28     | 77     | 41     | 3 |
| 44 | 97      | 84     | 45     | 88     | 50     | 4 |
| 45 | 144.426 | 88.110 | 62     | 98     | 60     | 5 |
| 46 | 55      | 36     | 79     | 66.109 | 70     | 6 |
| 47 | 84      | 62     | 97     | 20     | 79     | 7 |
| 48 | 144.513 | 88.214 | 33.314 | 31     | 89     | 8 |
| 49 | 42      | 88     | 31     | 42     | 98     | 9 |
| 50 | 71      | 88.317 | 48     | 53     | 25.008 | 0 |
| 51 | 144.601 | 39     | 65     | 64     | 18     | 1 |
| 52 | 30      | 65     | 82     | 75     | 27     | 2 |
| 53 | 59      | 92     | 99     | 86     | 37     | 3 |
| 54 | 88      | 47     | 33.416 | 97     | 47     | 4 |
| 55 | 144.717 | 43     | 33     | 66.207 | 56     | 5 |
| 56 | 46      | 69     | 51     | 18     | 66     | 6 |
| 57 | 75      | 95     | 68     | 29     | 75     | 7 |
| 58 | 144.804 | 88.421 | 85     | 40     | 85     | 8 |
| 59 | 33      | 47     | 33.502 | 51     | 95     | 9 |
| 60 | 62      | 73     | 19     | 62     | 25.104 | 0 |

## 曲線函數表

| '  | C       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 144.862 | 88.473 | 33.519 | 66.262 | 25.104 | 60 |
| 1  | 91      | 99     | 36     | 73     | 14     | 59 |
| 2  | 144.921 | 88.524 | 54     | 84     | 24     | 58 |
| 3  | 50      | 50     | 71     | 95     | 33     | 57 |
| 4  | 79      | 76     | 88     | 66.306 | 43     | 56 |
| 5  | 145.008 | 88.002 | 33.605 | 16     | 53     | 55 |
| 6  | 37      | 28     | 23     | 27     | 62     | 54 |
| 7  | 66      | 54     | 40     | 38     | 72     | 53 |
| 8  | 95      | 80     | 57     | 49     | 82     | 52 |
| 9  | 145.124 | 88.706 | 74     | 60     | 91     | 51 |
| 10 | 53      | 32     | 91     | 71     | 25.201 | 50 |
| 11 | 82      | 58     | 33.709 | 82     | 11     | 49 |
| 12 | 145.211 | 84     | 26     | 93     | 20     | 48 |
| 13 | 40      | 88.810 | 43     | 66.403 | 30     | 47 |
| 14 | 70      | 36     | 61     | 14     | 39     | 46 |
| 15 | 99      | 62     | 78     | 25     | 49     | 45 |
| 16 | 145.328 | 88     | 95     | 36     | 59     | 44 |
| 17 | 57      | 88.914 | 33.812 | 47     | 68     | 43 |
| 18 | 86      | 40     | 30     | 58     | 78     | 42 |
| 19 | 145.415 | 86     | 47     | 69     | 88     | 41 |
| 20 | 44      | 92     | 64     | 80     | 97     | 40 |
| 21 | 73      | 89.019 | 82     | 90     | 25.307 | 39 |
| 22 | 145.502 | 45     | 99     | 66.501 | 17     | 38 |
| 23 | 31      | 71     | 33.916 | 12     | 26     | 37 |
| 24 | 60      | 97     | 34     | 23     | 36     | 36 |
| 25 | 90      | 89.123 | 51     | 34     | 46     | 35 |
| 26 | 145.619 | 49     | 68     | 45     | 55     | 34 |
| 27 | 48      | 75     | 86     | 56     | 65     | 33 |
| 28 | 77      | 89.201 | 34.003 | 66     | 75     | 32 |
| 29 | 145.706 | 27     | 21     | 77     | 85     | 31 |
| 30 | 35      | 53     | 38     | 88     | 94     | 30 |
| 31 | 64      | 80     | 55     | 99     | 25.404 | 29 |
| 32 | 93      | 89.306 | 73     | 66.610 | 14     | 28 |
| 33 | 145.822 | 32     | 90     | 21     | 23     | 27 |
| 34 | 51      | 53     | 34.108 | 32     | 33     | 26 |
| 35 | 80      | 84     | 25     | 42     | 43     | 25 |
| 36 | 145.910 | 89.410 | 43     | 53     | 52     | 24 |
| 37 | 39      | 37     | 60     | 64     | 62     | 23 |
| 38 | 68      | 63     | 77     | 75     | 72     | 22 |
| 39 | 97      | 89     | 95     | 86     | 81     | 21 |
| 40 | 146.026 | 89.515 | 34.212 | 97     | 91     | 20 |
| 41 | 55      | 41     | 30     | 66.707 | 25.501 | 19 |
| 42 | 84      | 68     | 47     | 18     | 11     | 18 |
| 43 | 146.113 | 94     | 65     | 29     | 20     | 17 |
| 44 | 42      | 89.620 | 82     | 40     | 30     | 16 |
| 45 | 71      | 46     | 43.300 | 51     | 40     | 15 |
| 46 | 146.200 | 72     | 17     | 62     | 49     | 14 |
| 47 | 30      | 99     | 35     | 72     | 59     | 13 |
| 48 | 59      | 89.725 | 52     | 83     | 69     | 12 |
| 49 | 88      | 51     | 70     | 94     | 79     | 11 |
| 50 | 146.317 | 77     | 87     | 66.805 | 88     | 10 |
| 51 | 46      | 89.804 | 34.405 | 16     | 98     | 9  |
| 52 | 75      | 30     | 23     | 26     | 25.608 | 8  |
| 53 | 146.404 | 56     | 40     | 37     | 17     | 7  |
| 54 | 33      | 83     | 58     | 48     | 27     | 6  |
| 55 | 62      | 89.909 | 75     | 59     | 37     | 5  |
| 56 | 91      | 35     | 93     | 70     | 47     | 4  |
| 57 | 146.520 | 61     | 34.510 | 81     | 56     | 3  |
| 58 | 49      | 88     | 28     | 91     | 66     | 2  |
| 59 | 79      | 80.014 | 46     | 66.902 | 76     | 1  |
| 60 | 146.608 | 40     | 63     | 13     | 86     | 0  |

## 曲線函數表

|    | L       | T      | E      | X      | Y      |    |
|----|---------|--------|--------|--------|--------|----|
| 0  | 146.608 | 90.040 | 34.563 | 66.913 | 25.688 | 60 |
| 1  | 37      | 67     | 81     | 24     | 35     | 01 |
| 2  | 66      | 93     | 92     | 35     | 25.705 | 02 |
| 3  | 95      | 90.119 | 34.616 | 45     | 15     | 03 |
| 4  | 148.724 | 45     | 34     | 56     | 25     | 04 |
| 5  | 53      | 72     | 52     | 67     | 34     | 05 |
| 6  | 82      | 99     | 69     | 78     | 44     | 06 |
| 7  | 146.811 | 90.225 | 87     | 89     | 54     | 07 |
| 8  | 40      | 51     | 34.705 | 99     | 63     | 08 |
| 9  | 69      | 78     | 22     | 67.010 | 73     | 09 |
| 10 | 99      | 90.304 | 40     | 21     | 83     | 10 |
| 11 | 146.928 | 31     | 58     | 32     | 93     | 11 |
| 12 | 57      | 57     | 75     | 43     | 25.802 | 12 |
| 13 | 86      | 83     | 93     | 53     | 12     | 13 |
| 14 | 147.015 | 90.410 | 34.811 | 64     | 22     | 14 |
| 15 | 44      | 36     | 29     | 75     | 32     | 15 |
| 16 | 73      | 63     | 46     | 86     | 41     | 16 |
| 17 | 147.102 | 89     | 64     | 97     | 51     | 17 |
| 18 | 31      | 90.516 | 82     | 67.107 | 61     | 18 |
| 19 | 60      | 42     | 34.900 | 18     | 71     | 19 |
| 20 | 89      | 69     | 17     | 29     | 81     | 20 |
| 21 | 147.219 | 95     | 35     | 40     | 90     | 21 |
| 22 | 48      | 90.622 | 53     | 51     | 25.900 | 22 |
| 23 | 77      | 48     | 71     | 61     | 10     | 23 |
| 24 | 147.306 | 75     | 88     | 72     | 20     | 24 |
| 25 | 35      | 90.701 | 35.006 | 83     | 29     | 25 |
| 26 | 64      | 23     | 24     | 94     | 39     | 26 |
| 27 | 93      | 54     | 42     | 67.204 | 49     | 27 |
| 28 | 147.422 | 81     | 60     | 15     | 59     | 28 |
| 29 | 51      | 90.807 | 77     | 26     | 68     | 29 |
| 30 | 80      | 34     | 95     | 37     | 78     | 30 |
| 31 | 147.509 | 60     | 35.113 | 47     | 68     | 31 |
| 32 | 38      | 87     | 31     | 58     | 92     | 32 |
| 33 | 68      | 90.913 | 49     | 69     | 26.007 | 33 |
| 34 | 97      | 40     | 67     | 80     | 17     | 34 |
| 35 | 147.626 | 66     | 85     | 91     | 27     | 35 |
| 36 | 55      | 93     | 35.203 | 67.301 | 37     | 36 |
| 37 | 84      | 91.020 | 20     | 12     | 47     | 37 |
| 38 | 147.713 | 46     | 38     | 23     | 55     | 38 |
| 39 | 42      | 73     | 56     | 34     | 66     | 39 |
| 40 | 71      | 99     | 74     | 44     | 76     | 40 |
| 41 | 147.800 | 91.125 | 92     | 55     | 86     | 41 |
| 42 | 29      | 53     | 35.310 | 66     | 96     | 42 |
| 43 | 58      | 79     | 28     | 76     | 26.105 | 43 |
| 44 | 88      | 91.206 | 46     | 87     | 15     | 44 |
| 45 | 147.917 | 33     | 64     | 98     | 25     | 45 |
| 46 | 46      | 69     | 82     | 67.406 | 35     | 46 |
| 47 | 75      | 86     | 35.400 | 19     | 45     | 47 |
| 48 | 148.004 | 91.313 | 18     | 30     | 54     | 48 |
| 49 | 33      | 39     | 35     | 41     | 64     | 49 |
| 50 | 62      | 66     | 54     | 52     | 74     | 50 |
| 51 | 91      | 93     | 72     | 62     | 84     | 51 |
| 52 | 148.120 | 91.419 | 90     | 73     | 94     | 52 |
| 53 | 49      | 46     | 35.508 | 84     | 26.203 | 53 |
| 54 | 78      | 73     | 26     | 95     | 13     | 54 |
| 55 | 148.208 | 99     | 44     | 67.505 | 23     | 55 |
| 56 | 37      | 91.526 | 62     | 16     | 33     | 56 |
| 57 | 66      | 53     | 80     | 27     | 43     | 57 |
| 58 | 95      | 80     | 98     | 38     | 53     | 58 |
| 59 | 148.324 | 91.606 | 35.616 | 48     | 62     | 59 |
| 60 | 53      | 33     | 34     | 58     | 72     | 60 |



|     | L       | T      | E      | X      | Y      | '   |
|-----|---------|--------|--------|--------|--------|-----|
| 0   | 148.353 | 91.633 | 35.634 | 67.559 | 26.272 | 8 0 |
| 1   | 82      | 60     | 52     | 70     | 82     | 5 9 |
| 2   | 148.411 | 87     | 70     | 80     | 92     | 5 8 |
| 3   | 40      | 91.713 | 88     | 91     | 26.302 | 5 7 |
| 4   | 69      | 40     | 35.707 | 67.602 | 12     | 5 6 |
| 5   | 98      | 67     | 25     | 13     | 21     | 5 5 |
| 6   | 148.528 | 94     | 43     | 23     | 31     | 5 4 |
| 7   | 57      | 91.821 | 61     | 34     | 41     | 5 3 |
| 8   | 86      | 47     | 79     | 45     | 51     | 5 2 |
| 9   | 148.615 | 74     | 97     | 55     | 61     | 5 1 |
| 1 0 | 44      | 91.901 | 35.815 | 66     | 71     | 5 0 |
| 1 1 | 73      | 28     | 34     | 77     | 80     | 4 9 |
| 1 2 | 148.702 | 55     | 52     | 88     | 90     | 4 8 |
| 1 3 | 31      | 82     | 70     | 98     | 26.400 | 4 7 |
| 1 4 | 60      | 92.008 | 88     | 67.709 | 10     | 4 6 |
| 1 5 | 89      | 35     | 35.906 | 20     | 20     | 4 5 |
| 1 6 | 148.818 | 62     | 24     | 30     | 30     | 4 4 |
| 1 7 | 47      | 89     | 43     | 41     | 40     | 4 3 |
| 1 8 | 77      | 92.116 | 61     | 52     | 49     | 4 2 |
| 1 9 | 148.906 | 43     | 79     | 62     | 59     | 4 1 |
| 2 0 | 35      | 70     | 97     | 73     | 69     | 4 0 |
| 2 1 | 64      | 97     | 36.016 | 84     | 79     | 3 9 |
| 2 2 | 93      | 92.224 | 34     | 95     | 89     | 3 8 |
| 2 3 | 149.022 | 50     | 52     | 67.805 | 99     | 3 7 |
| 2 4 | 51      | 77     | 70     | 16     | 26.509 | 3 6 |
| 2 5 | 80      | 92.304 | 89     | 27     | 18     | 3 5 |
| 2 6 | 149.109 | 31     | 36.107 | 37     | 28     | 3 4 |
| 2 7 | 38      | 58     | 25     | 48     | 38     | 3 3 |
| 2 8 | 67      | 85     | 43     | 59     | 48     | 3 2 |
| 2 9 | 97      | 92.412 | 62     | 69     | 58     | 3 1 |
| 3 0 | 149.226 | 39     | 80     | 80     | 68     | 3 0 |
| 3 1 | 55      | 66     | 98     | 91     | 78     | 2 9 |
| 3 2 | 84      | 93     | 36.217 | 67.901 | 88     | 2 8 |
| 3 3 | 149.313 | 92.520 | 35     | 12     | 97     | 2 7 |
| 3 4 | 42      | 47     | 53     | 23     | 26.607 | 2 6 |
| 3 5 | 71      | 74     | 72     | 33     | 17     | 2 5 |
| 3 6 | 149.400 | 92.601 | 90     | 44     | 27     | 2 4 |
| 3 7 | 29      | 28     | 36.308 | 55     | 37     | 2 3 |
| 3 8 | 58      | 55     | 27     | 65     | 47     | 2 2 |
| 3 9 | 87      | 82     | 45     | 76     | 57     | 2 1 |
| 4 0 | 149.517 | 92.709 | 63     | 87     | 67     | 2 0 |
| 4 1 | 46      | 36     | 82     | 97     | 76     | 1 9 |
| 4 2 | 75      | 63     | 36.400 | 68.008 | 85     | 1 8 |
| 4 3 | 149.604 | 90     | 19     | 19     | 96     | 1 7 |
| 4 4 | 33      | 92.817 | 37     | 29     | 26.706 | 1 6 |
| 4 5 | 62      | 45     | 56     | 40     | 16     | 1 5 |
| 4 6 | 91      | 72     | 74     | 51     | 25     | 1 4 |
| 4 7 | 149.720 | 99     | 92     | 61     | 35     | 1 3 |
| 4 8 | 49      | 92.926 | 35.511 | 72     | 46     | 1 2 |
| 4 9 | 78      | 53     | 29     | 83     | 56     | 1 1 |
| 5 0 | 149.807 | 80     | 48     | 93     | 66     | 1 0 |
| 5 1 | 37      | 93.007 | 66     | 68.104 | 75     | 9 9 |
| 5 2 | 66      | 34     | 85     | 15     | 85     | 9 8 |
| 5 3 | 95      | 61     | 36.603 | 25     | 95     | 9 7 |
| 5 4 | 149.924 | 89     | 22     | 36     | 26.805 | 9 6 |
| 5 5 | 53      | 93.116 | 40     | 47     | 15     | 9 5 |
| 5 6 | 82      | 43     | 59     | 57     | 25     | 9 4 |
| 5 7 | 150.011 | 70     | 77     | 68     | 35     | 9 3 |
| 5 8 | 40      | 97     | 96     | 79     | 45     | 9 2 |
| 5 9 | 69      | 93.224 | 36.714 | 89     | 56     | 9 1 |
| 6 0 | 98      | 51     | 33     | 68.200 | 65     | 9 0 |

## 曲線函數表

| '  | L       | T      | E      | X      | Y      | '  |
|----|---------|--------|--------|--------|--------|----|
| 0  | 150.098 | 93.251 | 36.733 | 68.200 | 26.865 | 60 |
| 1  | 150.127 | 79     | 51     | 11     | 75     | 59 |
| 2  | 56      | 93.306 | 70     | 21     | 85     | 58 |
| 3  | 86      | 33     | 88     | 32     | 94     | 57 |
| 4  | 150.215 | 60     | 36.837 | 42     | 26.904 | 56 |
| 5  | 44      | 83     | 26     | 53     | 14     | 55 |
| 6  | 73      | 93.415 | 44     | 64     | 24     | 54 |
| 7  | 150.302 | 42     | 63     | 74     | 34     | 53 |
| 8  | 31      | 69     | 81     | 85     | 44     | 52 |
| 9  | 60      | 97     | 36.900 | 95     | 54     | 51 |
| 10 | 89      | 93.524 | 19     | 68.306 | 64     | 50 |
| 11 | 150.418 | 51     | 37     | 17     | 74     | 49 |
| 12 | 47      | 78     | 56     | 27     | 84     | 48 |
| 13 | 76      | 93.606 | 75     | 38     | 94     | 47 |
| 14 | 150.506 | 33     | 93     | 49     | 27.004 | 46 |
| 15 | 35      | 60     | 37.012 | 59     | 14     | 45 |
| 16 | 64      | 88     | 31     | 70     | 24     | 44 |
| 17 | 93      | 93.715 | 49     | 80     | 34     | 43 |
| 18 | 150.622 | 42     | 68     | 91     | 43     | 42 |
| 19 | 51      | 70     | 87     | 68.402 | 53     | 41 |
| 20 | 80      | 97     | 37.105 | 12     | 63     | 40 |
| 21 | 150.709 | 93.824 | 24     | 23     | 73     | 39 |
| 22 | 38      | 52     | 43     | 33     | 83     | 38 |
| 23 | 67      | 79     | 61     | 44     | 93     | 37 |
| 24 | 96      | 93.906 | 80     | 55     | 27.103 | 36 |
| 25 | 150.826 | 34     | 99     | 65     | 13     | 35 |
| 26 | 55      | 61     | 37.213 | 76     | 23     | 34 |
| 27 | 84      | 88     | 36     | 86     | 33     | 33 |
| 28 | 150.913 | 94.016 | 55     | 97     | 43     | 32 |
| 29 | 42      | 43     | 74     | 68.508 | 53     | 31 |
| 30 | 71      | 71     | 93     | 18     | 63     | 30 |
| 31 | 151.000 | 98     | 37.312 | 29     | 73     | 29 |
| 32 | 29      | 94.125 | 30     | 39     | 83     | 28 |
| 33 | 58      | 53     | 49     | 50     | 93     | 27 |
| 34 | 87      | 80     | 68     | 61     | 27.203 | 26 |
| 35 | 151.116 | 94.208 | 87     | 71     | 13     | 25 |
| 36 | 46      | 35     | 37.406 | 82     | 23     | 24 |
| 37 | 75      | 63     | 24     | 92     | 33     | 23 |
| 38 | 151.204 | 90     | 43     | 68.603 | 43     | 22 |
| 39 | 33      | 94.318 | 62     | 14     | 53     | 21 |
| 40 | 62      | 45     | 81     | 24     | 63     | 20 |
| 41 | 91      | 73     | 37.500 | 35     | 73     | 19 |
| 42 | 151.320 | 94.400 | 19     | 45     | 83     | 18 |
| 43 | 49      | 28     | 38     | 56     | 93     | 17 |
| 44 | 78      | 55     | 56     | 66     | 27.303 | 16 |
| 45 | 151.407 | 83     | 75     | 77     | 13     | 15 |
| 46 | 36      | 94.510 | 94     | 88     | 23     | 14 |
| 47 | 65      | 38     | 37.613 | 98     | 33     | 13 |
| 48 | 95      | 65     | 32     | 68.709 | 43     | 12 |
| 49 | 151.524 | 93     | 51     | 19     | 53     | 11 |
| 50 | 53      | 94.620 | 70     | 30     | 63     | 10 |
| 51 | 82      | 48     | 89     | 40     | 73     | 9  |
| 52 | 151.611 | 76     | 37.708 | 51     | 83     | 8  |
| 53 | 40      | 94.703 | 27     | 62     | 93     | 7  |
| 54 | 69      | 31     | 46     | 72     | 27.403 | 6  |
| 55 | 98      | 58     | 65     | 83     | 13     | 5  |
| 56 | 151.727 | 86     | 84     | 93     | 23     | 4  |
| 57 | 56      | 94.814 | 37.803 | 68.804 | 33     | 3  |
| 58 | 85      | 41     | 22     | 14     | 43     | 2  |
| 59 | 151.815 | 69     | 41     | 25     | 53     | 1  |
| 60 | 44      | 96     | 60     | 35     | 63     | 0  |

## 曲線函數表

| ' | L       | TL     | E      | X      | Y      | '   |
|---|---------|--------|--------|--------|--------|-----|
| 0 | 151.844 | 94.896 | 37.860 | 68.835 | 27.463 | 6 0 |
| 1 | 73      | 94.924 | 79     | 46     | 73     | 5 5 |
| 2 | 151.902 | 52     | 98     | 56     | 83     | 5 5 |
| 3 | 31      | 79     | 37.917 | 67     | 93     | 5 5 |
| 4 | 60      | 95.007 | 36     | 78     | 27.503 | 5 5 |
| 5 |         |        |        |        |        | 6 0 |
| 6 | 89      | 35     | 55     | 88     | 13     | 5 5 |
| 7 | 152.018 | 62     | 74     | 99     | 23     | 5 5 |
| 8 | 47      | 90     | 93     | 68.909 | 33     | 5 5 |
| 9 | 76      | 95.118 | 38.012 | 20     | 43     | 5 5 |
| 0 | 152.105 | 46     | 31     | 30     | 53     | 5 5 |
| 1 | 35      | 73     | 51     | 41     | 63     | 5 0 |
| 2 | 64      | 95.201 | 72     | 51     | 73     | 4 9 |
| 3 | 93      | 29     | 89     | 62     | 83     | 4 8 |
| 4 | 152.222 | 57     | 38.108 | 72     | 93     | 4 7 |
| 5 | 14      | 84     | 27     | 83     | 27.608 | 4 6 |
| 6 |         |        |        |        |        | 5 0 |
| 7 | 80      | 95.312 | 46     | 93     | 13     | 4 5 |
| 8 | 152.309 | 40     | 65     | 69.004 | 23     | 4 4 |
| 9 | 38      | 68     | 85     | 15     | 33     | 4 4 |
| 0 | 67      | 95     | 38.204 | 25     | 43     | 4 3 |
| 1 | 96      | 95.423 | 23     | 36     | 53     | 4 2 |
| 2 |         |        |        |        |        | 4 1 |
| 3 | 152.425 | 51     | 42     | 46     | 63     | 4 0 |
| 4 | 55      | 79     | 61     | 57     | 73     | 3 9 |
| 5 | 84      | 95.506 | 80     | 67     | 83     | 3 8 |
| 6 | 152.513 | 34     | 38.300 | 78     | 93     | 3 7 |
| 7 | 42      | 62     | 19     | 88     | 27.703 | 3 6 |
| 8 |         |        |        |        |        | 4 0 |
| 9 | 71      | 90     | 38     | 99     | 13     | 3 5 |
| 0 | 152.600 | 95.618 | 57     | 69.109 | 23     | 3 4 |
| 1 | 29      | 46     | 77     | 20     | 33     | 3 4 |
| 2 | 58      | 73     | 96     | 39     | 44     | 3 3 |
| 3 | 87      | 95.701 | 38.415 | 41     | 54     | 3 2 |
| 4 |         |        |        |        |        | 3 1 |
| 5 | 152.716 | 29     | 34     | 51     | 64     | 3 0 |
| 6 | 45      | 57     | 54     | 62     | 74     | 2 9 |
| 7 | 74      | 85     | 73     | 72     | 84     | 2 8 |
| 8 | 152.804 | 95.813 | 92     | 63     | 94     | 2 7 |
| 9 | 33      | 41     | 38.512 | 93     | 27.804 | 2 6 |
| 0 |         |        |        |        |        | 3 0 |
| 1 | 62      | 69     | 31     | 69.204 | 14     | 2 5 |
| 2 | 91      | 97     | 50     | 14     | 24     | 2 4 |
| 3 | 152.920 | 95.925 | 70     | 25     | 34     | 2 3 |
| 4 | 49      | 53     | 89     | 35     | 44     | 2 2 |
| 5 | 78      | 80     | 38.608 | 46     | 54     | 2 1 |
| 6 |         |        |        |        |        | 3 0 |
| 7 | 153.007 | 96.008 | 28     | 56     | 64     | 2 0 |
| 8 | 36      | 36     | 47     | 67     | 74     | 1 9 |
| 9 | 65      | 64     | 66     | 77     | 84     | 1 8 |
| 0 | 94      | 92     | 86     | 88     | 95     | 1 7 |
| 1 | 153.124 | 96.120 | 38.705 | 98     | 27.905 | 1 6 |
| 2 |         |        |        |        |        | 3 0 |
| 3 | 53      | 43     | 24     | 69.309 | 15     | 1 5 |
| 4 | 82      | 76     | 44     | 19     | 25     | 1 4 |
| 5 | 153.211 | 96.204 | 63     | 30     | 35     | 1 3 |
| 6 | 40      | 32     | 83     | 40     | 45     | 1 2 |
| 7 | 69      | 60     | 38.802 | 51     | 55     | 1 1 |
| 8 |         |        |        |        |        | 1 0 |
| 9 | 96      | 88     | 22     | 61     | 65     | 1 0 |
| 0 | 153.327 | 96.316 | 41     | 72     | 75     | 9 9 |
| 1 | 56      | 44     | 60     | 82     | 85     | 9 8 |
| 2 | 85      | 72     | 80     | 93     | 95     | 9 7 |
| 3 | 153.414 | 96.400 | 99     | 69.403 | 28.005 | 9 6 |
| 4 |         |        |        |        |        | 6 0 |
| 5 | 44      | 28     | 38.919 | 13     | 16     | 5 4 |
| 6 | 73      | 57     | 38     | 24     | 26     | 4 4 |
| 7 | 153.502 | 96.513 | 58     | 34     | 36     | 3 3 |
| 8 | 31      | 77     | 77     | 45     | 46     | 2 3 |
| 9 | 60      | 41     | 97     | 55     | 56     | 1 1 |
| 0 | 89      | 69     | 39.016 | 66     | 66     | 0 0 |

|     | L       | T      | E      | X      | Y      |     |
|-----|---------|--------|--------|--------|--------|-----|
| 0   | 153.569 | 96.569 | 39.016 | 69.466 | 28.068 | 6 0 |
| 1   | 153.618 | 97     | 36     | 76     | 76     | 6 9 |
| 2   | 47      | 96.625 | 55     | 87     | 86     | 6 8 |
| 3   | 76      | 53     | 75     | 97     | 96     | 6 7 |
| 4   | 153.705 | 81     | 95     | 69.508 | 28.107 | 6 6 |
| 5   | 34      | 96.710 | 39.114 | 18     | 17     | 5 5 |
| 6   | 64      | 38     | 34     | 29     | 27     | 5 4 |
| 7   | 93      | 66     | 54     | 39     | 37     | 5 3 |
| 8   | 153.822 | 94     | 73     | 49     | 47     | 5 2 |
| 9   | 51      | 96.822 | 92     | 60     | 57     | 5 1 |
| 1 0 | 80      | 50     | 39.212 | 70     | 67     | 5 0 |
| 1 1 | 153.909 | 79     | 32     | 81     | 77     | 4 9 |
| 1 2 | 38      | 96.907 | 51     | 91     | 87     | 4 8 |
| 1 3 | 67      | 35     | 71     | 69.602 | 98     | 4 7 |
| 1 4 | 96      | 63     | 91     | 12     | 28.208 | 4 6 |
| 1 5 | 154.025 | 91     | 39.310 | 23     | 18     | 4 5 |
| 1 6 | 54      | 97.020 | 30     | 33     | 28     | 4 4 |
| 1 7 | 83      | 48     | 50     | 43     | 38     | 4 3 |
| 1 8 | 154.113 | 76     | 69     | 54     | 48     | 4 2 |
| 1 9 | 42      | 97.104 | 89     | 64     | 58     | 4 1 |
| 2 0 | 71      | 33     | 39.409 | 75     | 68     | 4 0 |
| 2 1 | 154.200 | 61     | 28     | 85     | 79     | 3 9 |
| 2 2 | 29      | 89     | 48     | 96     | 89     | 3 8 |
| 2 3 | 58      | 97.218 | 68     | 69.706 | 99     | 3 7 |
| 2 4 | 87      | 46     | 87     | 16     | 28.309 | 3 6 |
| 2 5 | 154.316 | 74     | 39.507 | 27     | 19     | 3 5 |
| 2 6 | 45      | 97.302 | 27     | 37     | 29     | 3 4 |
| 2 7 | 74      | 31     | 47     | 48     | 39     | 3 3 |
| 2 8 | 154.403 | 59     | 66     | 58     | 50     | 3 2 |
| 2 9 | 33      | 87     | 86     | 67     | 60     | 3 1 |
| 3 0 | 62      | 97.416 | 39.606 | 79     | 70     | 3 0 |
| 3 1 | 91      | 44     | 26     | 89     | 80     | 2 9 |
| 3 2 | 154.520 | 72     | 46     | 69.800 | 90     | 2 8 |
| 3 3 | 49      | 97.501 | 65     | 10     | 28.400 | 2 7 |
| 3 4 | 78      | 23     | 85     | 21     | 10     | 2 6 |
| 3 5 | 154.607 | 58     | 39.705 | 31     | 21     | 2 5 |
| 3 6 | 36      | 86     | 25     | 41     | 31     | 2 4 |
| 3 7 | 65      | 97.614 | 45     | 52     | 41     | 2 3 |
| 3 8 | 94      | 43     | 64     | 62     | 51     | 2 2 |
| 3 9 | 154.723 | 71     | 84     | 73     | 61     | 2 1 |
| 4 0 | 53      | 97.700 | 39.804 | 83     | 71     | 2 0 |
| 4 1 | 82      | 28     | 24     | 94     | 82     | 1 9 |
| 4 2 | 154.811 | 56     | 44     | 69.904 | 92     | 1 8 |
| 4 3 | 40      | 85     | 64     | 14     | 28.502 | 1 7 |
| 4 4 | 69      | 97.813 | 84     | 25     | 12     | 1 6 |
| 4 5 | 98      | 42     | 39.904 | 35     | 22     | 1 5 |
| 4 6 | 154.927 | 70     | 24     | 46     | 32     | 1 4 |
| 4 7 | 56      | 99     | 43     | 56     | 43     | 1 3 |
| 4 8 | 85      | 97.927 | 63     | 66     | 53     | 1 2 |
| 4 9 | 155.014 | 56     | 83     | 77     | 63     | 1 1 |
| 5 0 | 43      | 84     | 40.003 | 87     | 76     | 1 0 |
| 5 1 | 73      | 98.013 | 23     | 97     | 83     | 9 9 |
| 5 2 | 155.102 | 41     | 43     | 70.008 | 94     | 9 8 |
| 5 3 | 31      | 70     | 63     | 18     | 28.604 | 9 7 |
| 5 4 | 60      | 98     | 83     | 29     | 14     | 9 6 |
| 5 5 | 89      | 98.127 | 40.103 | 39     | 24     | 5 4 |
| 5 6 | 155.218 | 55     | 23     | 49     | 34     | 4 3 |
| 5 7 | 47      | 84     | 43     | 60     | 44     | 3 2 |
| 5 8 | 76      | 98.213 | 63     | 70     | 55     | 2 1 |
| 5 9 | 155.305 | 41     | 83     | 81     | 65     | 1 0 |
| 6 0 | 34      | 70     | 40.205 | 91     | 75     | 0   |

## 曲線函數表

| '   | L       | T       | E      | X      | Y      | '   |
|-----|---------|---------|--------|--------|--------|-----|
| 0 1 | 155.334 | 98.270  | 40.203 | 70.091 | 28.675 | 6 0 |
| 0 2 | 63      | 98.270  | 23     | 70.101 | 85     | 5 9 |
| 0 3 | 92      | 98.327  | 43     | 12     | 95     | 5 8 |
| 0 4 | 155.422 | 55      | 63     | 22     | 28.706 | 5 7 |
|     | 51      | 84      | 83     | 32     | 16     | 5 6 |
| 5 6 | 80      | 99.413  | 40.304 | 43     | 26     | 5 5 |
| 5 7 | 155.509 | 41      | 24     | 53     | 36     | 5 4 |
| 5 8 | 38      | 70      | 44     | 63     | 46     | 5 3 |
| 5 9 | 67      | 99      | 64     | 74     | 57     | 5 2 |
|     | 96      | 98.527  | 84     | 84     | 67     | 5 1 |
| 1 0 | 155.625 | 56      | 40.404 | 95     | 77     | 5 0 |
| 1 1 | 54      | 85      | 24     | 70.205 | 87     | 4 9 |
| 1 2 | 83      | 98.613  | 44     | 15     | 97     | 4 8 |
| 1 3 | 155.712 | 42      | 64     | 26     | 28.803 | 4 7 |
| 1 4 | 42      | 71      | 85     | 35     | 18     | 4 6 |
| 1 5 | 71      | 98.700  | 40.505 | 45     | 28     | 4 5 |
| 1 6 | 155.800 | 28      | 25     | 57     | 38     | 4 4 |
| 1 7 | 29      | 57      | 45     | 67     | 48     | 4 3 |
| 1 8 | 58      | 86      | 65     | 77     | 59     | 4 2 |
| 1 9 | 87      | 98.814  | 85     | 88     | 69     | 4 1 |
| 2 0 | 155.916 | 43      | 40.506 | 98     | 79     | 4 0 |
| 2 1 | 45      | 72      | 26     | 70.308 | 89     | 3 9 |
| 2 2 | 74      | 98.901  | 46     | 19     | 28.900 | 3 8 |
| 2 3 | 156.003 | 30      | 66     | 29     | 10     | 3 7 |
| 2 4 | 32      | 58      | 87     | 39     | 20     | 3 6 |
| 2 5 | 62      | 87      | 40.707 | 50     | 30     | 3 5 |
| 2 6 | 91      | 99.016  | 27     | 60     | 40     | 3 4 |
| 2 7 | 156.100 | 45      | 47     | 70     | 51     | 3 3 |
| 2 8 | 49      | 74      | 68     | 81     | 61     | 3 2 |
| 2 9 | 78      | 99.102  | 88     | 91     | 71     | 3 1 |
| 3 0 | 156.207 | 31      | 40.808 | 70.401 | 81     | 3 0 |
| 3 1 | 35      | 60      | 29     | 12     | 92     | 2 9 |
| 3 2 | 65      | 89      | 49     | 22     | 29.002 | 2 8 |
| 3 3 | 94      | 99.218  | 69     | 32     | 12     | 2 7 |
| 3 4 | 156.323 | 47      | 90     | 43     | 22     | 2 6 |
| 3 5 | 52      | 75      | 40.910 | 53     | 33     | 2 5 |
| 3 6 | 82      | 99.304  | 30     | 63     | 43     | 2 4 |
| 3 7 | 156.411 | 33      | 51     | 74     | 53     | 2 3 |
| 3 8 | 40      | 62      | 71     | 84     | 63     | 2 2 |
| 3 9 | 69      | 91      | 91     | 94     | 74     | 2 1 |
| 4 0 | 93      | 99.420  | 41.012 | 70.505 | 84     | 2 0 |
| 4 1 | 156.527 | 49      | 32     | 15     | 94     | 1 9 |
| 4 2 | 56      | 78      | 53     | 25     | 29.104 | 1 8 |
| 4 3 | 85      | 99.507  | 73     | 35     | 15     | 1 7 |
| 4 4 | 156.614 | 36      | 93     | 46     | 25     | 1 6 |
| 4 5 | 43      | 65      | 41.114 | 56     | 35     | 1 5 |
| 4 6 | 72      | 94      | 34     | 66     | 45     | 1 4 |
| 4 7 | 156.701 | 99.623  | 55     | 77     | 55     | 1 3 |
| 4 8 | 31      | 52      | 75     | 87     | 65     | 1 2 |
| 4 9 | 60      | 81      | 95     | 97     | 76     | 1 1 |
| 5 0 | 89      | 99.710  | 41.216 | 70.608 | 87     | 1 0 |
| 5 1 | 156.818 | 30      | 37     | 18     | 97     | 9 9 |
| 5 2 | 47      | 68      | 57     | 28     | 29.207 | 9 8 |
| 5 3 | 76      | 97      | 78     | 39     | 17     | 9 7 |
| 5 4 | 156.905 | 99.826  | 98     | 49     | 28     | 9 6 |
| 5 5 | 34      | 55      | 41.319 | 59     | 38     | 9 5 |
| 5 6 | 63      | 84      | 39     | 70     | 48     | 9 4 |
| 5 7 | 92      | 99.913  | 60     | 80     | 58     | 9 3 |
| 5 8 | 157.021 | 42      | 80     | 90     | 68     | 9 2 |
| 5 9 | 51      | 71      | 41.401 | 70.700 | 79     | 9 1 |
| 6 0 | 80      | 100.000 | 21     | 11     | 89     | 9 0 |

| '  | L       | T       | E      | X      | Y      | ' |
|----|---------|---------|--------|--------|--------|---|
| 0  | 157.080 | 100.000 | 41.421 | 70.711 | 29.289 | 6 |
| 1  | 157.109 | 29      | 42     | 21     | 29.300 | 0 |
| 2  | 38      | 58      | 62     | 31     | 10     | 9 |
| 3  | 67      | 87      | 83     | 42     | 20     | 8 |
| 4  | 95      | 100.116 | 41.504 | 52     | 30     | 7 |
| 5  | 157.225 | 46      | 24     | 62     | 41     | 5 |
| 6  | 54      | 75      | 45     | 72     | 51     | 5 |
| 7  | 83      | 100.204 | 66     | 83     | 61     | 4 |
| 8  | 157.312 | 33      | 86     | 93     | 72     | 3 |
| 9  | 41      | 62      | 41.607 | 70.803 | 82     | 2 |
| 10 | 71      | 91      | 28     | 13     | 92     | 0 |
| 11 | 157.400 | 100.321 | 48     | 24     | 29.403 | 9 |
| 12 | 29      | 50      | 69     | 34     | 13     | 8 |
| 13 | 58      | 79      | 90     | 44     | 23     | 7 |
| 14 | 87      | 100.408 | 41.710 | 55     | 34     | 6 |
| 15 | 157.516 | 37      | 31     | 65     | 44     | 5 |
| 16 | 45      | 67      | 52     | 75     | 54     | 4 |
| 17 | 74      | 96      | 72     | 85     | 64     | 4 |
| 18 | 157.603 | 100.525 | 93     | 96     | 75     | 3 |
| 19 | 32      | 54      | 41.814 | 70.906 | 85     | 2 |
| 20 | 61      | 84      | 35     | 16     | 95     | 0 |
| 21 | 90      | 100.613 | 55     | 26     | 29.506 | 9 |
| 22 | 157.720 | 42      | 76     | 37     | 16     | 8 |
| 23 | 49      | 71      | 97     | 47     | 26     | 7 |
| 24 | 78      | 100.701 | 41.918 | 57     | 37     | 6 |
| 25 | 157.807 | 30      | 38     | 67     | 47     | 5 |
| 26 | 36      | 59      | 59     | 78     | 57     | 4 |
| 27 | 65      | 88      | 80     | 88     | 68     | 3 |
| 28 | 94      | 100.818 | 42.001 | 98     | 78     | 2 |
| 29 | 157.923 | 47      | 22     | 71.008 | 88     | 1 |
| 30 | 52      | 76      | 42     | 19     | 99     | 0 |
| 31 | 81      | 100.906 | 63     | 29     | 29.609 | 9 |
| 32 | 158.010 | 35      | 84     | 39     | 19     | 8 |
| 33 | 40      | 65      | 42.105 | 49     | 30     | 7 |
| 34 | 69      | 94      | 26     | 60     | 40     | 6 |
| 35 | 98      | 101.023 | 47     | 70     | 50     | 5 |
| 36 | 158.127 | 53      | 68     | 80     | 61     | 4 |
| 37 | 56      | 82      | 89     | 90     | 71     | 3 |
| 38 | 85      | 101.112 | 42.210 | 71.100 | 81     | 2 |
| 39 | 158.214 | 41      | 30     | 11     | 92     | 1 |
| 40 | 43      | 70      | 51     | 21     | 29.702 | 0 |
| 41 | 72      | 101.200 | 72     | 31     | 12     | 9 |
| 42 | 158.301 | 29      | 93     | 41     | 23     | 8 |
| 43 | 30      | 69      | 42.314 | 52     | 33     | 7 |
| 44 | 60      | 88      | 35     | 62     | 43     | 6 |
| 45 | 89      | 101.318 | 56     | 72     | 54     | 5 |
| 46 | 158.418 | 47      | 77     | 82     | 64     | 4 |
| 47 | 47      | 77      | 98     | 92     | 74     | 3 |
| 48 | 76      | 101.406 | 42.419 | 71.203 | 85     | 2 |
| 49 | 158.505 | 36      | 40     | 13     | 95     | 1 |
| 50 | 34      | 65      | 61     | 23     | 29.805 | 0 |
| 51 | 63      | 95      | 82     | 33     | 16     | 9 |
| 52 | 92      | 101.524 | 42.503 | 43     | 26     | 8 |
| 53 | 158.621 | 54      | 24     | 54     | 37     | 7 |
| 54 | 50      | 83      | 45     | 64     | 47     | 6 |
| 55 | 80      | 101.613 | 66     | 74     | 57     | 5 |
| 56 | 158.709 | 42      | 87     | 84     | 68     | 4 |
| 57 | 38      | 72      | 42.609 | 94     | 78     | 3 |
| 58 | 67      | 101.702 | 30     | 71.305 | 88     | 2 |
| 59 | 96      | 31      | 51     | 15     | 99     | 1 |
| 60 | 158.825 | 61      | 72     | 25     | 29.909 | 0 |

| '  | L       | T       | E      | X      | Y      | '  |
|----|---------|---------|--------|--------|--------|----|
| 0  | 158.825 | 101.761 | 42.672 | 71.325 | 29.909 | 60 |
| 1  | 54      | 90      | 93     | 35     | 19     | 59 |
| 2  | 83      | 101.820 | 42.714 | 45     | 30     | 58 |
| 3  | 158.912 | 50      | 35     | 56     | 40     | 57 |
| 4  | 41      | 79      | 56     | 66     | 51     | 56 |
| 5  | 70      | 101.909 | 77     | 76     | 61     | 55 |
| 6  | 99      | 38      | 59     | 86     | 71     | 54 |
| 7  | 159.029 | 68      | 42.820 | 96     | 82     | 53 |
| 8  | 58      | 98      | 41     | 71.406 | 92     | 52 |
| 9  | 87      | 102.027 | 62     | 17     | 30.002 | 51 |
| 10 | 159.116 | 57      | 83     | 27     | 13     | 50 |
| 11 | 45      | 87      | 42.905 | 37     | 23     | 49 |
| 12 | 74      | 102.117 | 26     | 47     | 34     | 48 |
| 13 | 159.203 | 46      | 47     | 57     | 44     | 47 |
| 14 | 32      | 76      | 68     | 68     | 54     | 46 |
| 15 | 61      | 102.206 | 90     | 78     | 65     | 45 |
| 16 | 90      | 35      | 43.011 | 88     | 75     | 44 |
| 17 | 159.319 | 65      | 32     | 98     | 86     | 43 |
| 18 | 49      | 95      | 53     | 71.508 | 96     | 42 |
| 19 | 78      | 102.325 | 75     | 18     | 30.106 | 41 |
| 20 | 159.407 | 55      | 96     | 29     | 17     | 40 |
| 21 | 36      | 84      | 43.117 | 39     | 27     | 39 |
| 22 | 65      | 102.414 | 39     | 49     | 38     | 38 |
| 23 | 94      | 44      | 60     | 59     | 48     | 37 |
| 24 | 159.523 | 74      | 81     | 69     | 58     | 36 |
| 25 | 52      | 102.504 | 43.203 | 79     | 69     | 35 |
| 26 | 81      | 33      | 24     | 90     | 79     | 34 |
| 27 | 159.610 | 63      | 45     | 71.600 | 90     | 33 |
| 28 | 31      | 93      | 67     | 10     | 30.200 | 32 |
| 29 | 69      | 102.623 | 88     | 20     | 10     | 31 |
| 30 | 98      | 53      | 43.309 | 30     | 21     | 30 |
| 31 | 159.727 | 83      | 31     | 40     | 31     | 29 |
| 32 | 56      | 102.713 | 52     | 50     | 42     | 28 |
| 33 | 85      | 42      | 74     | 61     | 52     | 27 |
| 34 | 159.814 | 72      | 95     | 71     | 63     | 26 |
| 35 | 43      | 102.802 | 43.417 | 81     | 73     | 25 |
| 36 | 72      | 32      | 38     | 91     | 83     | 24 |
| 37 | 159.901 | 82      | 59     | 71.701 | 94     | 23 |
| 38 | 30      | 92      | 81     | 11     | 30.304 | 22 |
| 39 | 59      | 102.922 | 43.502 | 21     | 15     | 21 |
| 40 | 89      | 52      | 24     | 32     | 25     | 20 |
| 41 | 160.018 | 82      | 45     | 42     | 36     | 19 |
| 42 | 47      | 103.012 | 67     | 52     | 46     | 18 |
| 43 | 76      | 42      | 88     | 62     | 56     | 17 |
| 44 | 160.105 | 72      | 43.610 | 72     | 67     | 16 |
| 45 | 34      | 103.102 | 31     | 82     | 77     | 15 |
| 46 | 63      | 32      | 53     | 92     | 88     | 14 |
| 47 | 92      | 62      | 75     | 71.802 | 98     | 13 |
| 48 | 160.221 | 92      | 90     | 13     | 30.409 | 12 |
| 49 | 50      | 103.222 | 43.718 | 23     | 19     | 11 |
| 50 | 79      | 52      | 39     | 33     | 30     | 10 |
| 51 | 160.308 | 82      | 61     | 43     | 40     | 9  |
| 52 | 38      | 103.312 | 82     | 53     | 50     | 8  |
| 53 | 67      | 42      | 43.804 | 63     | 61     | 7  |
| 54 | 96      | 72      | 26     | 73     | 71     | 6  |
| 55 | 160.425 | 103.402 | 47     | 83     | 82     | 5  |
| 56 | 54      | 32      | 69     | 93     | 92     | 4  |
| 57 | 83      | 63      | 91     | 71.904 | 30.503 | 3  |
| 58 | 160.512 | 93      | 43.912 | 14     | 13     | 2  |
| 59 | 41      | 103.523 | 34     | 24     | 24     | 1  |
| 60 | 70      | 53      | 56     | 34     | 34     | 0  |

## 曲線函數表

| '  | L       | T       | E      | X      | Y      | ' |
|----|---------|---------|--------|--------|--------|---|
| 0  | 160.570 | 103.553 | 43.956 | 71.931 | 30.534 | 8 |
| 1  | 99      | 83      | 77     | 44     | 45     | 0 |
| 2  | 160.628 | 103.613 | 99     | 54     | 56     | 9 |
| 3  | 68      | 43      | 44.021 | 64     | 66     | 8 |
| 4  | 87      | 74      | 42     | 74     | 76     | 7 |
| 5  | 160.716 | 103.704 | 64     | 84     | 86     | 6 |
| 6  | 45      | 34      | 86     | 95     | 97     | 5 |
| 7  | 74      | 64      | 44.108 | 72.005 | 30.607 | 4 |
| 8  | 160.803 | 103.825 | 29     | 15     | 18     | 3 |
| 9  | 32      | 51      | 51     | 25     | 28     | 2 |
| 10 | 61      | 55      | 73     | 35     | 39     | 1 |
| 11 | 90      | 85      | 95     | 45     | 49     | 0 |
| 12 | 160.919 | 103.915 | 44.216 | 55     | 60     | 9 |
| 13 | 48      | 46      | 38     | 65     | 70     | 8 |
| 14 | 78      | 76      | 60     | 75     | 81     | 7 |
| 15 | 161.007 | 104.006 | 82     | 85     | 91     | 6 |
| 16 | 36      | 36      | 44.304 | 95     | 30.702 | 5 |
| 17 | 65      | 67      | 26     | 72.105 | 12     | 4 |
| 18 | 94      | 97      | 47     | 16     | 23     | 3 |
| 19 | 161.123 | 104.127 | 69     | 26     | 33     | 2 |
| 20 | 52      | 58      | 91     | 36     | 44     | 1 |
| 21 | 81      | 88      | 44.413 | 46     | 54     | 0 |
| 22 | 161.210 | 104.218 | 35     | 56     | 65     | 9 |
| 23 | 39      | 49      | 57     | 66     | 75     | 8 |
| 24 | 68      | 79      | 79     | 76     | 86     | 7 |
| 25 | 96      | 104.309 | 44.501 | 86     | 96     | 6 |
| 26 | 161.327 | 40      | 23     | 96     | 30.807 | 5 |
| 27 | 56      | 70      | 45     | 72.206 | 17     | 4 |
| 28 | 85      | 104.400 | 66     | 16     | 28     | 3 |
| 29 | 161.414 | 31      | 88     | 26     | 38     | 2 |
| 30 | 43      | 61      | 44.610 | 36     | 49     | 1 |
| 31 | 72      | 92      | 32     | 46     | 59     | 0 |
| 32 | 161.501 | 104.522 | 54     | 56     | 70     | 9 |
| 33 | 30      | 53      | 76     | 67     | 80     | 8 |
| 34 | 59      | 83      | 98     | 77     | 91     | 7 |
| 35 | 88      | 104.614 | 44.720 | 87     | 30.901 | 6 |
| 36 | 161.617 | 44      | 42     | 97     | 12     | 5 |
| 37 | 47      | 74      | 64     | 72.307 | 22     | 4 |
| 38 | 76      | 104.705 | 86     | 17     | 33     | 3 |
| 39 | 161.705 | 35      | 44.809 | 27     | 43     | 2 |
| 40 | 34      | 66      | 31     | 37     | 54     | 1 |
| 41 | 63      | 96      | 53     | 47     | 64     | 0 |
| 42 | 92      | 104.827 | 75     | 57     | 75     | 9 |
| 43 | 161.821 | 58      | 97     | 67     | 85     | 8 |
| 44 | 50      | 88      | 44.919 | 77     | 96     | 7 |
| 45 | 79      | 104.919 | 41     | 87     | 31.006 | 6 |
| 46 | 161.908 | 49      | 63     | 97     | 17     | 5 |
| 47 | 37      | 80      | 85     | 72.407 | 27     | 4 |
| 48 | 67      | 105.010 | 45.007 | 17     | 38     | 3 |
| 49 | 96      | 41      | 30     | 27     | 49     | 2 |
| 50 | 162.025 | 71      | 52     | 37     | 59     | 1 |
| 51 | 54      | 105.102 | 74     | 47     | 70     | 0 |
| 52 | 83      | 33      | 96     | 57     | 80     | 9 |
| 53 | 162.112 | 62      | 45.118 | 67     | 91     | 8 |
| 54 | 41      | 94      | 40     | 77     | 31.101 | 7 |
| 55 | 70      | 105.225 | 63     | 87     | 12     | 6 |
| 56 | 99      | 55      | 85     | 97     | 22     | 5 |
| 57 | 162.228 | 86      | 45.207 | 72.507 | 33     | 4 |
| 58 | 57      | 105.317 | 29     | 17     | 43     | 3 |
| 59 | 87      | 47      | 52     | 27     | 54     | 2 |
| 60 | 162.316 | 78      | 74     | 37     | 65     | 1 |



## 曲線函數表

|    | L       | T       | E      | X      | Y      |    |
|----|---------|---------|--------|--------|--------|----|
| 0  | 162.316 | 105.378 | 45.274 | 72.537 | 31.165 | 60 |
| 1  | 45      | 105.409 | 96     | 47     | 75     | 59 |
| 2  | 74      | 39      | 45.318 | 57     | 86     | 58 |
| 3  | 162.403 | 70      | 41     | 67     | 96     | 57 |
| 4  | 32      | 105.501 | 63     | 77     | 31.207 | 56 |
| 5  | 61      | 32      | 85     | 87     | 17     | 55 |
| 6  | 90      | 62      | 45.408 | 97     | 28     | 54 |
| 7  | 162.519 | 93      | 30     | 72.607 | 38     | 53 |
| 8  | 48      | 105.624 | 52     | 17     | 49     | 52 |
| 9  | 77      | 55      | 75     | 27     | 60     | 51 |
| 10 | 162.607 | 85      | 97     | 37     | 70     | 50 |
| 11 | 36      | 105.716 | 45.519 | 47     | 81     | 49 |
| 12 | 65      | 47      | 42     | 57     | 91     | 48 |
| 13 | 94      | 78      | 64     | 67     | 31.302 | 47 |
| 14 | 162.723 | 105.809 | 87     | 77     | 12     | 46 |
| 15 | 52      | 39      | 45.609 | 87     | 23     | 45 |
| 16 | 81      | 70      | 31     | 97     | 33     | 44 |
| 17 | 162.810 | 105.901 | 54     | 72.707 | 44     | 43 |
| 18 | 39      | 32      | 76     | 17     | 55     | 42 |
| 19 | 68      | 63      | 99     | 27     | 65     | 41 |
| 20 | 97      | 94      | 45.721 | 37     | 76     | 40 |
| 21 | 162.926 | 106.025 | 44     | 47     | 86     | 39 |
| 22 | 56      | 56      | 66     | 57     | 97     | 38 |
| 23 | 85      | 86      | 89     | 67     | 31.408 | 37 |
| 24 | 163.014 | 106.117 | 45.811 | 77     | 18     | 36 |
| 25 | 43      | 43      | 34     | 87     | 29     | 35 |
| 26 | 72      | 79      | 56     | 97     | 39     | 34 |
| 27 | 163.101 | 106.210 | 79     | 72.807 | 50     | 33 |
| 28 | 30      | 41      | 45.901 | 17     | 60     | 32 |
| 29 | 59      | 72      | 24     | 27     | 71     | 31 |
| 30 | 88      | 106.303 | 46     | 37     | 82     | 30 |
| 31 | 163.217 | 34      | 69     | 47     | 92     | 29 |
| 32 | 46      | 65      | 92     | 57     | 31.503 | 28 |
| 33 | 76      | 96      | 46.014 | 67     | 13     | 27 |
| 34 | 163.305 | 106.427 | 37     | 77     | 24     | 26 |
| 35 | 34      | 53      | 59     | 87     | 35     | 25 |
| 36 | 63      | 89      | 82     | 97     | 45     | 24 |
| 37 | 92      | 106.520 | 46.105 | 72.907 | 56     | 23 |
| 38 | 163.421 | 51      | 27     | 17     | 66     | 22 |
| 39 | 50      | 82      | 50     | 27     | 77     | 21 |
| 40 | 79      | 106.613 | 73     | 37     | 88     | 20 |
| 41 | 163.508 | 44      | 95     | 47     | 98     | 19 |
| 42 | 37      | 76      | 46.218 | 57     | 31.609 | 18 |
| 43 | 66      | 106.707 | 41     | 66     | 19     | 17 |
| 44 | 96      | 33      | 63     | 76     | 30     | 16 |
| 45 | 163.625 | 69      | 86     | 86     | 41     | 15 |
| 46 | 54      | 106.800 | 46.309 | 96     | 51     | 14 |
| 47 | 83      | 31      | 31     | 73.006 | 62     | 13 |
| 48 | 163.712 | 62      | 54     | 16     | 73     | 12 |
| 49 | 41      | 93      | 77     | 26     | 83     | 11 |
| 50 | 70      | 106.925 | 48.400 | 36     | 94     | 10 |
| 51 | 99      | 22      | 22     | 46     | 31.704 | 9  |
| 52 | 163.828 | 87      | 45     | 56     | 15     | 8  |
| 53 | 57      | 107.018 | 68     | 66     | 26     | 7  |
| 54 | 86      | 49      | 91     | 76     | 36     | 6  |
| 55 | 163.916 | 81      | 46.514 | 86     | 47     | 5  |
| 56 | 45      | 107.112 | 37     | 96     | 58     | 4  |
| 57 | 74      | 43      | 59     | 73.106 | 68     | 3  |
| 58 | 164.003 | 74      | 82     | 15     | 79     | 2  |
| 59 | 32      | 107.206 | 46.605 | 25     | 89     | 1  |
| 60 | 61      | 37      | 28     | 35     | 31.800 | 0  |

## 曲線函數表

| '   | L       | T       | E      | X      | Y      | '   |
|-----|---------|---------|--------|--------|--------|-----|
| 0   | 164.061 | 107.237 | 46.628 | 73.135 | 31.800 | 6 0 |
| 1   | 90      | 68      | 51     | 45     | 11     | 9 9 |
| 2   | 164.119 | 99      | 74     | 55     | 21     | 5 8 |
| 3   | 48      | 107.331 | 97     | 65     | 32     | 5 7 |
| 4   | 77      | 62      | 46.719 | 75     | 43     | 5 6 |
| 5   | 164.206 | 93      | 42     | 85     | 53     | 5 5 |
| 6   | 35      | 107.425 | 65     | 95     | 64     | 4 4 |
| 7   | 65      | 56      | 88     | 73.205 | 75     | 3 3 |
| 8   | 94      | 87      | 46.811 | 15     | 85     | 2 2 |
| 9   | 164.323 | 107.519 | 84     | 25     | 96     | 1 1 |
| 1 0 | 52      | 50      | 57     | 34     | 31.907 | 5 0 |
| 1 1 | 81      | 81      | 80     | 44     | 17     | 4 9 |
| 1 2 | 164.410 | 107.613 | 46.903 | 54     | 28     | 4 8 |
| 1 3 | 39      | 44      | 26     | 64     | 39     | 4 7 |
| 1 4 | 68      | 76      | 49     | 74     | 49     | 4 6 |
| 1 5 | 97      | 107.707 | 72     | 84     | 60     | 4 5 |
| 1 6 | 164.526 | 38      | 95     | 94     | 70     | 4 4 |
| 1 7 | 55      | 70      | 47.018 | 73.304 | 81     | 4 3 |
| 1 8 | 85      | 107.801 | 41     | 14     | 92     | 4 2 |
| 1 9 | 164.614 | 33      | 64     | 24     | 32.002 | 4 1 |
| 2 0 | 43      | 64      | 87     | 33     | 13     | 4 0 |
| 2 1 | 72      | 96      | 47.110 | 43     | 24     | 3 9 |
| 2 2 | 164.701 | 107.927 | 33     | 53     | 34     | 3 8 |
| 2 3 | 30      | 59      | 57     | 63     | 45     | 3 7 |
| 2 4 | 59      | 90      | 80     | 73     | 56     | 3 6 |
| 2 5 | 88      | 108.022 | 47.203 | 83     | 66     | 3 5 |
| 2 6 | 164.817 | 53      | 26     | 93     | 77     | 3 4 |
| 2 7 | 46      | 65      | 49     | 73.403 | 88     | 3 3 |
| 2 8 | 75      | 108.116 | 72     | 13     | 99     | 3 2 |
| 2 9 | 164.905 | 48      | 96     | 23     | 32.109 | 3 1 |
| 3 0 | 34      | 79      | 47.319 | 32     | 20     | 3 0 |
| 3 1 | 63      | 108.211 | 42     | 42     | 31     | 2 9 |
| 3 2 | 92      | 42      | 65     | 52     | 41     | 2 8 |
| 3 3 | 165.021 | 74      | 88     | 62     | 52     | 2 7 |
| 3 4 | 50      | 108.306 | 47.411 | 72     | 63     | 2 6 |
| 3 5 | 79      | 37      | 35     | 82     | 73     | 2 5 |
| 3 6 | 165.108 | 69      | 58     | 92     | 84     | 2 4 |
| 3 7 | 37      | 108.401 | 81     | 73.501 | 95     | 2 3 |
| 3 8 | 66      | 32      | 47.504 | 11     | 32.205 | 2 2 |
| 3 9 | 95      | 64      | 28     | 21     | 16     | 2 1 |
| 4 0 | 165.225 | 95      | 51     | 31     | 27     | 2 0 |
| 4 1 | 54      | 108.527 | 74     | 41     | 37     | 1 9 |
| 4 2 | 83      | 59      | 97     | 51     | 48     | 1 8 |
| 4 3 | 165.312 | 91      | 47.621 | 61     | 59     | 1 7 |
| 4 4 | 41      | 108.622 | 44     | 70     | 70     | 1 6 |
| 4 5 | 70      | 54      | 67     | 80     | 80     | 1 5 |
| 4 6 | 99      | 86      | 91     | 90     | 91     | 1 4 |
| 4 7 | 165.428 | 108.717 | 47.714 | 73.600 | 32.302 | 1 3 |
| 4 8 | 57      | 49      | 37     | 10     | 12     | 1 2 |
| 4 9 | 86      | 81      | 61     | 20     | 23     | 1 1 |
| 5 0 | 165.515 | 108.813 | 84     | 29     | 34     | 1 0 |
| 5 1 | 44      | 44      | 47.808 | 39     | 44     | 9 9 |
| 5 2 | 74      | 76      | 31     | 49     | 55     | 9 8 |
| 5 3 | 165.603 | 108.908 | 54     | 59     | 66     | 9 7 |
| 5 4 | 32      | 40      | 78     | 69     | 77     | 9 6 |
| 5 5 | 61      | 72      | 47.901 | 79     | 87     | 9 5 |
| 5 6 | 90      | 109.003 | 25     | 88     | 98     | 9 4 |
| 5 7 | 165.719 | 35      | 48     | 98     | 32.409 | 9 3 |
| 5 8 | 48      | 67      | 72     | 73.708 | 19     | 9 2 |
| 5 9 | 77      | 99      | 95     | 18     | 30     | 9 1 |
| 6 0 | 165.806 | 109.131 | 48.019 | 28     | 41     | 9 0 |

## 曲線函數表

|    | L       | T       | E      | X      | Y      |     |
|----|---------|---------|--------|--------|--------|-----|
| 0  | 165.806 | 103.131 | 48.019 | 73.728 | 32.441 | 6 0 |
| 1  | 35      | 63      | 42     | 38     | 52     | 6 1 |
| 2  | 64      | 95      | 66     | 47     | 62     | 6 2 |
| 3  | 94      | 109.226 | 89     | 57     | 73     | 6 3 |
| 4  | 165.923 | 58      | 48.118 | 67     | 84     | 6 4 |
| 5  | 52      | 90      | 36     | 77     | 95     | 6 5 |
| 6  | 81      | 109.322 | 60     | 87     | 32.505 | 6 6 |
| 7  | 166.010 | 54      | 83     | 96     | 16     | 6 7 |
| 8  | 39      | 86      | 48.207 | 73.806 | 27     | 6 8 |
| 9  | 68      | 109.418 | 31     | 16     | 37     | 6 9 |
| 10 | 97      | 50      | 54     | 26     | 48     | 5 0 |
| 11 | 166.126 | 82      | 78     | 36     | 59     | 5 1 |
| 12 | 55      | 109.514 | 48.301 | 46     | 70     | 5 2 |
| 13 | 84      | 46      | 25     | 55     | 80     | 5 3 |
| 14 | 166.214 | 78      | 49     | 65     | 91     | 5 4 |
| 15 | 43      | 109.610 | 72     | 75     | 32.602 | 5 5 |
| 16 | 72      | 42      | 96     | 85     | 13     | 5 6 |
| 17 | 166.301 | 74      | 48.420 | 95     | 23     | 5 7 |
| 18 | 30      | 109.706 | 43     | 73.904 | 34     | 5 8 |
| 19 | 59      | 38      | 67     | 14     | 45     | 5 9 |
| 20 | 88      | 70      | 91     | 24     | 56     | 4 0 |
| 21 | 166.417 | 109.802 | 48.514 | 34     | 66     | 4 1 |
| 22 | 46      | 34      | 38     | 43     | 77     | 4 2 |
| 23 | 75      | 66      | 62     | 53     | 88     | 4 3 |
| 24 | 166.504 | 99      | 85     | 63     | 99     | 4 4 |
| 25 | 33      | 109.931 | 48.609 | 73     | 32.709 | 4 5 |
| 26 | 63      | 63      | 33     | 83     | 20     | 4 6 |
| 27 | 92      | 95      | 57     | 92     | 31     | 4 7 |
| 28 | 166.621 | 110.027 | 81     | 74.002 | 42     | 4 8 |
| 29 | 50      | 59      | 48.704 | 12     | 53     | 4 9 |
| 30 | 79      | 91      | 28     | 22     | 63     | 3 0 |
| 31 | 166.708 | 110.124 | 52     | 32     | 74     | 3 1 |
| 32 | 37      | 56      | 76     | 41     | 85     | 3 2 |
| 33 | 66      | 88      | 48.800 | 51     | 96     | 3 3 |
| 34 | 95      | 110.220 | 24     | 61     | 32.806 | 3 4 |
| 35 | 166.824 | 52      | 48     | 71     | 17     | 3 5 |
| 36 | 53      | 85      | 71     | 80     | 28     | 3 6 |
| 37 | 83      | 110.317 | 95     | 90     | 39     | 3 7 |
| 38 | 166.912 | 49      | 48.919 | 74.100 | 49     | 3 8 |
| 39 | 41      | 81      | 43     | 10     | 60     | 3 9 |
| 40 | 70      | 110.414 | 67     | 19     | 71     | 2 0 |
| 41 | 99      | 46      | 91     | 29     | 82     | 2 1 |
| 42 | 167.028 | 78      | 49.015 | 39     | 93     | 2 2 |
| 43 | 57      | 110.510 | 39     | 49     | 32.903 | 2 3 |
| 44 | 86      | 43      | 63     | 59     | 14     | 2 4 |
| 45 | 167.115 | 75      | 87     | 68     | 25     | 2 5 |
| 46 | 44      | 110.607 | 49.111 | 78     | 36     | 2 6 |
| 47 | 73      | 40      | 35     | 88     | 46     | 2 7 |
| 48 | 167.203 | 72      | 59     | 98     | 57     | 2 8 |
| 49 | 32      | 110.705 | 83     | 74.207 | 68     | 2 9 |
| 50 | 61      | 37      | 49.207 | 17     | 79     | 1 0 |
| 51 | 90      | 69      | 31     | 27     | 90     | 1 1 |
| 52 | 167.319 | 110.802 | 55     | 37     | 33.000 | 1 2 |
| 53 | 48      | 34      | 79     | 46     | 11     | 1 3 |
| 54 | 77      | 66      | 49.303 | 56     | 22     | 1 4 |
| 55 | 167.406 | 99      | 27     | 66     | 33     | 1 5 |
| 56 | 35      | 110.931 | 51     | 75     | 44     | 1 6 |
| 57 | 64      | 64      | 75     | 85     | 54     | 1 7 |
| 58 | 93      | 96      | 99     | 95     | 65     | 1 8 |
| 59 | 167.523 | 111.029 | 49.423 | 74.305 | 76     | 1 9 |
| 60 | 52      | 61      | 48     | 14     | 87     | 1 0 |

## 曲線函數表

|    | L       | T       | E      | X      | Y      |   |
|----|---------|---------|--------|--------|--------|---|
| 0  | 187.552 | 111.061 | 48.448 | 74.314 | 33.087 | 8 |
| 1  | 81      | 94      | 72     | 24     | 98     | 5 |
| 2  | 187.610 | 111.126 | 96     | 34     | 33.109 | 5 |
| 3  | 39      | 59      | 48.450 | 44     | 19     | 5 |
| 4  | 68      | 91      | 44     | 53     | 30     | 5 |
| 5  | 97      | 111.224 | 68     | 63     | 41     | 5 |
| 6  | 187.726 | 56      | 93     | 73     | 52     | 5 |
| 7  | 55      | 89      | 48.617 | 83     | 63     | 5 |
| 8  | 84      | 111.321 | 41     | 92     | 74     | 5 |
| 9  | 157.813 | 54      | 65     | 74.402 | 84     | 5 |
| 10 | 42      | 87      | 90     | 12     | 95     | 5 |
| 11 | 72      | 111.419 | 48.714 | 21     | 33.206 | 4 |
| 12 | 187.901 | 52      | 38     | 31     | 17     | 4 |
| 13 | 30      | 84      | 62     | 41     | 28     | 4 |
| 14 | 59      | 111.517 | 87     | 51     | 38     | 4 |
| 15 | 88      | 90      | 48.811 | 60     | 49     | 4 |
| 16 | 188.017 | 82      | 35     | 70     | 60     | 4 |
| 17 | 46      | 111.615 | 60     | 80     | 71     | 4 |
| 18 | 75      | 48      | 84     | 89     | 82     | 4 |
| 19 | 188.104 | 80      | 48.908 | 99     | 93     | 4 |
| 20 | 33      | 111.713 | 33     | 74.509 | 33.303 | 4 |
| 1  | 62      | 46      | 57     | 18     | 14     | 3 |
| 2  | 188.221 | 78      | 81     | 28     | 25     | 3 |
| 3  | 92      | 111.811 | 50.006 | 38     | 36     | 3 |
| 4  | 50      | 44      | 30     | 48     | 47     | 3 |
| 5  | 79      | 77      | 55     | 57     | 58     | 3 |
| 6  | 188.308 | 111.909 | 79     | 67     | 68     | 3 |
| 7  | 37      | 42      | 60.103 | 77     | 79     | 3 |
| 8  | 66      | 75      | 28     | 86     | 90     | 3 |
| 9  | 95      | 112.008 | 52     | 96     | 33.401 | 3 |
| 10 | 188.424 | 40      | 77     | 74.606 | 12     | 3 |
| 11 | 53      | 73      | 50.201 | 15     | 23     | 3 |
| 12 | 82      | 112.106 | 26     | 25     | 33     | 3 |
| 13 | 188.512 | 39      | 50     | 35     | 44     | 3 |
| 14 | 41      | 72      | 75     | 44     | 55     | 3 |
| 15 | 70      | 112.205 | 99     | 54     | 66     | 2 |
| 16 | 188.628 | 37      | 58.324 | 64     | 77     | 2 |
| 17 | 99      | 70      | 48     | 73     | 88     | 2 |
| 18 | 58      | 112.303 | 73     | 83     | 99     | 2 |
| 19 | 86      | 36      | 97     | 93     | 33.509 | 2 |
| 20 | 188.715 | 69      | 50.422 | 74.702 | 20     | 2 |
| 1  | 44      | 112.402 | 47     | 12     | 31     | 1 |
| 2  | 73      | 35      | 71     | 22     | 42     | 1 |
| 3  | 188.802 | 68      | 96     | 31     | 53     | 1 |
| 4  | 32      | 112.501 | 50.520 | 41     | 64     | 1 |
| 5  | 61      | 34      | 45     | 51     | 75     | 1 |
| 6  | 188.919 | 112.600 | 70     | 60     | 86     | 1 |
| 7  | 90      | 67      | 70     | 70     | 96     | 1 |
| 8  | 48      | 112.699 | 50.619 | 80     | 33.607 | 1 |
| 9  | 77      | 33      | 44     | 89     | 18     | 1 |
| 10 | 189.006 | 99      | 68     | 74.809 | 29     | 1 |
| 11 | 35      | 112.732 | 93     | 18     | 40     | 9 |
| 12 | 64      | 85      | 50.718 | 28     | 51     | 8 |
| 13 | 189.122 | 112.831 | 43     | 38     | 62     | 7 |
| 14 | 93      | 67      | 67     | 47     | 73     | 6 |
| 15 | 51      | 64      | 92     | 47     | 83     | 5 |
| 16 | 189.210 | 112.930 | 50.817 | 57     | 94     | 4 |
| 17 | 81      | 37      | 42     | 67     | 16     | 3 |
| 18 | 39      | 63      | 66     | 76     | 27     | 2 |
| 19 | 68      | 96      | 91     | 86     | 33     | 1 |
| 20 | 189.329 | 113.029 | 50.916 | 96     | 1      | 0 |

| '  | L       | T       | E      | X      | Y      | ' |
|----|---------|---------|--------|--------|--------|---|
| 0  | 169.297 | 113.029 | 50.916 | 74.896 | 33.738 | 6 |
| 1  | 169.326 | 63      | 41     | 74.905 | 49     | 9 |
| 2  | 55      | 96      | 66     | 15     | 60     | 5 |
| 3  | 84      | 113.129 | 90     | 24     | 71     | 7 |
| 4  | 169.413 | 62      | 51.015 | 34     | 82     | 5 |
| 5  | 42      | 95      | 40     | 44     | 92     | 5 |
| 6  | 71      | 113.228 | 65     | 53     | 33.903 | 5 |
| 7  | 169.501 | 62      | 90     | 63     | 14     | 5 |
| 8  | 30      | 95      | 51.115 | 73     | 25     | 5 |
| 9  | 59      | 113.328 | 40     | 82     | 36     | 5 |
| 10 | 89      | 61      | 65     | 92     | 47     | 5 |
| 11 | 169.617 | 94      | 90     | 75.001 | 58     | 4 |
| 12 | 45      | 113.428 | 51.215 | 11     | 69     | 4 |
| 13 | 75      | 61      | 39     | 21     | 80     | 4 |
| 14 | 169.704 | 94      | 64     | 30     | 91     | 4 |
| 15 | 33      | 113.528 | 89     | 40     | 33.902 | 4 |
| 16 | 62      | 61      | 51.314 | 50     | 12     | 4 |
| 17 | 91      | 94      | 39     | 59     | 23     | 4 |
| 18 | 169.821 | 113.627 | 64     | 69     | 34     | 4 |
| 19 | 50      | 61      | 89     | 78     | 45     | 4 |
| 20 | 79      | 94      | 51.414 | 88     | 56     | 4 |
| 21 | 169.908 | 113.727 | 40     | 98     | 67     | 3 |
| 22 | 37      | 61      | 65     | 75.107 | 78     | 3 |
| 23 | 66      | 94      | 90     | 17     | 89     | 3 |
| 24 | 95      | 113.828 | 51.515 | 26     | 34.000 | 3 |
| 25 | 170.024 | 61      | 40     | 36     | 11     | 3 |
| 26 | 53      | 94      | 65     | 46     | 22     | 3 |
| 27 | 82      | 113.928 | 90     | 55     | 33     | 3 |
| 28 | 170.111 | 61      | 51.615 | 65     | 44     | 3 |
| 29 | 41      | 95      | 40     | 74     | 54     | 3 |
| 30 | 70      | 114.028 | 65     | 84     | 65     | 3 |
| 31 | 99      | 62      | 91     | 94     | 76     | 2 |
| 32 | 170.228 | 95      | 51.715 | 75.208 | 87     | 2 |
| 33 | 57      | 114.129 | 41     | 13     | 98     | 2 |
| 34 | 86      | 62      | 66     | 22     | 34.109 | 2 |
| 35 | 170.315 | 96      | 91     | 32     | 20     | 2 |
| 36 | 44      | 114.229 | 51.817 | 41     | 31     | 2 |
| 37 | 73      | 63      | 42     | 51     | 42     | 2 |
| 38 | 170.402 | 96      | 67     | 61     | 53     | 2 |
| 39 | 31      | 114.330 | 92     | 70     | 64     | 2 |
| 40 | 60      | 66      | 51.918 | 80     | 75     | 2 |
| 41 | 90      | 97      | 43     | 89     | 86     | 1 |
| 42 | 170.519 | 114.430 | 68     | 99     | 97     | 1 |
| 43 | 48      | 64      | 93     | 75.308 | 34.208 | 1 |
| 44 | 77      | 98      | 52.019 | 18     | 19     | 1 |
| 45 | 170.606 | 114.531 | 44     | 28     | 30     | 1 |
| 46 | 35      | 65      | 69     | 37     | 41     | 1 |
| 47 | 64      | 98      | 95     | 47     | 51     | 1 |
| 48 | 93      | 114.632 | 52.120 | 56     | 62     | 1 |
| 49 | 170.722 | 66      | 45     | 66     | 73     | 1 |
| 50 | 51      | 99      | 71     | 75     | 84     | 1 |
| 51 | 80      | 114.733 | 96     | 85     | 95     | 0 |
| 52 | 170.810 | 87      | 52.222 | 95     | 34.306 | 0 |
| 53 | 39      | 114.801 | 47     | 75.404 | 17     | 0 |
| 54 | 68      | 34      | 72     | 14     | 28     | 0 |
| 55 | 97      | 68      | 95     | 23     | 39     | 0 |
| 56 | 170.926 | 114.902 | 52.323 | 33     | 50     | 0 |
| 57 | 55      | 35      | 49     | 42     | 61     | 0 |
| 58 | 84      | 63      | 74     | 52     | 72     | 0 |
| 59 | 171.013 | 115.003 | 52.400 | 61     | 83     | 0 |
| 60 | 42      | 37      | 25     | 71     | 94     | 0 |

| '   | L       | T       | E      | X      | Y      | '   |
|-----|---------|---------|--------|--------|--------|-----|
| 0   | 171.042 | 115.037 | 52.425 | 75.471 | 34.394 | 6 0 |
| 1   | 71      | 71      | 51     | 80     | 34.405 | 6 9 |
| 2   | 171.100 | 115.104 | 76     | 90     | 15     | 5 8 |
| 3   | 39      | 38      | 52.532 | 75.500 | 27     | 5 7 |
| 4   | 59      | 72      | 27     | 9      | 38     | 5 6 |
| 5   | 88      | 115.206 | 53     | 19     | 49     | 5 5 |
| 6   | 171.217 | 40      | 78     | 28     | 60     | 5 4 |
| 7   | 46      | 74      | 52.604 | 38     | 71     | 5 3 |
| 8   | 75      | 115.307 | 30     | 47     | 82     | 5 2 |
| 9   | 171.304 | 41      | 55     | 57     | 93     | 5 1 |
| 1 0 | 33      | 75      | 81     | 66     | 34.504 | 5 0 |
| 1 1 | 62      | 115.409 | 52.707 | 76     | 15     | 4 9 |
| 1 2 | 91      | 43      | 32     | 85     | 26     | 4 8 |
| 1 3 | 171.420 | 77      | 58     | 95     | 37     | 4 7 |
| 1 4 | 50      | 115.511 | 83     | 75.604 | 48     | 4 6 |
| 1 5 | 79      | 45      | 52.809 | 14     | 59     | 4 5 |
| 1 6 | 171.508 | 79      | 35     | 23     | 70     | 4 4 |
| 1 7 | 37      | 115.613 | 61     | 33     | 81     | 4 3 |
| 1 8 | 66      | 47      | 86     | 42     | 92     | 4 2 |
| 1 9 | 95      | 81      | 52.912 | 52     | 34.602 | 4 1 |
| 2 0 | 171.624 | 115.715 | 38     | 61     | 14     | 4 0 |
| 2 1 | 52      | 49      | 63     | 71     | 25     | 3 9 |
| 2 2 | 82      | 83      | 89     | 80     | 36     | 3 8 |
| 2 3 | 171.711 | 115.817 | 53.015 | 90     | 47     | 3 7 |
| 2 4 | 40      | 51      | 41     | 99     | 58     | 3 6 |
| 2 5 | 69      | 85      | 67     | 75.709 | 69     | 3 5 |
| 2 6 | 99      | 115.919 | 92     | 18     | 80     | 3 4 |
| 2 7 | 171.828 | 53      | 53.118 | 28     | 91     | 3 3 |
| 2 8 | 57      | 87      | 44     | 37     | 91     | 3 2 |
| 2 9 | 85      | 116.022 | 70     | 47     | 34.702 | 3 1 |
| 3 0 | 171.915 | 56      | 96     | 56     | 24     | 3 0 |
| 3 1 | 44      | 90      | 53.222 | 65     | 35     | 2 9 |
| 3 2 | 73      | 116.124 | 47     | 75     | 46     | 2 8 |
| 3 3 | 172.002 | 68      | 73     | 85     | 57     | 2 7 |
| 3 4 | 31      | 92      | 93     | 94     | 68     | 2 6 |
| 3 5 | 60      | 116.226 | 53.325 | 75.804 | 79     | 2 5 |
| 3 6 | 89      | 61      | 51     | 13     | 90     | 2 4 |
| 3 7 | 172.119 | 95      | 77     | 23     | 34.801 | 2 3 |
| 3 8 | 43      | 116.329 | 53.403 | 32     | 12     | 2 2 |
| 3 9 | 77      | 63      | 29     | 42     | 23     | 2 1 |
| 4 0 | 172.206 | 98      | 55     | 51     | 34     | 2 0 |
| 4 1 | 35      | 116.432 | 81     | 61     | 45     | 1 9 |
| 4 2 | 64      | 66      | 53.507 | 70     | 56     | 1 8 |
| 4 3 | 93      | 116.500 | 33     | 80     | 67     | 1 7 |
| 4 4 | 172.322 | 35      | 59     | 89     | 78     | 1 6 |
| 4 5 | 51      | 69      | 85     | 99     | 89     | 1 5 |
| 4 6 | 80      | 116.603 | 53.611 | 75.908 | 34.900 | 1 4 |
| 4 7 | 172.409 | 38      | 37     | 18     | 11     | 1 3 |
| 4 8 | 39      | 72      | 63     | 27     | 22     | 1 2 |
| 4 9 | 68      | 116.705 | 89     | 37     | 34     | 1 1 |
| 5 0 | 97      | 41      | 53.715 | 46     | 45     | 1 0 |
| 5 1 | 172.526 | 75      | 41     | 55     | 56     | 9 9 |
| 5 2 | 55      | 116.809 | 67     | 65     | 67     | 8 8 |
| 5 3 | 84      | 44      | 94     | 74     | 78     | 7 7 |
| 5 4 | 172.613 | 78      | 53.820 | 84     | 89     | 6 6 |
| 5 5 | 42      | 116.913 | 46     | 93     | 35.000 | 5 4 |
| 5 6 | 71      | 47      | 72     | 76.003 | 11     | 4 3 |
| 5 7 | 172.700 | 82      | 98     | 12     | 22     | 3 2 |
| 5 8 | 29      | 117.016 | 53.924 | 22     | 33     | 2 1 |
| 5 9 | 59      | 50      | 51     | 31     | 44     | 1 0 |
| 6 0 | 88      | 85      | 77     | 41     | 55     | 0   |

| '  | L       | TL      | E      | X      | Y      | '   |
|----|---------|---------|--------|--------|--------|-----|
| 0  | 172.788 | 117.085 | 53.977 | 76.041 | 35.055 | 60  |
| 1  | 172.817 | 117.119 | 54.003 | 50     | 66     | 61  |
| 2  | 46      | 54      | 29     | 59     | 77     | 62  |
| 3  | 75      | 86      | 66     | 69     | 88     | 63  |
| 4  | 172.904 | 117.223 | 82     | 78     | 99     | 64  |
| 5  | 33      | 57      | 54.108 | 88     | 35.110 | 65  |
| 6  | 62      | 92      | 34     | 97     | 22     | 66  |
| 7  | 91      | 117.327 | 61     | 76.107 | 33     | 67  |
| 8  | 173.020 | 61      | 87     | 16     | 44     | 68  |
| 9  | 49      | 96      | 54.213 | 25     | 55     | 69  |
| 10 | 78      | 117.430 | 40     | 35     | 66     | 70  |
| 11 | 173.108 | 65      | 66     | 44     | 77     | 71  |
| 12 | 37      | 117.500 | 92     | 54     | 88     | 72  |
| 13 | 66      | 34      | 54.319 | 63     | 99     | 73  |
| 14 | 95      | 69      | 45     | 73     | 35.210 | 74  |
| 15 | 173.224 | 117.603 | 72     | 82     | 21     | 75  |
| 16 | 53      | 38      | 98     | 91     | 32     | 76  |
| 17 | 82      | 73      | 54.424 | 76.201 | 43     | 77  |
| 18 | 173.311 | 117.708 | 51     | 10     | 54     | 78  |
| 19 | 40      | 42      | 77     | 20     | 66     | 79  |
| 20 | 69      | 77      | 54.504 | 29     | 77     | 80  |
| 21 | 98      | 117.812 | 30     | 39     | 88     | 81  |
| 22 | 173.428 | 46      | 57     | 48     | 99     | 82  |
| 23 | 57      | 81      | 83     | 57     | 35.310 | 83  |
| 24 | 86      | 117.916 | 54.610 | 67     | 21     | 84  |
| 25 | 173.515 | 51      | 36     | 76     | 32     | 85  |
| 26 | 44      | 86      | 63     | 86     | 43     | 86  |
| 27 | 73      | 118.020 | 89     | 95     | 54     | 87  |
| 28 | 173.602 | 55      | 54.716 | 76.304 | 65     | 88  |
| 29 | 31      | 90      | 42     | 14     | 76     | 89  |
| 30 | 60      | 118.125 | 69     | 23     | 88     | 90  |
| 31 | 89      | 60      | 96     | 33     | 99     | 91  |
| 32 | 173.718 | 95      | 54.822 | 42     | 35.410 | 92  |
| 33 | 48      | 118.229 | 49     | 51     | 21     | 93  |
| 34 | 77      | 84      | 75     | 61     | 32     | 94  |
| 35 | 173.806 | 99      | 54.902 | 70     | 43     | 95  |
| 36 | 35      | 118.334 | 29     | 80     | 54     | 96  |
| 37 | 64      | 69      | 55     | 89     | 65     | 97  |
| 38 | 93      | 118.404 | 82     | 98     | 76     | 98  |
| 39 | 173.922 | 33      | 55.009 | 76.408 | 88     | 99  |
| 40 | 51      | 74      | 35     | 17     | 99     | 100 |
| 41 | 80      | 118.509 | 62     | 26     | 35.510 | 101 |
| 42 | 174.009 | 44      | 99     | 35     | 21     | 102 |
| 43 | 38      | 79      | 55.116 | 45     | 32     | 103 |
| 44 | 68      | 118.614 | 42     | 55     | 43     | 104 |
| 45 | 97      | 49      | 69     | 64     | 54     | 105 |
| 46 | 174.126 | 84      | 96     | 73     | 65     | 106 |
| 47 | 85      | 118.719 | 55.223 | 83     | 76     | 107 |
| 48 | 84      | 54      | 50     | 92     | 88     | 108 |
| 49 | 174.213 | 89      | 76     | 76.501 | 99     | 109 |
| 50 | 42      | 118.824 | 55.303 | 11     | 35.610 | 110 |
| 51 | 71      | 55      | 30     | 20     | 21     | 111 |
| 52 | 174.300 | 94      | 57     | 30     | 32     | 112 |
| 53 | 29      | 118.929 | 84     | 39     | 43     | 113 |
| 54 | 58      | 64      | 55.411 | 48     | 54     | 114 |
| 55 | 87      | 99      | 38     | 58     | 65     | 115 |
| 56 | 174.417 | 119.035 | 65     | 67     | 77     | 116 |
| 57 | 46      | 70      | 92     | 76     | 88     | 117 |
| 58 | 75      | 118.105 | 55.519 | 86     | 99     | 118 |
| 59 | 174.504 | 40      | 45     | 95     | 35.710 | 119 |
| 60 | 33      | 75      | 72     | 76.604 | 21     | 120 |

## 曲線函數表

|    | L       | T       | E      | X      | Y      |    |
|----|---------|---------|--------|--------|--------|----|
| 0  | 174.533 | 119.175 | 55.572 | 76.604 | 35.721 | 60 |
| 1  | 52      | 119.211 | 99     | 14     | 32     | 59 |
| 2  | 91      | 46      | 55.626 | 23     | 43     | 58 |
| 3  | 174.620 | 81      | 53     | 32     | 55     | 57 |
| 4  | 49      | 119.316 | 80     | 42     | 66     | 56 |
| 5  | 78      | 51      | 55.707 | 51     | 77     | 55 |
| 6  | 174.707 | 87      | 34     | 60     | 88     | 54 |
| 7  | 37      | 119.422 | 61     | 70     | 99     | 53 |
| 8  | 66      | 57      | 89     | 79     | 35.810 | 52 |
| 9  | 95      | 93      | 55.816 | 88     | 22     | 51 |
| 10 | 174.824 | 119.528 | 43     | 98     | 33     | 50 |
| 11 | 53      | 63      | 70     | 76.707 | 44     | 49 |
| 12 | 82      | 99      | 97     | 16     | 55     | 48 |
| 13 | 174.911 | 119.634 | 55.924 | 25     | 66     | 47 |
| 14 | 40      | 69      | 51     | 35     | 77     | 46 |
| 15 | 69      | 119.705 | 78     | 44     | 88     | 45 |
| 16 | 98      | 40      | 58.005 | 54     | 35.900 | 44 |
| 17 | 175.027 | 76      | 33     | 63     | 11     | 43 |
| 18 | 57      | 119.811 | 60     | 72     | 22     | 42 |
| 19 | 86      | 46      | 87     | 82     | 33     | 41 |
| 20 | 175.115 | 92      | 56.114 | 91     | 44     | 40 |
| 1  | 44      | 119.917 | 41     | 76.800 | 55     | 39 |
| 2  | 73      | 53      | 69     | 10     | 67     | 38 |
| 3  | 175.202 | 88      | 96     | 19     | 78     | 37 |
| 4  | 31      | 120.024 | 58.223 | 28     | 89     | 36 |
| 5  | 60      | 59      | 50     | 38     | 36.000 | 35 |
| 6  | 89      | 95      | 78     | 47     | 11     | 34 |
| 7  | 175.318 | 120.130 | 56.305 | 56     | 23     | 33 |
| 8  | 47      | 66      | 32     | 66     | 34     | 32 |
| 9  | 77      | 120.201 | 60     | 75     | 45     | 31 |
| 0  | 175.406 | 37      | 87     | 84     | 56     | 30 |
| 1  | 35      | 72      | 58.414 | 93     | 67     | 29 |
| 2  | 64      | 120.308 | 42     | 76.903 | 78     | 28 |
| 3  | 93      | 44      | 69     | 21     | 90     | 27 |
| 4  | 175.522 | 79      | 97     | 31     | 38.101 | 26 |
| 5  | 51      | 120.415 | 56.524 | 40     | 12     | 25 |
| 6  | 80      | 51      | 51     | 49     | 23     | 24 |
| 7  | 175.609 | 86      | 79     | 58     | 34     | 23 |
| 8  | 38      | 120.522 | 56.606 | 68     | 46     | 22 |
| 9  | 67      | 58      | 34     | 78     | 57     | 21 |
| 0  | 96      | 93      | 61     | 77     | 68     | 20 |
| 1  | 175.725 | 120.629 | 89     | 86     | 79     | 19 |
| 2  | 55      | 65      | 56.716 | 96     | 90     | 18 |
| 3  | 84      | 120.700 | 44     | 77.005 | 36.202 | 17 |
| 4  | 175.813 | 36      | 71     | 14     | 13     | 16 |
| 5  | 42      | 72      | 99     | 23     | 24     | 15 |
| 6  | 175.900 | 120.808 | 56.826 | 33     | 35     | 14 |
| 7  | 71      | 43      | 54     | 42     | 46     | 13 |
| 8  | 29      | 79      | 61     | 51     | 58     | 12 |
| 9  | 58      | 120.915 | 56.909 | 61     | 69     | 11 |
| 0  | 87      | 51      | 37     | 70     | 80     | 10 |
| 1  | 176.016 | 121.022 | 64     | 79     | 91     | 9  |
| 2  | 46      | 92      | 57.019 | 88     | 36.302 | 8  |
| 3  | 75      | 58      | 47     | 96     | 14     | 7  |
| 4  | 176.104 | 94      | 77.107 | 105    | 25     | 6  |
| 5  | 33      | 121.130 | 75     | 16     | 36     | 5  |
| 6  | 62      | 66      | 57.102 | 25     | 47     | 4  |
| 7  | 91      | 121.202 | 30     | 35     | 58     | 3  |
| 8  | 176.220 | 38      | 58     | 44     | 70     | 2  |
| 9  | 49      | 74      | 86     | 53     | 81     | 1  |
| 0  | 78      | 121.310 | 57.213 | 62     | 92     | 0  |



| '                 | L                                    | T  | E  | X                                    | Y                                  | '                          |
|-------------------|--------------------------------------|--|--|--------------------------------------|------------------------------------|----------------------------|
| 0<br>0<br>4<br>5  | 176.278<br>176.307<br>35<br>65<br>95 | 121.310<br>45<br>82<br>121.418<br>54       | 57.213<br>41<br>69<br>97<br>57.324       | 77.162<br>72<br>81<br>90<br>99       | 36.392<br>36.403<br>15<br>26<br>37 | 8<br>0<br>9<br>8<br>7<br>6 |
| 5<br>5<br>8<br>9  | 176.424<br>53<br>82<br>176.511<br>40 | 121.528<br>62<br>98<br>121.634             | 52<br>80<br>57.408<br>36<br>64           | 77.209<br>18<br>27<br>35<br>46       | 43<br>59<br>71<br>82<br>93         | 5<br>5<br>4<br>3<br>2<br>1 |
| 10<br>1<br>1<br>4 | 176.627<br>56<br>85                  | 121.706<br>42<br>78<br>121.814             | 57.519<br>47<br>75<br>57.603             | 55<br>64<br>73<br>83<br>92           | 36.504<br>16<br>27<br>38<br>49     | 5<br>4<br>4<br>4<br>4      |
| 11<br>1<br>1<br>1 | 176.715<br>44<br>73<br>176.802<br>31 | 121.923<br>86<br>121.923<br>59<br>95       | 31<br>59<br>87<br>57.715<br>43           | 77.301<br>10<br>19<br>29<br>38       | 61<br>72<br>83<br>94<br>36.606     | 4<br>4<br>4<br>4<br>4      |
| 20<br>2<br>2<br>4 | 176.918<br>47<br>76                  | 122.031<br>67<br>122.104<br>40<br>76       | 71<br>99<br>57.827<br>55<br>83           | 47<br>56<br>66<br>75<br>84           | 17<br>28<br>39<br>51<br>62         | 4<br>0<br>9<br>8<br>7<br>6 |
| 22<br>2<br>2<br>2 | 177.005<br>35<br>64<br>93<br>177.122 | 122.212<br>49<br>85<br>122.321<br>58       | 57.911<br>39<br>67<br>95<br>58.023       | 77.402<br>12<br>21<br>30             | 78<br>84<br>96<br>36.707<br>18     | 3<br>5<br>4<br>3<br>2<br>1 |
| 30<br>3<br>3<br>4 | 177.209<br>80<br>98<br>67            | 122.430<br>67<br>122.503<br>39             | 51<br>80<br>58.108<br>36<br>64           | 39<br>48<br>58<br>67<br>76           | 29<br>41<br>52<br>63<br>74         | 3<br>0<br>9<br>8<br>7<br>6 |
| 33<br>3<br>3<br>8 | 177.325<br>55<br>84<br>177.413       | 122.612<br>48<br>85<br>122.721             | 92<br>58.220<br>49<br>85<br>58.305       | 85<br>94<br>77<br>13<br>22           | 86<br>97<br>36.803<br>20<br>31     | 2<br>5<br>4<br>3<br>2<br>1 |
| 40<br>4<br>4<br>4 | 177.500<br>29<br>58                  | 122.831<br>67<br>122.904                   | 33<br>62<br>90<br>58.418<br>47           | 31<br>40<br>50<br>59<br>68           | 42<br>53<br>65<br>76<br>87         | 2<br>0<br>1<br>1<br>1<br>6 |
| 45<br>4<br>6<br>7 | 177.616<br>45<br>75<br>177.704       | 123.06<br>77<br>123.013<br>50<br>85        | 75<br>58.503<br>32<br>60<br>88           | 77<br>86<br>95<br>77.605<br>14       | 99<br>36.910<br>91<br>32<br>44     | 1<br>5<br>4<br>3<br>2<br>1 |
| 50<br>5<br>1<br>2 | 177.820<br>91<br>177.820<br>49       | 123.123<br>60<br>96<br>123.233<br>70       | 58.617<br>45<br>74<br>58.702<br>31       | 23<br>32<br>41<br>50<br>60           | 55<br>66<br>78<br>89<br>37.000     | 1<br>0<br>9<br>8<br>7<br>6 |
| 55<br>5<br>6<br>7 | 177.907<br>36<br>65<br>94<br>178.024 | 123.306<br>43<br>80<br>123.415<br>53<br>90 | 59<br>87<br>58.816<br>44<br>73<br>58.902 | 69<br>78<br>87<br>96<br>77.705<br>15 | 11<br>23<br>34<br>45<br>57<br>68   | 5<br>4<br>3<br>2<br>1<br>0 |

| '  | L       | T       | E      | X      | Y      | '  |
|----|---------|---------|--------|--------|--------|----|
| 0  | 178.024 | 123.490 | 58.902 | 77.715 | 37.068 | 60 |
| 1  | 53      | 123.526 | 30     | 24     | 79     | 59 |
| 2  | 82      | 63      | 53     | 33     | 91     | 58 |
| 3  | 178.111 | 123.600 | 87     | 42     | 37.102 | 57 |
| 4  | 40      | 37      | 59.016 | 51     | 13     | 56 |
| 5  | 69      | 73      | 44     | 60     | 24     | 55 |
| 6  | 98      | 123.710 | 73     | 69     | 36     | 54 |
| 7  | 178.227 | 47      | 59.102 | 79     | 47     | 53 |
| 8  | 56      | 84      | 30     | 88     | 58     | 52 |
| 9  | 85      | 123.821 | 59     | 97     | 70     | 51 |
| 10 | 178.314 | 58      | 88     | 77.806 | 81     | 50 |
| 1  | 44      | 84      | 59.216 | 15     | 92     | 49 |
| 2  | 73      | 123.931 | 45     | 24     | 37.204 | 48 |
| 3  | 178.402 | 68      | 74     | 33     | 15     | 47 |
| 4  | 31      | 124.005 | 59.302 | 43     | 26     | 46 |
| 5  | 60      | 42      | 31     | 52     | 38     | 45 |
| 6  | 89      | 79      | 60     | 61     | 49     | 44 |
| 7  | 178.518 | 124.116 | 89     | 70     | 60     | 43 |
| 8  | 47      | 53      | 59.417 | 79     | 72     | 42 |
| 9  | 76      | 90      | 46     | 88     | 83     | 41 |
| 20 | 178.605 | 124.227 | 75     | 97     | 94     | 40 |
| 1  | 34      | 64      | 59.504 | 77.906 | 37.306 | 39 |
| 2  | 64      | 124.331 | 33     | 16     | 17     | 38 |
| 3  | 93      | 38      | 62     | 25     | 28     | 37 |
| 4  | 178.722 | 76      | 90     | 34     | 40     | 36 |
| 5  | 51      | 124.412 | 59.619 | 43     | 51     | 35 |
| 6  | 80      | 49      | 43     | 52     | 62     | 34 |
| 7  | 178.809 | 86      | 77     | 61     | 74     | 33 |
| 8  | 38      | 124.523 | 59.706 | 70     | 85     | 32 |
| 9  | 67      | 60      | 35     | 79     | 96     | 31 |
| 30 | 96      | 97      | 64     | 88     | 37.408 | 30 |
| 1  | 178.925 | 124.634 | 93     | 98     | 19     | 29 |
| 2  | 54      | 72      | 59.822 | 78.007 | 30     | 28 |
| 3  | 84      | 124.709 | 51     | 16     | 42     | 27 |
| 4  | 179.013 | 46      | 80     | 25     | 53     | 26 |
| 5  | 42      | 83      | 59.909 | 34     | 64     | 25 |
| 6  | 71      | 124.820 | 38     | 43     | 76     | 24 |
| 7  | 179.100 | 58      | 67     | 52     | 87     | 23 |
| 8  | 29      | 95      | 96     | 61     | 98     | 22 |
| 9  | 58      | 124.932 | 60.025 | 70     | 37.510 | 21 |
| 40 | 87      | 69      | 54     | 79     | 21     | 20 |
| 1  | 179.216 | 125.007 | 83     | 88     | 32     | 19 |
| 2  | 45      | 44      | 60.112 | 98     | 44     | 18 |
| 3  | 74      | 81      | 41     | 78.107 | 55     | 17 |
| 4  | 179.303 | 125.118 | 71     | 16     | 67     | 16 |
| 5  | 33      | 56      | 60.200 | 25     | 78     | 15 |
| 6  | 62      | 93      | 29     | 34     | 89     | 14 |
| 7  | 91      | 125.230 | 58     | 43     | 37.601 | 13 |
| 8  | 179.420 | 68      | 87     | 52     | 12     | 12 |
| 9  | 49      | 125.305 | 60.317 | 61     | 23     | 11 |
| 50 | 78      | 43      | 46     | 70     | 35     | 10 |
| 1  | 179.507 | 80      | 75     | 79     | 46     | 9  |
| 2  | 36      | 125.417 | 60.404 | 88     | 57     | 8  |
| 3  | 65      | 55      | 33     | 97     | 69     | 7  |
| 4  | 94      | 92      | 63     | 78.206 | 80     | 6  |
| 55 | 179.623 | 125.530 | 92     | 15     | 92     | 5  |
| 6  | 53      | 67      | 60.521 | 25     | 37.703 | 4  |
| 7  | 82      | 125.605 | 51     | 34     | 14     | 3  |
| 8  | 179.711 | 42      | 80     | 43     | 26     | 2  |
| 9  | 40      | 80      | 60.609 | 52     | 37     | 1  |
| 60 | 69      | 125.717 | 39     | 61     | 48     | 0  |

## 曲線函數表

| '  | L       | T       | E      | X      | Y      | '   |
|----|---------|---------|--------|--------|--------|-----|
| 0  | 179.769 | 125.717 | 60.639 | 78.261 | 37.748 | 609 |
| 1  | 98      | 55      | 68     | 70     | 60     | 608 |
| 2  | 179.827 | 92      | 98     | 79     | 71     | 607 |
| 3  | 56      | 125.830 | 60.727 | 88     | 83     | 606 |
| 4  | 85      | 67      | 56     | 97     | 94     | 605 |
| 5  | 179.914 | 125.905 | 86     | 78.305 | 37.805 | 554 |
| 6  | 43      | 43      | 60.815 | 15     | 17     | 553 |
| 7  | 73      | 80      | 45     | 24     | 28     | 552 |
| 8  | 180.002 | 126.018 | 74     | 33     | 40     | 551 |
| 9  | 31      | 55      | 60.904 | 42     | 51     | 550 |
| 10 | 60      | 93      | 33     | 51     | 62     | 509 |
| 11 | 89      | 126.151 | 63     | 60     | 74     | 508 |
| 12 | 180.118 | 69      | 92     | 69     | 85     | 507 |
| 13 | 47      | 126.206 | 61.022 | 78     | 97     | 506 |
| 14 | 76      | 44      | 51     | 87     | 37.908 | 505 |
| 15 | 180.205 | 82      | 81     | 96     | 19     | 454 |
| 16 | 34      | 126.319 | 61.111 | 78.405 | 31     | 453 |
| 17 | 63      | 57      | 40     | 14     | 42     | 452 |
| 18 | 93      | 95      | 70     | 23     | 54     | 451 |
| 19 | 180.322 | 126.433 | 99     | 32     | 65     | 450 |
| 20 | 51      | 71      | 61.229 | 42     | 76     | 409 |
| 21 | 80      | 126.508 | 59     | 51     | 88     | 408 |
| 22 | 180.409 | 46      | 88     | 60     | 99     | 407 |
| 23 | 38      | 84      | 61.318 | 69     | 38.011 | 406 |
| 24 | 67      | 126.622 | 48     | 78     | 22     | 405 |
| 25 | 96      | 60      | 78     | 87     | 33     | 364 |
| 26 | 180.525 | 98      | 61.407 | 96     | 45     | 363 |
| 27 | 54      | 126.736 | 37     | 78.505 | 56     | 362 |
| 28 | 83      | 74      | 67     | 14     | 68     | 361 |
| 29 | 180.612 | 126.811 | 97     | 23     | 79     | 360 |
| 30 | 42      | 49      | 61.526 | 32     | 91     | 319 |
| 31 | 71      | 87      | 56     | 41     | 38.102 | 318 |
| 32 | 180.700 | 126.925 | 86     | 50     | 13     | 317 |
| 33 | 29      | 63      | 61.616 | 59     | 25     | 316 |
| 34 | 58      | 127.001 | 46     | 68     | 36     | 315 |
| 35 | 87      | 39      | 76     | 77     | 48     | 274 |
| 36 | 180.816 | 77      | 61.706 | 86     | 59     | 273 |
| 37 | 45      | 127.115 | 35     | 95     | 71     | 272 |
| 38 | 74      | 63      | 65     | 78.604 | 82     | 271 |
| 39 | 180.903 | 91      | 95     | 13     | 93     | 270 |
| 40 | 32      | 127.230 | 61.825 | 22     | 38.205 | 229 |
| 41 | 62      | 68      | 55     | 31     | 16     | 228 |
| 42 | 91      | 127.306 | 85     | 40     | 28     | 227 |
| 43 | 181.020 | 44      | 61.915 | 49     | 39     | 226 |
| 44 | 49      | 82      | 45     | 58     | 51     | 225 |
| 45 | 78      | 127.420 | 75     | 67     | 62     | 184 |
| 46 | 181.107 | 58      | 62.005 | 76     | 73     | 183 |
| 47 | 36      | 96      | 35     | 84     | 85     | 182 |
| 48 | 65      | 127.535 | 65     | 94     | 96     | 181 |
| 49 | 94      | 73      | 95     | 78.702 | 38.308 | 180 |
| 50 | 181.223 | 127.611 | 62.125 | 11     | 15     | 139 |
| 51 | 52      | 49      | 55     | 20     | 31     | 138 |
| 52 | 82      | 88      | 85     | 29     | 42     | 137 |
| 53 | 181.311 | 127.726 | 62.216 | 38     | 54     | 136 |
| 54 | 40      | 64      | 46     | 47     | 65     | 135 |
| 55 | 69      | 127.802 | 76     | 56     | 77     | 94  |
| 56 | 98      | 41      | 62.306 | 65     | 88     | 93  |
| 57 | 181.427 | 79      | 36     | 74     | 99     | 92  |
| 58 | 56      | 127.917 | 66     | 83     | 38.411 | 91  |
| 59 | 85      | 56      | 97     | 92     | 22     | 90  |
| 60 | 181.514 | 94      | 62.427 | 78.801 | 34     | 89  |

## 曲線函數表

|    | L       | T       | E      | X      | Y      |     |
|----|---------|---------|--------|--------|--------|-----|
| 0  | 181.514 | 127.994 | 62.427 | 78.801 | 38.434 | 6 0 |
| 1  | 43      | 128.033 | 57     | 10     | 45     | 5 9 |
| 2  | 72      | 71      | 87     | 19     | 57     | 5 8 |
| 3  | 181.602 | 128.109 | 62.518 | 28     | 68     | 5 7 |
| 4  | 31      | 48      | 48     | 37     | 80     | 5 6 |
| 5  | 60      | 86      | 78     | 46     | 91     | 5 5 |
| 6  | 89      | 128.225 | 62.609 | 55     | 38.508 | 5 4 |
| 7  | 181.718 | 63      | 39     | 64     | 14     | 5 3 |
| 8  | 47      | 128.302 | 69     | 73     | 26     | 5 2 |
| 9  | 76      | 40      | 62.700 | 82     | 37     | 5 1 |
| 10 | 181.805 | 79      | 30     | 90     | 48     | 5 0 |
| 11 | 34      | 128.417 | 60     | 99     | 60     | 4 9 |
| 12 | 63      | 56      | 91     | 78.908 | 71     | 4 8 |
| 13 | 92      | 94      | 62.821 | 17     | 83     | 4 7 |
| 14 | 181.921 | 128.533 | 52     | 26     | 94     | 4 6 |
| 15 | 51      | 71      | 82     | 35     | 38.605 | 4 5 |
| 16 | 80      | 128.610 | 62.913 | 44     | 17     | 4 4 |
| 17 | 182.009 | 49      | 43     | 53     | 29     | 4 3 |
| 18 | 38      | 87      | 74     | 62     | 40     | 4 2 |
| 19 | 67      | 128.726 | 63.004 | 71     | 52     | 4 1 |
| 20 | 96      | 64      | 35     | 80     | 63     | 4 0 |
| 21 | 182.125 | 128.803 | 65     | 89     | 75     | 3 9 |
| 22 | 54      | 42      | 96     | 98     | 86     | 3 8 |
| 23 | 83      | 80      | 63.126 | 79.007 | 98     | 3 7 |
| 24 | 182.212 | 128.919 | 57     | 15     | 38.709 | 3 6 |
| 25 | 41      | 58      | 87     | 24     | 21     | 3 5 |
| 26 | 71      | 97      | 63.218 | 33     | 32     | 3 4 |
| 27 | 182.300 | 129.035 | 49     | 42     | 44     | 3 3 |
| 28 | 29      | 74      | 79     | 51     | 55     | 3 2 |
| 29 | 58      | 129.113 | 63.310 | 60     | 67     | 3 1 |
| 30 | 87      | 52      | 41     | 69     | 78     | 3 0 |
| 31 | 182.416 | 91      | 71     | 78     | 90     | 2 9 |
| 32 | 45      | 129.229 | 63.402 | 87     | 38.801 | 2 8 |
| 33 | 74      | 68      | 33     | 96     | 13     | 2 7 |
| 34 | 182.503 | 129.307 | 65     | 79.105 | 24     | 2 6 |
| 35 | 32      | 46      | 94     | 13     | 36     | 2 5 |
| 36 | 61      | 85      | 63.525 | 22     | 47     | 2 4 |
| 37 | 91      | 129.424 | 66     | 31     | 59     | 2 3 |
| 38 | 182.620 | 63      | 87     | 40     | 70     | 2 2 |
| 39 | 49      | 129.502 | 63.617 | 49     | 82     | 2 1 |
| 40 | 78      | 41      | 48     | 58     | 93     | 2 0 |
| 41 | 182.707 | 79      | 79     | 67     | 38.905 | 1 9 |
| 42 | 36      | 129.618 | 63.710 | 76     | 16     | 1 8 |
| 43 | 65      | 57      | 41     | 85     | 28     | 1 7 |
| 44 | 94      | 96      | 72     | 93     | 39     | 1 6 |
| 45 | 182.823 | 129.735 | 63.803 | 79.202 | 51     | 1 5 |
| 46 | 52      | 74      | 33     | 11     | 62     | 1 4 |
| 47 | 81      | 129.814 | 64     | 20     | 74     | 1 3 |
| 48 | 182.911 | 53      | 95     | 29     | 85     | 1 2 |
| 49 | 40      | 92      | 63.926 | 38     | 97     | 1 1 |
| 50 | 69      | 129.931 | 57     | 47     | 39.006 | 1 0 |
| 51 | 98      | 70      | 86     | 56     | 20     | 9 9 |
| 52 | 183.027 | 130.009 | 64.019 | 64     | 32     | 9 8 |
| 53 | 56      | 48      | 50     | 73     | 43     | 9 7 |
| 54 | 85      | 87      | 81     | 82     | 55     | 9 6 |
| 55 | 183.114 | 130.126 | 64.112 | 91     | 66     | 9 5 |
| 56 | 43      | 66      | 43     | 79.300 | 78     | 9 4 |
| 57 | 72      | 130.205 | 75     | 9      | 89     | 9 3 |
| 58 | 183.201 | 44      | 64.206 | 18     | 39.101 | 9 2 |
| 59 | 30      | 83      | 37     | 26     | 12     | 9 1 |
| 60 | 60      | 130.322 | 68     | 35     | 24     | 9 0 |

| '   | CL      | T       | E      | X      | Y      | '   |
|-----|---------|---------|--------|--------|--------|-----|
| 0   | 183.260 | 130.322 | 64.268 | 79.335 | 39.124 | 6 0 |
| 1   | 89      | 62      | 99     | 44     | 35     | 5 8 |
| 2   | 183.318 | 130.401 | 64.330 | 53     | 47     | 5 7 |
| 3   | 47      | 40      | 61     | 62     | 58     | 5 6 |
| 4   | 76      | 80      | 93     | 71     | 70     |     |
| 5   | 183.405 | 130.519 | 64.424 | 80     | 82     | 5 5 |
| 6   | 34      | 58      | 55     | 88     | 93     | 5 4 |
| 7   | 63      | 98      | 86     | 97     | 39.206 | 5 3 |
| 8   | 92      | 130.637 | 64.517 | 79.406 | 18     | 5 2 |
| 9   | 183.521 | 76      | 49     | 15     | 28     | 5 1 |
| 1 0 | 50      | 130.716 | 80     | 24     | 39     | 5 0 |
| 1 1 | 80      | 55      | 64.611 | 33     | 51     | 4 9 |
| 1 2 | 183.609 | 95      | 43     | 41     | 62     | 4 8 |
| 1 3 | 38      | 130.834 | 74     | 50     | 74     | 4 7 |
| 1 4 | 67      | 73      | 64.705 | 59     | 85     | 4 6 |
| 1 5 | 96      | 130.913 | 37     | 68     | 97     | 4 5 |
| 1 6 | 183.725 | 52      | 68     | 77     | 39.309 | 4 4 |
| 1 7 | 54      | 92      | 99     | 86     | 20     | 4 3 |
| 1 8 | 83      | 131.031 | 64.831 | 94     | 32     | 4 2 |
| 1 9 | 135.812 | 71      | 62     | 79.503 | 43     | 4 1 |
| 2 0 | 41      | 131.110 | 94     | 12     | 55     | 4 0 |
| 2 1 | 70      | 50      | 64.925 | 21     | 66     | 3 9 |
| 2 2 | 183.900 | 90      | 57     | 30     | 78     | 3 8 |
| 2 3 | 29      | 131.229 | 88     | 38     | 90     | 3 7 |
| 2 4 | 58      | 69      | 65.020 | 47     | 39.401 | 3 6 |
| 2 5 | 87      | 131.308 | 51     | 56     | 13     | 3 5 |
| 2 6 | 184.016 | 48      | 83     | 65     | 24     | 3 4 |
| 2 7 | 45      | 88      | 65.114 | 74     | 36     | 3 3 |
| 2 8 | 74      | 131.427 | 46     | 82     | 47     | 3 2 |
| 2 9 | 184.103 | 67      | 77     | 91     | 59     | 3 1 |
| 3 0 | 32      | 131.507 | 65.209 | 79.600 | 71     | 3 0 |
| 3 1 | 61      | 46      | 41     | 9      | 82     | 2 9 |
| 3 2 | 90      | 86      | 72     | 18     | 94     | 2 8 |
| 3 3 | 184.220 | 131.625 | 65.304 | 27     | 39.505 | 2 7 |
| 3 4 | 49      | 66      | 35     | 35     | 17     | 2 6 |
| 3 5 | 78      | 131.705 | 67     | 44     | 28     | 2 5 |
| 3 6 | 184.307 | 45      | 99     | 53     | 40     | 2 4 |
| 3 7 | 36      | 85      | 65.430 | 62     | 52     | 2 3 |
| 3 8 | 65      | 131.825 | 62     | 71     | 63     | 2 2 |
| 3 9 | 94      | 65      | 94     | 79     | 75     | 2 1 |
| 4 0 | 184.423 | 131.904 | 65.526 | 88     | 86     | 2 0 |
| 4 1 | 52      | 44      | 57     | 97     | 98     | 1 9 |
| 4 2 | 81      | 84      | 89     | 79.706 | 39.610 | 1 8 |
| 4 3 | 184.510 | 132.024 | 65.621 | 14     | 21     | 1 7 |
| 4 4 | 39      | 64      | 53     | 23     | 33     | 1 6 |
| 4 5 | 69      | 132.104 | 85     | 32     | 44     | 1 5 |
| 4 6 | 98      | 44      | 65.717 | 41     | 56     | 1 4 |
| 4 7 | 184.627 | 84      | 48     | 50     | 68     | 1 3 |
| 4 8 | 56      | 132.224 | 80     | 58     | 79     | 1 2 |
| 4 9 | 85      | 64      | 65.812 | 67     | 91     | 1 1 |
| 5 0 | 184.714 | 132.304 | 44     | 76     | 39.702 | 1 0 |
| 5 1 | 43      | 44      | 75     | 85     | 14     | 9   |
| 5 2 | 72      | 84      | 65.908 | 94     | 26     | 8   |
| 5 3 | 184.801 | 132.424 | 40     | 79.802 | 37     | 7   |
| 5 4 | 30      | 64      | 72     | 11     | 49     | 6   |
| 5 5 | 59      | 132.504 | 66.004 | 20     | 60     | 5   |
| 5 6 | 89      | 44      | 36     | 29     | 72     | 4   |
| 5 7 | 184.918 | 84      | 68     | 37     | 84     | 3   |
| 5 8 | 47      | 132.624 | 66.100 | 46     | 95     | 2   |
| 5 9 | 76      | 64      | 32     | 55     | 39.807 | 1   |
| 6 0 | 185.005 | 132.704 | 64     | 64     | 18     | 0   |

| '       | L       | T       | E      | X      | Y      | '  |
|---------|---------|---------|--------|--------|--------|----|
| 0       | 185.005 | 132.734 | 66.164 | 79.964 | 39.618 | 60 |
| 34      |         | 45      | 86     | 72     | 30     | 9  |
| 63      |         | 85      | 66.228 | 81     | 42     | 8  |
| 92      |         | 65      | 92     | 99     | 53     | 7  |
| 185.121 |         |         |        |        | 65     | 6  |
| 50      | 185.209 | 132.905 | 66.325 | 79.907 | 77     | 5  |
| 79      |         | 46      | 57     | 16     | 88     | 4  |
| 38      |         | 86      | 89     | 25     | 39.900 | 3  |
| 67      |         | 66      | 53     | 42     | 11     | 2  |
| 96      |         |         |        |        | 23     | 1  |
| 185.325 | 133.107 | 66.518  | 51     | 35     | 50     | 9  |
| 54      | 47      | 85      | 60     | 46     | 49     | 8  |
| 83      | 88      | 50      | 68     | 58     | 48     | 7  |
| 185.412 | 133.228 | 66.615  | 82     | 70     | 47     | 6  |
|         | 68      |         |        | 86     | 81     | 5  |
| 41      | 133.309 | 66.711  | 47     | 95     | 93     | 4  |
| 70      | 49      | 82      | 79     | 80.003 | 40.004 | 4  |
| 99      | 89      | 44      | 76     | 12     | 16     | 3  |
| 185.528 | 133.430 | 66.809  | 38     | 21     | 28     | 2  |
| 58      | 70      | 41      | 38     | 30     | 39     | 1  |
| 87      |         |         |        |        |        |    |
| 185.616 | 133.511 | 66.906  | 41     | 51     | 51     | 0  |
| 45      | 50      | 73      | 47     | 63     | 63     | 9  |
| 74      | 92      | 38      | 73     | 74     | 74     | 8  |
| 185.703 | 133.632 | 66.101  | 68     | 82     | 86     | 7  |
|         | 73      | 33      | 88     | 91     | 98     | 6  |
| 32      | 133.713 | 67.003  | 71     | 82     | 40.109 | 5  |
| 61      | 54      | 91      | 36     | 91     | 21     | 4  |
| 90      | 94      | 99      | 68     | 99     | 33     | 3  |
| 185.819 | 133.835 | 67.101  | 68     | 80.108 | 44     | 2  |
| 48      | 76      | 17      | 56     | 17     | 56     | 1  |
| 78      | 133.916 | 67.231  | 33     | 25     | 67     | 0  |
| 185.907 | 134.038 | 67.329  | 66     | 34     | 79     | 9  |
| 36      | 98      | 62      | 98     | 43     | 91     | 8  |
| 65      | 79      | 94      | 64     | 51     | 91     | 7  |
| 94      |         | 82      | 64     | 60     | 40.202 | 6  |
| 186.023 | 134.120 | 67.427  | 96     | 69     | 26     | 5  |
| 52      | 60      | 78      | 78     | 37     | 37     | 4  |
| 81      | 134.201 | 67.525  | 62     | 86     | 49     | 3  |
| 186.110 | 134.323 | 67.623  | 42     | 95     | 61     | 2  |
| 39      | 82      | 55      | 91     | 47     | 72     | 1  |
| 68      | 134.405 | 67.722  | 60     | 12     | 84     | 0  |
| 98      | 64      | 82      | 92     | 21     | 96     | 9  |
| 186.227 | 134.527 | 67.821  | 58     | 30     | 40.307 | 8  |
| 56      | 45      | 53      | 58     | 38     | 19     | 7  |
| 85      | 87      | 47      | 91     | 47     | 31     | 6  |
| 186.314 | 134.609 | 67.919  | 56     | 56     | 42     | 5  |
| 43      | 68      | 56      | 64     | 64     | 54     | 4  |
| 72      | 134.722 | 68.018  | 89     | 73     | 66     | 3  |
| 186.401 | 134.814 | 68.117  | 55     | 82     | 77     | 2  |
| 30      | 50      | 44      | 91     | 90     | 89     | 1  |
| 59      | 134.937 | 68.215  | 68     | 99     | 40.401 | 0  |
| 88      | 73      | 53      | 82     | 80.308 | 12     | 9  |
| 186.518 | 135.019 | 68.313  | 53     | 16     | 24     | 8  |
| 47      | 55      | 44      | 95     | 25     | 36     | 7  |
| 76      | 96      | 34      | 67.919 | 34     | 48     | 6  |
| 186.606 | 135.101 | 68.411  | 52     | 42     | 59     | 5  |
| 34      | 78      | 85      | 85     | 51     | 71     | 4  |
| 63      | 135.019 | 68.509  | 60     | 60     | 83     | 3  |
| 92      | 60      | 51      | 68     | 68     | 94     | 2  |
| 186.721 | 135.101 | 68.607  | 84     | 77     | 40.506 | 1  |
| 50      | 42      | 86      | 68.117 | 86     | 18     | 0  |

| '  | L       | T       | E      | X      | Y      | '   |
|----|---------|---------|--------|--------|--------|-----|
| 0  | 186.750 | 135.142 | 68.117 | 80.386 | 40.518 | 6 0 |
| 1  | 79      | 83      | 50     | 94     | 29     | 6 1 |
| 2  | 186.808 | 135.224 | 83     | 80.403 | 41     | 6 2 |
| 3  | 37      | 66      | 68.216 | 12     | 53     | 6 3 |
| 4  | 67      | 135.307 | 50     | 20     | 64     | 6 4 |
| 5  | 96      | 48      | 83     | 29     | 76     | 5 5 |
| 6  | 186.925 | 89      | 68.316 | 38     | 68     | 5 4 |
| 7  | 54      | 135.430 | 49     | 46     | 40.600 | 5 3 |
| 8  | 83      | 72      | 82     | 56     | 11     | 5 2 |
| 9  | 187.012 | 135.513 | 68.415 | 63     | 23     | 5 1 |
| 10 | 41      | 54      | 49     | 72     | 35     | 5 0 |
| 11 | 70      | 95      | 82     | 81     | 46     | 4 9 |
| 12 | 99      | 135.637 | 68.515 | 89     | 58     | 4 8 |
| 13 | 187.128 | 78      | 48     | 88     | 70     | 4 7 |
| 14 | 57      | 135.719 | 81     | 80.507 | 81     | 4 6 |
| 15 | 87      | 61      | 68.615 | 15     | 93     | 4 5 |
| 16 | 187.216 | 135.802 | 48     | 24     | 40.705 | 4 4 |
| 17 | 45      | 43      | 81     | 32     | 17     | 4 3 |
| 18 | 74      | 85      | 68.715 | 41     | 28     | 4 2 |
| 19 | 187.303 | 135.926 | 48     | 50     | 40     | 4 1 |
| 20 | 32      | 68      | 81     | 58     | 52     | 4 0 |
| 21 | 61      | 136.009 | 68.815 | 67     | 63     | 3 9 |
| 22 | 90      | 50      | 48     | 76     | 75     | 3 8 |
| 23 | 187.419 | 92      | 82     | 84     | 87     | 3 7 |
| 24 | 43      | 136.133 | 68.915 | 93     | 99     | 3 6 |
| 25 | 77      | 75      | 49     | 80.601 | 40.810 | 3 5 |
| 26 | 187.507 | 136.216 | 82     | 10     | 22     | 3 4 |
| 27 | 36      | 58      | 69.016 | 19     | 34     | 3 3 |
| 28 | 65      | 136.300 | 49     | 27     | 46     | 3 2 |
| 29 | 94      | 41      | 83     | 36     | 57     | 3 1 |
| 30 | 187.623 | 83      | 68.116 | 44     | 69     | 3 0 |
| 31 | 52      | 136.424 | 50     | 53     | 81     | 2 9 |
| 32 | 81      | 66      | 83     | 62     | 92     | 2 8 |
| 33 | 187.710 | 136.508 | 68.217 | 70     | 40.904 | 2 7 |
| 34 | 39      | 49      | 50     | 79     | 16     | 2 6 |
| 35 | 68      | 91      | 84     | 87     | 28     | 2 5 |
| 36 | 97      | 136.633 | 68.318 | 96     | 39     | 2 4 |
| 37 | 187.827 | 74      | 51     | 80.705 | 51     | 2 3 |
| 38 | 56      | 136.716 | 85     | 13     | 63     | 2 2 |
| 39 | 85      | 58      | 68.419 | 22     | 75     | 2 1 |
| 40 | 187.914 | 136.800 | 52     | 30     | 86     | 2 0 |
| 41 | 43      | 41      | 86     | 39     | 98     | 1 9 |
| 42 | 72      | 83      | 69.520 | 48     | 41.010 | 1 8 |
| 43 | 188.001 | 136.925 | 54     | 56     | 22     | 1 7 |
| 44 | 30      | 67      | 87     | 65     | 33     | 1 6 |
| 45 | 59      | 137.009 | 68.621 | 73     | 45     | 1 5 |
| 46 | 88      | 50      | 55     | 82     | 57     | 1 4 |
| 47 | 188.117 | 92      | 89     | 90     | 69     | 1 3 |
| 48 | 46      | 137.134 | 68.723 | 99     | 80     | 1 2 |
| 49 | 76      | 76      | 57     | 80.808 | 92     | 1 1 |
| 50 | 188.205 | 137.218 | 90     | 16     | 41.104 | 1 0 |
| 51 | 34      | 60      | 69.824 | 25     | 16     | 9   |
| 52 | 63      | 137.302 | 58     | 33     | 27     | 8   |
| 53 | 92      | 44      | 92     | 42     | 39     | 7   |
| 54 | 188.321 | 85      | 69.926 | 50     | 51     | 6   |
| 55 | 50      | 137.428 | 60     | 59     | 63     | 5   |
| 56 | 79      | 70      | 94     | 67     | 74     | 4   |
| 57 | 188.408 | 137.512 | 70.028 | 76     | 86     | 3   |
| 58 | 37      | 54      | 62     | 85     | 98     | 2   |
| 59 | 66      | 96      | 96     | 93     | 41.210 | 1   |
| 60 | 96      | 137.638 | 70.130 | 80.902 | 21     | 0   |

|    | L       | T       | E      | X      | Y      |    |
|----|---------|---------|--------|--------|--------|----|
| 0  | 188.496 | 137.638 | 70.130 | 80.902 | 41.221 | 80 |
| 1  | 188.525 | 80      | 64     | 10     | 33     | 50 |
| 2  | 54      | 137.722 | 98     | 19     | 45     | 60 |
| 3  | 83      | 65      | 70.232 | 27     | 57     | 70 |
| 4  | 188.612 | 137.807 | 66     | 36     | 69     | 80 |
| 5  | 41      | 49      | 70.301 | 44     | 80     | 55 |
| 6  | 70      | 91      | 35     | 53     | 92     | 65 |
| 7  | 99      | 137.933 | 69     | 61     | 41.304 | 75 |
| 8  | 188.728 | 75      | 70.403 | 70     | 16     | 85 |
| 9  | 57      | 138.018 | 37     | 79     | 27     | 95 |
| 10 | 86      | 60      | 72     | 87     | 39     | 50 |
| 11 | 188.816 | 138.102 | 70.506 | 96     | 51     | 60 |
| 12 | 45      | 45      | 40     | 81.004 | 63     | 70 |
| 13 | 74      | 87      | 74     | 13     | 74     | 80 |
| 14 | 188.903 | 138.229 | 70.609 | 21     | 86     | 90 |
| 15 | 32      | 72      | 43     | 30     | 98     | 45 |
| 16 | 61      | 138.314 | 77     | 38     | 41.410 | 55 |
| 17 | 90      | 56      | 70.712 | 47     | 22     | 65 |
| 18 | 189.019 | 99      | 45     | 56     | 33     | 75 |
| 19 | 48      | 138.441 | 80     | 64     | 45     | 85 |
| 20 | 77      | 83      | 70.815 | 72     | 57     | 40 |
| 21 | 189.106 | 138.526 | 49     | 81     | 69     | 50 |
| 22 | 38      | 68      | 84     | 89     | 81     | 60 |
| 23 | 65      | 139.611 | 70.918 | 98     | 92     | 70 |
| 24 | 94      | 53      | 52     | 81.106 | 41.504 | 80 |
| 25 | 189.223 | 96      | 87     | 15     | 16     | 55 |
| 26 | 52      | 138.738 | 71.021 | 23     | 28     | 65 |
| 27 | 81      | 81      | 55     | 32     | 40     | 75 |
| 28 | 189.310 | 138.824 | 91     | 40     | 51     | 85 |
| 29 | 39      | 66      | 71.125 | 49     | 63     | 95 |
| 30 | 68      | 138.909 | 60     | 57     | 75     | 40 |
| 31 | 97      | 51      | 94     | 66     | 87     | 50 |
| 32 | 189.426 | 94      | 71.229 | 74     | 98     | 60 |
| 33 | 55      | 139.037 | 63     | 83     | 41.610 | 70 |
| 34 | 85      | 79      | 98     | 91     | 22     | 80 |
| 35 | 189.514 | 139.122 | 71.333 | 81.200 | 34     | 55 |
| 36 | 43      | 65      | 67     | 8      | 46     | 65 |
| 37 | 72      | 139.207 | 71.402 | 17     | 58     | 75 |
| 38 | 189.601 | 50      | 37     | 25     | 69     | 85 |
| 39 | 30      | 93      | 72     | 34     | 81     | 95 |
| 40 | 59      | 139.336 | 71.506 | 42     | 93     | 40 |
| 41 | 88      | 78      | 41     | 51     | 41.705 | 50 |
| 42 | 189.717 | 139.421 | 75     | 59     | 17     | 60 |
| 43 | 46      | 64      | 71.611 | 68     | 29     | 70 |
| 44 | 75      | 139.507 | 46     | 76     | 40     | 80 |
| 45 | 189.805 | 50      | 80     | 85     | 52     | 55 |
| 46 | 34      | 93      | 71.715 | 93     | 64     | 65 |
| 47 | 63      | 139.636 | 50     | 81.302 | 76     | 75 |
| 48 | 92      | 78      | 85     | 10     | 88     | 85 |
| 49 | 189.921 | 139.721 | 71.820 | 18     | 99     | 95 |
| 50 | 50      | 64      | 55     | 27     | 41.811 | 40 |
| 51 | 79      | 139.807 | 90     | 35     | 23     | 50 |
| 52 | 190.008 | 50      | 71.925 | 44     | 35     | 60 |
| 53 | 37      | 93      | 60     | 52     | 47     | 70 |
| 54 | 66      | 139.936 | 95     | 61     | 59     | 80 |
| 55 | 95      | 79      | 72.030 | 69     | 70     | 55 |
| 56 | 190.125 | 140.022 | 65     | 78     | 82     | 65 |
| 57 | 54      | 65      | 72.100 | 86     | 94     | 75 |
| 58 | 83      | 140.109 | 35     | 95     | 41.906 | 85 |
| 59 | 190.212 | 52      | 70     | 81.403 | 18     | 95 |
| 60 | 41      | 95      | 72.205 | 12     | 30     | 40 |



## 曲線函數表

| '   | L       | T       | E      | X      | Y      | '   |
|-----|---------|---------|--------|--------|--------|-----|
| 0   | 190.241 | 140.195 | 72.205 | 81.412 | 41.930 | 6 0 |
| 1   | 70      | 140.238 | 40     | 20     | 41     | 5 5 |
| 2   | 99      | 91      | 75     | 28     | 53     | 5 0 |
| 3   | 190.328 | 140.324 | 72.310 | 37     | 66     | 5 5 |
| 4   | 57      | 67      | 46     | 45     | 77     | 5 0 |
| 5   | 86      | 140.411 | 81     | 54     | 89     | 5 5 |
| 6   | 190.415 | 54      | 72.416 | 62     | 42.001 | 5 4 |
| 7   | 45      | 97      | 51     | 71     | 13     | 4 9 |
| 8   | 74      | 140.540 | 87     | 79     | 24     | 4 4 |
| 9   | 190.503 | 84      | 72.522 | 87     | 36     | 4 0 |
| 1 0 | 32      | 140.627 | 57     | 96     | 48     | 5 0 |
| 1 1 | 61      | 70      | 92     | 81.504 | 60     | 4 9 |
| 1 2 | 90      | 140.714 | 72.628 | 13     | 72     | 4 8 |
| 1 3 | 190.619 | 57      | 63     | 21     | 84     | 4 7 |
| 1 4 | 48      | 140.800 | 98     | 30     | 96     | 4 6 |
| 1 5 | 77      | 44      | 72.734 | 38     | 42.107 | 4 5 |
| 1 6 | 190.706 | 87      | 69     | 46     | 19     | 4 4 |
| 1 7 | 35      | 140.931 | 72.805 | 55     | 31     | 4 3 |
| 1 8 | 64      | 74      | 40     | 63     | 43     | 4 2 |
| 1 9 | 94      | 141.017 | 75     | 72     | 55     | 4 1 |
| 2 0 | 190.823 | 61      | 72.911 | 80     | 67     | 4 0 |
| 2 1 | 52      | 141.104 | 46     | 88     | 79     | 3 9 |
| 2 2 | 81      | 48      | 82     | 97     | 90     | 3 8 |
| 2 3 | 190.910 | 91      | 73.017 | 81.605 | 42.202 | 3 7 |
| 2 4 | 39      | 141.235 | 53     | 14     | 14     | 3 6 |
| 2 5 | 68      | 79      | 89     | 22     | 26     | 3 5 |
| 2 6 | 97      | 141.322 | 73.124 | 31     | 38     | 3 4 |
| 2 7 | 191.026 | 66      | 60     | 39     | 50     | 3 3 |
| 2 8 | 55      | 141.409 | 95     | 47     | 62     | 3 2 |
| 2 9 | 84      | 53      | 73.231 | 56     | 74     | 3 1 |
| 3 0 | 191.114 | 97      | 67     | 64     | 85     | 3 0 |
| 3 1 | 43      | 141.544 | 73.332 | 72     | 97     | 2 9 |
| 3 2 | 72      | 84      | 38     | 81     | 42.309 | 2 8 |
| 3 3 | 191.201 | 141.628 | 74     | 89     | 21     | 2 7 |
| 3 4 | 30      | 71      | 73.409 | 98     | 33     | 2 6 |
| 3 5 | 59      | 141.715 | 45     | 81.706 | 45     | 2 5 |
| 3 6 | 88      | 59      | 81     | 14     | 57     | 2 4 |
| 3 7 | 191.317 | 141.803 | 73.517 | 23     | 69     | 2 3 |
| 3 8 | 46      | 47      | 52     | 51     | 80     | 2 2 |
| 3 9 | 75      | 90      | 88     | 40     | 92     | 2 1 |
| 4 0 | 191.404 | 141.934 | 73.624 | 48     | 42.404 | 2 0 |
| 4 1 | 34      | 78      | 60     | 56     | 16     | 1 9 |
| 4 2 | 63      | 142.022 | 96     | 65     | 28     | 1 8 |
| 4 3 | 92      | 66      | 73.732 | 73     | 40     | 1 7 |
| 4 4 | 191.521 | 142.110 | 68     | 81     | 52     | 1 6 |
| 4 5 | 50      | 54      | 73.804 | 90     | 64     | 1 5 |
| 4 6 | 79      | 98      | 39     | 98     | 76     | 1 4 |
| 4 7 | 191.608 | 142.242 | 75     | 81.807 | 88     | 1 3 |
| 4 8 | 37      | 85      | 73.911 | 15     | 99     | 1 2 |
| 4 9 | 66      | 142.330 | 47     | 23     | 42.511 | 1 1 |
| 5 0 | 95      | 74      | 83     | 32     | 25     | 1 0 |
| 5 1 | 191.724 | 142.418 | 74.019 | 40     | 35     | 9 9 |
| 5 2 | 54      | 62      | 56     | 48     | 47     | 9 8 |
| 5 3 | 83      | 142.505 | 92     | 57     | 59     | 9 7 |
| 5 4 | 191.812 | 50      | 74.128 | 65     | 71     | 9 6 |
| 5 5 | 41      | 94      | 64     | 73     | 83     | 9 5 |
| 5 6 | 70      | 142.638 | 74.200 | 82     | 95     | 9 4 |
| 5 7 | 99      | 82      | 35     | 90     | 42.607 | 9 3 |
| 5 8 | 191.928 | 142.726 | 72     | 98     | 18     | 9 2 |
| 5 9 | 57      | 71      | 74.308 | 81.907 | 30     | 9 1 |
| 6 0 | 86      | 142.815 | 45     | 15     | 42     | 9 0 |

|    | L       | T       | E      | X      | Y      |    |
|----|---------|---------|--------|--------|--------|----|
| 0  | 191.986 | 142.815 | 74.345 | 81.915 | 42.642 | 60 |
| 1  | 192.015 | 69      | 81     | 24     | 54     | 59 |
| 2  | 44      | 142.903 | 74.417 | 32     | 66     | 58 |
| 3  | 73      | 47      | 53     | 40     | 78     | 57 |
| 4  | 192.103 | 92      | 89     | 49     | 90     | 56 |
| 5  | 32      | 143.096 | 74.526 | 57     | 42.702 | 55 |
| 6  | 61      | 80      | 62     | 65     | 14     | 54 |
| 7  | 90      | 143.125 | 99     | 74     | 26     | 53 |
| 8  | 192.219 | 69      | 74.635 | 82     | 38     | 52 |
| 9  | 48      | 143.213 | 71     | 90     | 50     | 51 |
| 10 | 77      | 58      | 74.708 | 99     | 62     | 50 |
| 11 | 192.306 | 143.302 | 44     | 82.007 | 73     | 49 |
| 12 | 35      | 47      | 81     | 15     | 85     | 48 |
| 13 | 64      | 91      | 74.817 | 23     | 97     | 47 |
| 14 | 93      | 143.435 | 63     | 32     | 42.809 | 46 |
| 15 | 192.423 | 80      | 90     | 40     | 21     | 45 |
| 16 | 52      | 143.524 | 74.926 | 48     | 33     | 44 |
| 17 | 81      | 69      | 63     | 57     | 45     | 43 |
| 18 | 192.510 | 143.614 | 75.000 | 65     | 57     | 42 |
| 19 | 39      | 58      | 36     | 73     | 69     | 41 |
| 20 | 68      | 143.703 | 73     | 82     | 81     | 40 |
| 21 | 97      | 47      | 75.109 | 90     | 93     | 39 |
| 22 | 192.626 | 92      | 46     | 98     | 42.905 | 38 |
| 23 | 55      | 143.836 | 83     | 82.107 | 17     | 37 |
| 24 | 84      | 81      | 75.219 | 15     | 29     | 36 |
| 25 | 192.713 | 143.926 | 56     | 23     | 41     | 35 |
| 26 | 43      | 70      | 93     | 31     | 52     | 34 |
| 27 | 72      | 144.015 | 75.329 | 40     | 64     | 33 |
| 28 | 192.831 | 63      | 66     | 48     | 76     | 32 |
| 29 | 30      | 144.105 | 75.403 | 56     | 88     | 31 |
| 30 | 59      | 49      | 40     | 65     | 43.000 | 30 |
| 31 | 88      | 94      | 76     | 73     | 12     | 29 |
| 32 | 192.917 | 144.239 | 75.513 | 81     | 24     | 28 |
| 33 | 46      | 84      | 50     | 90     | 36     | 27 |
| 34 | 75      | 144.329 | 87     | 98     | 48     | 26 |
| 35 | 193.004 | 73      | 75.624 | 82.206 | 60     | 25 |
| 36 | 33      | 144.418 | 61     | 14     | 72     | 24 |
| 37 | 63      | 63      | 98     | 23     | 84     | 23 |
| 38 | 92      | 144.508 | 75.734 | 31     | 96     | 22 |
| 39 | 193.121 | 53      | 71     | 39     | 43.108 | 21 |
| 40 | 50      | 98      | 75.808 | 47     | 20     | 20 |
| 41 | 79      | 144.643 | 45     | 56     | 32     | 19 |
| 42 | 193.208 | 88      | 82     | 64     | 44     | 18 |
| 43 | 37      | 144.733 | 75.919 | 72     | 56     | 17 |
| 44 | 66      | 78      | 56     | 81     | 68     | 16 |
| 45 | 95      | 144.823 | 93     | 89     | 80     | 15 |
| 46 | 193.324 | 68      | 76.031 | 97     | 92     | 14 |
| 47 | 53      | 144.913 | 68     | 82.305 | 43.204 | 13 |
| 48 | 82      | 58      | 76.105 | 14     | 16     | 12 |
| 49 | 193.412 | 145.003 | 42     | 22     | 28     | 11 |
| 50 | 41      | 48      | 79     | 30     | 40     | 10 |
| 51 | 70      | 94      | 76.216 | 38     | 51     | 9  |
| 52 | 99      | 145.139 | 53     | 47     | 63     | 8  |
| 53 | 193.528 | 84      | 91     | 55     | 75     | 7  |
| 54 | 57      | 145.229 | 76.328 | 63     | 87     | 6  |
| 55 | 86      | 74      | 65     | 71     | 99     | 5  |
| 56 | 193.615 | 145.320 | 76.402 | 80     | 43.311 | 4  |
| 57 | 44      | 65      | 40     | 88     | 23     | 3  |
| 58 | 73      | 145.410 | 77     | 96     | 35     | 2  |
| 59 | 193.702 | 56      | 76.514 | 82.404 | 47     | 1  |
| 60 | 32      | 145.501 | 52     | 13     | 59     | 0  |

|    | L       | T       | E      | X      | Y      |   |
|----|---------|---------|--------|--------|--------|---|
| 0  | 183.732 | 145.501 | 76.552 | 82.413 | 43.359 | 0 |
| 1  | 61      | 46      | 89     | 21     | 71     | 1 |
| 2  | 90      | 92      | 76.626 | 29     | 83     | 2 |
| 3  | 183.819 | 145.637 | 64     | 37     | 95     | 3 |
| 4  | 48      | 82      | 76.701 | 46     | 43.407 | 4 |
| 5  | 77      | 145.728 | 39     | 54     | 19     | 5 |
| 6  | 183.906 | 73      | 76     | 62     | 31     | 6 |
| 7  | 35      | 145.819 | 76.814 | 70     | 43     | 7 |
| 8  | 64      | 64      | 51     | 78     | 56     | 8 |
| 9  | 93      | 145.910 | 89     | 87     | 67     | 9 |
| 10 | 194.022 | 55      | 76.926 | 95     | 79     | 0 |
| 11 | 52      | 146.001 | 64     | 82.503 | 91     | 1 |
| 12 | 81      | 46      | 77.001 | 11     | 43.503 | 2 |
| 13 | 194.110 | 92      | 39     | 20     | 15     | 3 |
| 14 | 39      | 146.137 | 77     | 28     | 27     | 4 |
| 15 | 68      | 83      | 77.114 | 36     | 39     | 5 |
| 16 | 97      | 146.229 | 52     | 44     | 51     | 6 |
| 17 | 194.226 | 74      | 90     | 52     | 63     | 7 |
| 18 | 55      | 146.320 | 77.227 | 61     | 75     | 8 |
| 19 | 84      | 66      | 65     | 69     | 87     | 9 |
| 20 | 194.313 | 146.411 | 77.303 | 77     | 99     | 0 |
| 21 | 42      | 57      | 41     | 85     | 43.611 | 1 |
| 22 | 72      | 146.503 | 78     | 93     | 23     | 2 |
| 23 | 194.401 | 49      | 77.416 | 82.602 | 35     | 3 |
| 24 | 30      | 95      | 54     | 10     | 47     | 4 |
| 25 | 59      | 146.640 | 92     | 18     | 59     | 5 |
| 26 | 88      | 86      | 77.530 | 26     | 71     | 6 |
| 27 | 194.517 | 146.732 | 68     | 34     | 83     | 7 |
| 28 | 46      | 78      | 77.606 | 43     | 95     | 8 |
| 29 | 75      | 146.824 | 43     | 51     | 43.707 | 9 |
| 30 | 194.604 | 70      | 81     | 59     | 19     | 0 |
| 31 | 33      | 146.916 | 77.719 | 67     | 31     | 1 |
| 32 | 62      | 62      | 57     | 75     | 44     | 2 |
| 33 | 91      | 147.007 | 95     | 83     | 56     | 3 |
| 34 | 194.721 | 53      | 77.833 | 92     | 63     | 4 |
| 35 | 50      | 99      | 71     | 82.700 | 80     | 5 |
| 36 | 79      | 147.145 | 77.909 | 8      | 92     | 6 |
| 37 | 194.808 | 92      | 48     | 16     | 43.804 | 7 |
| 38 | 37      | 147.238 | 86     | 24     | 16     | 8 |
| 39 | 66      | 84      | 78.024 | 33     | 28     | 9 |
| 40 | 95      | 147.330 | 62     | 41     | 40     | 0 |
| 41 | 194.924 | 76      | 78.100 | 49     | 52     | 1 |
| 42 | 53      | 147.422 | 38     | 57     | 64     | 2 |
| 43 | 82      | 68      | 77     | 65     | 76     | 3 |
| 44 | 195.011 | 147.514 | 78.215 | 73     | 88     | 4 |
| 45 | 41      | 61      | 53     | 82     | 43.900 | 5 |
| 46 | 70      | 147.607 | 91     | 90     | 12     | 6 |
| 47 | 99      | 53      | 78.330 | 98     | 24     | 7 |
| 48 | 195.128 | 99      | 68     | 82.806 | 36     | 8 |
| 49 | 57      | 147.746 | 78.405 | 14     | 48     | 9 |
| 50 | 86      | 92      | 45     | 22     | 60     | 0 |
| 51 | 195.215 | 147.838 | 83     | 30     | 72     | 1 |
| 52 | 44      | 85      | 78.521 | 39     | 84     | 2 |
| 53 | 73      | 147.931 | 60     | 47     | 96     | 3 |
| 54 | 195.302 | 77      | 98     | 55     | 44.008 | 4 |
| 55 | 31      | 148.024 | 78.637 | 63     | 20     | 5 |
| 56 | 61      | 70      | 75     | 71     | 32     | 6 |
| 57 | 90      | 148.117 | 78.713 | 79     | 44     | 7 |
| 58 | 195.419 | 63      | 52     | 87     | 57     | 8 |
| 59 | 48      | 148.210 | 91     | 96     | 69     | 9 |
| 60 | 77      | 56      | 78.829 | 82.904 | 81     | 0 |

## 曲線函數表

| '  | L       | T       | E      | X      | Y      | '  |
|----|---------|---------|--------|--------|--------|----|
| 0  | 195.477 | 148.256 | 78.829 | 82.904 | 44.081 | 80 |
| 1  | 195.506 | 148.308 | 68     | 12     | 93     | 81 |
| 2  | 35      |         | 78.906 | 20     | 44.105 | 82 |
| 3  | 64      |         | 45     | 28     | 17     | 83 |
| 4  | 93      | 148.442 | 84     | 36     | 29     | 84 |
| 5  | 195.622 | 89      | 79.022 | 44     | 41     | 85 |
| 6  | 51      | 148.535 | 61     | 52     | 53     | 86 |
| 7  | 80      |         | 79.100 | 61     | 65     | 87 |
| 8  | 195.710 | 148.629 | 38     | 69     | 77     | 88 |
| 9  | 39      | 75      | 77     | 77     | 89     | 89 |
| 10 | 63      | 148.722 | 79.216 | 85     | 44.201 | 90 |
| 11 | 97      | 69      | 54     | 93     | 13     | 44 |
| 12 | 195.826 | 148.816 | 93     | 83.001 | 25     | 48 |
| 13 | 55      | 62      | 79.332 | 9      | 38     | 47 |
| 14 | 84      | 148.909 | 71     | 17     | 50     | 46 |
| 15 | 195.913 | 56      | 79.410 | 26     | 62     | 45 |
| 16 | 42      | 149.003 | 49     | 34     | 74     | 44 |
| 17 | 71      | 50      | 88     | 42     | 86     | 43 |
| 18 | 196.000 | 97      | 79.527 | 50     | 98     | 42 |
| 19 | 30      | 149.143 | 65     | 58     | 44.310 | 41 |
| 20 | 59      | 90      | 79.604 | 66     | 22     | 40 |
| 21 | 88      | 149.237 | 43     | 74     | 34     | 39 |
| 22 | 196.117 | 84      | 82     | 82     | 46     | 38 |
| 23 | 46      | 149.331 | 79.721 | 90     | 58     | 37 |
| 24 | 75      | 78      | 60     | 98     | 70     | 36 |
| 25 | 196.204 | 149.425 | 79.800 | 83.106 | 82     | 35 |
| 26 | 33      | 72      | 39     | 15     | 95     | 34 |
| 27 | 62      | 149.519 | 78     | 23     | 44.407 | 33 |
| 28 | 91      | 66      | 79.917 | 31     | 19     | 32 |
| 29 | 196.320 | 149.613 | 56     | 39     | 31     | 31 |
| 30 | 50      | 61      | 95     | 47     | 43     | 30 |
| 31 | 79      | 149.708 | 80.034 | 55     | 55     | 29 |
| 32 | 196.408 | 55      | 74     | 63     | 67     | 28 |
| 33 | 37      | 149.802 | 80.113 | 71     | 79     | 27 |
| 34 | 66      | 49      | 52     | 79     | 91     | 26 |
| 35 | 95      |         | 91     | 87     | 44.503 | 25 |
| 36 | 196.524 | 149.944 | 80.231 | 95     | 16     | 24 |
| 37 | 53      | 91      | 70     | 83.203 | 28     | 23 |
| 38 | 82      | 150.038 | 80.308 | 12     | 40     | 22 |
| 39 | 196.611 | 85      | 49     | 20     | 52     | 21 |
| 40 | 40      | 150.133 | 88     | 28     | 64     | 20 |
| 41 | 70      | 80      | 80.427 | 36     | 76     | 19 |
| 42 | 99      | 150.227 | 67     | 44     | 88     | 18 |
| 43 | 196.728 | 75      | 80.506 | 52     | 44.600 | 17 |
| 44 | 57      | 150.322 | 46     | 60     | 12     | 16 |
| 45 | 86      | 70      | 85     | 68     | 24     | 15 |
| 46 | 196.815 | 150.417 | 80.625 | 76     | 37     | 14 |
| 47 | 44      | 65      | 64     | 84     | 49     | 13 |
| 48 | 73      | 150.512 | 80.704 | 92     | 61     | 12 |
| 49 | 196.902 | 60      | 43     | 83.300 | 73     | 11 |
| 50 | 31      | 150.607 | 83     | 8      | 85     | 10 |
| 51 | 60      | 55      | 80.823 | 16     | 97     | 9  |
| 52 | 89      | 150.702 | 62     | 24     | 44.709 | 8  |
| 53 | 197.019 | 50      | 80.902 | 32     | 21     | 7  |
| 54 | 48      | 97      | 42     | 40     | 34     | 6  |
| 55 | 77      | 150.845 | 81     | 48     | 46     | 5  |
| 56 | 197.106 | 93      | 81.021 | 56     | 58     | 4  |
| 57 | 35      | 150.940 | 61     | 64     | 70     | 3  |
| 58 | 64      | 88      | 81.100 | 72     | 82     | 2  |
| 59 | 93      | 151.036 | 40     | 81     | 94     | 1  |
| 60 | 197.222 | 83      | 80     | 89     | 44.806 | 0  |

| '  | L       | T       | E      | X      | Y      | ' |
|----|---------|---------|--------|--------|--------|---|
| 0  | 197.222 | 151.083 | 81.180 | 83.389 | 44.806 | 0 |
| 1  | 51      | 151.131 | 81.220 | 97     | 18     | 0 |
| 2  | 80      | 79      | 60     | 83.405 | 31     | 0 |
| 3  | 197.309 | 151.227 | 81.300 | 13     | 43     | 0 |
| 4  | 39      | 75      | 40     | 21     | 55     | 6 |
| 5  | 03      | 151.322 | 79     | 29     | 67     | 6 |
| 6  | 97      | 70      | 81.419 | 37     | 79     | 6 |
| 7  | 197.426 | 151.418 | 59     | 45     | 91     | 6 |
| 8  | 55      | 66      | 99     | 53     | 44.903 | 6 |
| 9  | 84      | 151.514 | 81.539 | 61     | 15     | 6 |
| 10 | 197.513 | 62      | 79     | 69     | 28     | 0 |
| 11 | 42      | 151.610 | 81.619 | 77     | 40     | 0 |
| 12 | 71      | 68      | 59     | 85     | 52     | 0 |
| 13 | 197.600 | 151.706 | 81.700 | 93     | 64     | 0 |
| 14 | 29      | 54      | 81.740 | 83.501 | 76     | 0 |
| 15 | 59      | 151.802 | 80     | 9      | 88     | 5 |
| 16 | 88      | 50      | 81.820 | 17     | 45.000 | 5 |
| 17 | 197.717 | 98      | 60     | 25     | 13     | 5 |
| 18 | 46      | 151.945 | 81.900 | 33     | 25     | 5 |
| 19 | 75      | 94      | 40     | 41     | 37     | 5 |
| 20 | 197.804 | 152.043 | 81     | 49     | 49     | 0 |
| 21 | 33      | 91      | 82.021 | 57     | 61     | 0 |
| 22 | 62      | 152.139 | 61     | 65     | 73     | 0 |
| 23 | 91      | 87      | 82.101 | 73     | 86     | 0 |
| 24 | 197.920 | 152.235 | 42     | 81     | 98     | 6 |
| 25 | 49      | 84      | 82     | 89     | 45.110 | 5 |
| 26 | 79      | 152.332 | 82.222 | 97     | 22     | 5 |
| 27 | 198.008 | 80      | 63     | 83.605 | 34     | 5 |
| 28 | 37      | 152.429 | 82.303 | 13     | 46     | 5 |
| 29 | 66      | 77      | 44     | 21     | 58     | 5 |
| 30 | 95      | 152.525 | 84     | 29     | 71     | 0 |
| 31 | 198.124 | 74      | 82.425 | 37     | 83     | 9 |
| 32 | 53      | 152.622 | 65     | 45     | 95     | 9 |
| 33 | 82      | 71      | 82.506 | 52     | 45.207 | 2 |
| 34 | 198.211 | 152.719 | 46     | 60     | 19     | 2 |
| 35 | 40      | 67      | 87     | 68     | 31     | 5 |
| 36 | 69      | 152.816 | 82.627 | 76     | 44     | 5 |
| 37 | 98      | 64      | 68     | 84     | 56     | 5 |
| 38 | 198.328 | 152.913 | 82.708 | 92     | 68     | 2 |
| 39 | 57      | 62      | 49     | 83.700 | 80     | 2 |
| 40 | 86      | 153.010 | 90     | 8      | 92     | 0 |
| 41 | 198.415 | 59      | 82.830 | 16     | 45.304 | 1 |
| 42 | 44      | 153.107 | 71     | 24     | 17     | 9 |
| 43 | 73      | 56      | 82.912 | 32     | 29     | 1 |
| 44 | 198.502 | 153.205 | 53     | 40     | 41     | 8 |
| 45 | 31      | 53      | 93     | 48     | 53     | 1 |
| 46 | 60      | 153.302 | 83.034 | 56     | 65     | 4 |
| 47 | 89      | 51      | 75     | 64     | 78     | 1 |
| 48 | 198.618 | 153.400 | 83.116 | 72     | 90     | 3 |
| 49 | 48      | 48      | 57     | 80     | 45.402 | 1 |
| 50 | 77      | 97      | 98     | 88     | 14     | 0 |
| 51 | 198.706 | 153.546 | 83.239 | 96     | 26     | 9 |
| 52 | 35      | 95      | 80     | 83.804 | 39     | 8 |
| 53 | 64      | 153.644 | 83.321 | 12     | 51     | 7 |
| 54 | 93      | 93      | 61     | 19     | 63     | 6 |
| 55 | 198.822 | 153.742 | 83.402 | 27     | 75     | 5 |
| 56 | 51      | 91      | 43     | 35     | 87     | 4 |
| 57 | 80      | 153.839 | 85     | 43     | 99     | 3 |
| 58 | 198.909 | 88      | 83.506 | 51     | 45.512 | 2 |
| 59 | 38      | 153.937 | 67     | 59     | 24     | 1 |
| 60 | 68      | 86      | 83.608 | 67     | 36     | 0 |

| '  | L       | T       | E      | X      | Y      | '  |
|----|---------|---------|--------|--------|--------|----|
| 0  | 199.968 | 153.986 | 83.608 | 83.857 | 45.536 | 0  |
| 1  | 97      | 154.035 | 49     | 75     | 48     | 1  |
| 2  | 199.026 | 85      | 90     | 83     | 60     | 2  |
| 3  | 55      | 154.134 | 83.731 | 91     | 73     | 3  |
| 4  | 84      | 83      | 72     | 99     | 85     | 4  |
| 5  | 199.113 | 154.232 | 83.814 | 83.907 | 97     | 5  |
| 6  | 42      | 61      | 55     | 15     | 45.609 | 6  |
| 7  | 71      | 154.330 | 83.893 | 22     | 21     | 7  |
| 8  | 199.200 | 73      | 56     | 30     | 34     | 8  |
| 9  | 29      | 154.429 | 72     | 38     | 46     | 9  |
| 10 | 58      | 76      | 84.020 | 46     | 58     | 10 |
| 11 | 88      | 154.527 | 61     | 54     | 70     | 11 |
| 12 | 199.317 | 75      | 84.103 | 62     | 83     | 12 |
| 13 | 46      | 154.625 | 44     | 70     | 95     | 13 |
| 14 | 75      | 75      | 86     | 73     | 45.707 | 14 |
| 15 | 199.404 | 154.724 | 84.227 | 85     | 19     | 15 |
| 16 | 33      | 74      | 69     | 94     | 31     | 16 |
| 17 | 62      | 154.823 | 84.310 | 84.001 | 44     | 17 |
| 18 | 91      | 73      | 52     | 9      | 56     | 18 |
| 19 | 199.520 | 154.922 | 93     | 17     | 68     | 19 |
| 20 | 49      | 71      | 84.435 | 25     | 80     | 20 |
| 1  | 78      | 155.021 | 76     | 33     | 92     | 1  |
| 2  | 199.607 | 70      | 84.518 | 41     | 45.805 | 2  |
| 3  | 37      | 155.120 | 60     | 49     | 17     | 3  |
| 4  | 65      | 70      | 84.601 | 57     | 29     | 4  |
| 5  | 95      | 155.219 | 43     | 64     | 41     | 5  |
| 6  | 199.724 | 69      | 85     | 72     | 54     | 6  |
| 7  | 53      | 155.318 | 84.725 | 80     | 66     | 7  |
| 8  | 82      | 68      | 68     | 88     | 78     | 8  |
| 9  | 199.811 | 155.418 | 84.810 | 96     | 90     | 9  |
| 30 | 40      | 67      | 52     | 84.104 | 45.933 | 30 |
| 1  | 69      | 155.517 | 93     | 12     | 15     | 1  |
| 2  | 98      | 67      | 84.935 | 20     | 27     | 2  |
| 3  | 199.927 | 155.617 | 77     | 27     | 39     | 3  |
| 4  | 57      | 66      | 85.019 | 35     | 51     | 4  |
| 5  | 86      | 155.716 | 61     | 43     | 64     | 5  |
| 6  | 200.015 | 66      | 85.103 | 51     | 76     | 6  |
| 7  | 44      | 155.816 | 45     | 59     | 88     | 7  |
| 8  | 73      | 66      | 87     | 67     | 46.000 | 8  |
| 9  | 200.102 | 155.916 | 85.229 | 75     | 13     | 9  |
| 40 | 31      | 65      | 71     | 82     | 25     | 40 |
| 1  | 60      | 156.015 | 85.313 | 90     | 37     | 1  |
| 2  | 89      | 65      | 55     | 98     | 49     | 2  |
| 3  | 200.218 | 156.115 | 97     | 84.206 | 62     | 3  |
| 4  | 47      | 65      | 85.439 | 14     | 74     | 4  |
| 5  | 77      | 156.215 | 81     | 22     | 86     | 5  |
| 6  | 200.306 | 65      | 85.523 | 30     | 98     | 6  |
| 7  | 35      | 156.315 | 65     | 37     | 46.111 | 7  |
| 8  | 64      | 66      | 85.608 | 45     | 23     | 8  |
| 9  | 93      | 156.416 | 50     | 53     | 35     | 9  |
| 50 | 200.422 | 66      | 92     | 61     | 47     | 50 |
| 1  | 51      | 156.516 | 85.734 | 69     | 60     | 1  |
| 2  | 80      | 66      | 77     | 77     | 72     | 2  |
| 3  | 200.509 | 156.616 | 85.819 | 84     | 84     | 3  |
| 4  | 33      | 67      | 61     | 92     | 96     | 4  |
| 5  | 67      | 156.717 | 85.904 | 84.300 | 46.209 | 5  |
| 6  | 97      | 67      | 46     | 8      | 21     | 6  |
| 7  | 200.625 | 156.817 | 89     | 16     | 33     | 7  |
| 8  | 55      | 68      | 86.031 | 23     | 45     | 8  |
| 9  | 84      | 156.918 | 73     | 31     | 58     | 9  |
| 60 | 200.713 | 69      | 86.116 | 39     | 70     | 60 |

| '   | L       | T       | E      | X      | Y      | '   |
|-----|---------|---------|--------|--------|--------|-----|
| 0 1 | 200.713 | 156.969 | 86.116 | 84.339 | 46.270 | 8 0 |
| 1   | 42      | 157.019 | 58     | 47     | 82     | 0 0 |
| 2   | 71      | 69      | 86.201 | 55     | 95     | 0 0 |
| 3   | 200.800 | 157.120 | 43     | 63     | 46.307 | 0 0 |
| 4   | 29      | 70      | 86     | 70     | 19     | 0 0 |
| 5   | 58      | 157.221 | 86.329 | 78     | 31     | 0 0 |
| 6   | 87      | 71      | 71     | 86     | 44     | 0 0 |
| 7   | 200.916 | 157.322 | 86.414 | 94     | 56     | 0 0 |
| 8   | 46      | 72      | 57     | 81.402 | 68     | 0 0 |
| 9   | 75      | 157.423 | 99     | 9      | 80     | 0 0 |
| 1 0 | 201.004 | 74      | 86.542 | 17     | 93     | 5 0 |
| 1   | 33      | 157.524 | 85     | 25     | 46.405 | 0 0 |
| 2   | 62      | 75      | 86.627 | 33     | 17     | 0 0 |
| 3   | 91      | 157.625 | 70     | 41     | 30     | 0 0 |
| 4   | 201.120 | 76      | 86.713 | 48     | 42     | 0 0 |
| 5   | 49      | 157.727 | 56     | 56     | 54     | 4 5 |
| 6   | 78      | 78      | 99     | 64     | 66     | 4 4 |
| 7   | 201.207 | 157.828 | 86.842 | 72     | 79     | 4 4 |
| 8   | 36      | 79      | 84     | 79     | 91     | 4 4 |
| 9   | 66      | 157.930 | 86.927 | 87     | 46.503 | 4 4 |
| 2 0 | 95      | 81      | 70     | 95     | 16     | 4 0 |
| 1   | 201.324 | 158.032 | 87.013 | 81.503 | 28     | 0 0 |
| 2   | 53      | 82      | 56     | 11     | 40     | 0 0 |
| 3   | 82      | 158.133 | 99     | 18     | 52     | 0 0 |
| 4   | 201.411 | 84      | 87.142 | 26     | 65     | 0 0 |
| 5   | 40      | 158.235 | 85     | 34     | 77     | 5 5 |
| 6   | 69      | 86      | 87.229 | 42     | 89     | 5 4 |
| 7   | 98      | 158.337 | 72     | 49     | 46.602 | 5 3 |
| 8   | 201.527 | 88      | 87.315 | 57     | 14     | 5 3 |
| 9   | 56      | 158.439 | 58     | 65     | 26     | 5 1 |
| 3 0 | 86      | 90      | 87.401 | 73     | 39     | 3 0 |
| 1   | 201.615 | 158.541 | 44     | 80     | 51     | 0 0 |
| 2   | 44      | 93      | 88     | 88     | 63     | 0 0 |
| 3   | 73      | 158.644 | 87.531 | 96     | 75     | 0 0 |
| 4   | 201.702 | 95      | 54     | 81.604 | 88     | 0 0 |
| 5   | 31      | 158.746 | 87.617 | 12     | 46.700 | 2 5 |
| 6   | 60      | 97      | 61     | 19     | 12     | 2 4 |
| 7   | 89      | 158.848 | 87.704 | 27     | 25     | 2 3 |
| 8   | 201.818 | 158.900 | 48     | 35     | 37     | 2 2 |
| 9   | 47      | 51      | 91     | 43     | 49     | 2 1 |
| 4 0 | 76      | 159.002 | 87.834 | 50     | 62     | 2 0 |
| 1   | 201.906 | 54      | 78     | 58     | 74     | 1 9 |
| 2   | 36      | 159.105 | 87.921 | 66     | 86     | 1 8 |
| 3   | 64      | 56      | 65     | 73     | 99     | 1 7 |
| 4   | 93      | 159.208 | 88.008 | 81     | 46.811 | 1 6 |
| 5   | 202.022 | 59      | 52     | 89     | 23     | 1 5 |
| 6   | 51      | 159.311 | 95     | 97     | 35     | 1 4 |
| 7   | 80      | 82      | 88.139 | 81.704 | 48     | 1 3 |
| 8   | 202.109 | 159.414 | 83     | 12     | 60     | 1 2 |
| 9   | 38      | 65      | 88.226 | 20     | 72     | 1 1 |
| 5 0 | 67      | 159.517 | 70     | 28     | 85     | 1 0 |
| 1   | 96      | 68      | 88.314 | 35     | 97     | 0 9 |
| 2   | 202.225 | 159.620 | 57     | 43     | 46.909 | 0 8 |
| 3   | 55      | 71      | 88.401 | 51     | 22     | 0 7 |
| 4   | 84      | 159.723 | 45     | 58     | 34     | 0 6 |
| 5   | 202.313 | 75      | 89     | 66     | 46     | 5 5 |
| 6   | 42      | 159.827 | 88.532 | 74     | 59     | 5 4 |
| 7   | 71      | 78      | 76     | 82     | 71     | 5 3 |
| 8   | 202.400 | 159.930 | 88.620 | 89     | 83     | 5 2 |
| 9   | 29      | 82      | 64     | 97     | 96     | 5 1 |
| 0   | 58      | 160.033 | 88.708 | 81.805 | 47.008 | 5 0 |

## 曲線函數表

|    | L       | T       | E      | X      | Y      |     |
|----|---------|---------|--------|--------|--------|-----|
| 0  | 202.458 | 160.033 | 88.708 | 84.805 | 47.008 | 60  |
| 1  | 87      | 85      | 52     | 12     | 20     | 8   |
| 2  | 202.516 | 160.137 | 88.96  | 20     | 33     | 16  |
| 3  | 45      | 89      | 88.840 | 28     | 45     | 24  |
| 4  | 75      | 160.241 | 84     | 36     | 57     | 32  |
| 5  | 202.604 | 93      | 88.928 | 43     | 70     | 40  |
| 6  | 33      | 160.345 | 72     | 51     | 82     | 48  |
| 7  | 62      | 97      | 88.016 | 59     | 94     | 56  |
| 8  | 91      | 160.449 | 60     | 66     | 47.107 | 64  |
| 9  | 202.720 | 160.501 | 89.104 | 74     | 19     | 72  |
| 10 | 49      | 53      | 48     | 82     | 31     | 80  |
| 11 | 78      | 160.605 | 93     | 89     | 44     | 88  |
| 12 | 202.807 | 57      | 89.237 | 97     | 56     | 96  |
| 13 | 36      | 160.709 | 81     | 84.905 | 68     | 104 |
| 14 | 65      | 61      | 89.325 | 13     | 81     | 112 |
| 15 | 95      | 160.813 | 70     | 20     | 93     | 120 |
| 16 | 202.924 | 65      | 89.414 | 28     | 47.206 | 128 |
| 17 | 53      | 160.917 | 58     | 36     | 18     | 136 |
| 18 | 82      | 70      | 89.503 | 43     | 30     | 144 |
| 19 | 203.011 | 161.022 | 47     | 51     | 43     | 152 |
| 20 | 40      | 74      | 91     | 59     | 55     | 160 |
| 21 | 69      | 161.126 | 89.636 | 66     | 67     | 168 |
| 22 | 98      | 79      | 80     | 74     | 80     | 176 |
| 23 | 203.127 | 161.231 | 89.725 | 82     | 92     | 184 |
| 24 | 56      | 83      | 69     | 89     | 47.304 | 192 |
| 25 | 85      | 161.336 | 89.814 | 97     | 17     | 200 |
| 26 | 203.215 | 88      | 58     | 85.005 | 29     | 208 |
| 27 | 44      | 161.441 | 89.903 | 12     | 41     | 216 |
| 28 | 73      | 98      | 48     | 20     | 54     | 224 |
| 29 | 203.302 | 161.546 | 92     | 28     | 66     | 232 |
| 30 | 31      | 98      | 90.037 | 35     | 79     | 240 |
| 31 | 60      | 161.651 | 81     | 43     | 91     | 248 |
| 32 | 89      | 161.703 | 90.126 | 50     | 47.403 | 256 |
| 33 | 203.418 | 56      | 71     | 58     | 16     | 264 |
| 34 | 47      | 161.808 | 90.216 | 66     | 28     | 272 |
| 35 | 76      | 61      | 60     | 73     | 40     | 280 |
| 36 | 203.505 | 161.914 | 90.305 | 81     | 53     | 288 |
| 37 | 34      | 66      | 50     | 89     | 65     | 296 |
| 38 | 64      | 162.019 | 95     | 96     | 78     | 304 |
| 39 | 93      | 72      | 90.440 | 85.104 | 90     | 312 |
| 40 | 203.622 | 162.125 | 85     | 12     | 47.502 | 320 |
| 41 | 51      | 77      | 90.530 | 19     | 15     | 328 |
| 42 | 80      | 162.230 | 75     | 27     | 27     | 336 |
| 43 | 203.709 | 83      | 90.619 | 35     | 39     | 344 |
| 44 | 38      | 162.336 | 65     | 42     | 52     | 352 |
| 45 | 67      | 89      | 90.710 | 50     | 64     | 360 |
| 46 | 96      | 162.442 | 56     | 57     | 77     | 368 |
| 47 | 203.825 | 95      | 90.800 | 66     | 89     | 376 |
| 48 | 54      | 162.548 | 45     | 73     | 47.601 | 384 |
| 49 | 84      | 162.601 | 90     | 80     | 14     | 392 |
| 50 | 203.913 | 54      | 90.935 | 88     | 26     | 400 |
| 51 | 42      | 162.707 | 80     | 96     | 39     | 408 |
| 52 | 71      | 60      | 91.025 | 85.203 | 51     | 416 |
| 53 | 204.000 | 162.813 | 71     | 11     | 63     | 424 |
| 54 | 29      | 66      | 91.116 | 18     | 76     | 432 |
| 55 | 58      | 162.919 | 61     | 26     | 88     | 440 |
| 56 | 87      | 72      | 91.207 | 34     | 47.701 | 448 |
| 57 | 204.116 | 163.025 | 52     | 41     | 13     | 456 |
| 58 | 46      | 79      | 97     | 49     | 25     | 464 |
| 59 | 74      | 163.132 | 91.343 | 56     | 38     | 472 |
| 60 | 204.204 | 85      | 88     | 64     | 50     | 480 |



| '   | L       | T       | E      | X      | Y      | '   |
|-----|---------|---------|--------|--------|--------|-----|
| 0   | 204.204 | 163.185 | 91.388 | 85.264 | 47.750 | 6 0 |
| 1   | 33      | 163.238 | 91.433 | 72     | 62     | 6 9 |
| 2   | 62      | 92      | 79     | 79     | 75     | 6 8 |
| 3   | 91      | 163.345 | 91.524 | 87     | 87     | 5 7 |
| 4   | 204.320 | 98      | 70     | 94     | 47.800 | 5 6 |
| 5   | 49      | 163.452 | 91.615 | 85.302 | 12     | 5 5 |
| 6   | 78      | 163.505 | 61     | 9      | 25     | 5 4 |
| 7   | 204.407 | 59      | 91.707 | 17     | 37     | 5 3 |
| 8   | 36      | 163.612 | 52     | 25     | 49     | 5 2 |
| 9   | 65      | 66      | 98     | 32     | 62     | 5 1 |
| 1 0 | 94      | 163.719 | 91.844 | 40     | 74     | 5 0 |
| 1 1 | 204.523 | 73      | 89     | 47     | 87     | 4 9 |
| 1 2 | 53      | 163.826 | 91.935 | 55     | 99     | 4 8 |
| 1 3 | 82      | 80      | 81     | 63     | 47.911 | 4 7 |
| 1 4 | 204.611 | 163.933 | 92.026 | 70     | 24     | 4 6 |
| 1 5 | 40      | 87      | 72     | 78     | 36     | 4 5 |
| 1 6 | 69      | 164.041 | 92.118 | 85     | 49     | 4 4 |
| 1 7 | 98      | 94      | 64     | 93     | 61     | 4 3 |
| 1 8 | 204.727 | 164.148 | 92.210 | 85.400 | 73     | 4 2 |
| 1 9 | 56      | 164.202 | 56     | 8      | 86     | 4 1 |
| 2 0 | 85      | 56      | 92.302 | 16     | 98     | 4 0 |
| 2 1 | 204.814 | 164.309 | 45     | 23     | 48.011 | 3 9 |
| 2 2 | 43      | 63      | 94     | 31     | 23     | 3 8 |
| 2 3 | 73      | 164.417 | 92.440 | 38     | 36     | 3 7 |
| 2 4 | 204.902 | 71      | 86     | 46     | 48     | 3 6 |
| 2 5 | 31      | 164.525 | 92.532 | 53     | 60     | 3 5 |
| 2 6 | 60      | 79      | 78     | 61     | 73     | 3 4 |
| 2 7 | 89      | 164.633 | 92.624 | 68     | 85     | 3 3 |
| 2 8 | 205.018 | 87      | 70     | 76     | 98     | 3 2 |
| 2 9 | 47      | 164.741 | 92.716 | 84     | 48.110 | 3 1 |
| 3 0 | 76      | 95      | 62     | 91     | 23     | 3 0 |
| 3 1 | 205.105 | 164.849 | 92.809 | 99     | 35     | 2 9 |
| 3 2 | 34      | 164.903 | 55     | 85.506 | 48     | 2 8 |
| 3 3 | 63      | 57      | 92.901 | 14     | 60     | 2 7 |
| 3 4 | 93      | 165.011 | 47     | 21     | 72     | 2 6 |
| 3 5 | 205.222 | 65      | 94     | 29     | 85     | 2 5 |
| 3 6 | 51      | 165.120 | 93.040 | 36     | 97     | 2 4 |
| 3 7 | 80      | 74      | 86     | 44     | 48.210 | 2 3 |
| 3 8 | 205.309 | 165.228 | 93.133 | 51     | 22     | 2 2 |
| 3 9 | 38      | 82      | 79     | 59     | 35     | 2 1 |
| 4 0 | 67      | 165.337 | 93.226 | 67     | 47     | 2 0 |
| 4 1 | 96      | 91      | 72     | 74     | 59     | 1 9 |
| 4 2 | 205.425 | 165.445 | 93.319 | 82     | 72     | 1 8 |
| 4 3 | 54      | 165.500 | 65     | 89     | 84     | 1 7 |
| 4 4 | 83      | 54      | 93.412 | 97     | 97     | 1 6 |
| 4 5 | 205.513 | 165.608 | 58     | 85.604 | 48.309 | 1 5 |
| 4 6 | 42      | 63      | 93.506 | 12     | 22     | 1 4 |
| 4 7 | 71      | 165.717 | 52     | 19     | 34     | 1 3 |
| 4 8 | 205.600 | 72      | 98     | 27     | 47     | 1 2 |
| 4 9 | 29      | 165.826 | 93.645 | 34     | 59     | 1 1 |
| 5 0 | 58      | 81      | 92     | 42     | 72     | 1 0 |
| 5 1 | 87      | 165.935 | 93.738 | 49     | 84     | 9   |
| 5 2 | 205.716 | 90      | 85     | 57     | 96     | 8   |
| 5 3 | 45      | 166.045 | 93.832 | 64     | 48.409 | 7   |
| 5 4 | 74      | 99      | 79     | 72     | 21     | 6   |
| 5 5 | 205.803 | 166.154 | 93.926 | 79     | 34     | 5   |
| 5 6 | 32      | 166.209 | 73     | 87     | 46     | 4   |
| 5 7 | 62      | 64      | 94.019 | 94     | 59     | 3   |
| 5 8 | 91      | 166.318 | 66     | 85.702 | 71     | 2   |
| 5 9 | 205.920 | 73      | 94.113 | 9      | 84     | 1   |
| 6 0 | 49      | 166.428 | 60     | 17     | 96     | 0   |

| '  | L       | T       | E      | X      | Y      | ' |
|----|---------|---------|--------|--------|--------|---|
| 0  | 205.949 | 166.428 | 94.160 | 85.717 | 48.496 | 6 |
| 1  | 78      | 83      | 94.207 | 24     | 48.509 | 0 |
| 2  | 206.007 | 166.538 | 54     | 32     | 21     | 9 |
| 3  | 36      | 93      | 94.301 | 39     | 34     | 8 |
| 4  | 65      | 166.547 | 49     | 47     | 46     | 7 |
| 5  | 94      | 166.702 | 96     | 54     | 58     | 5 |
| 6  | 206.123 | 166.57  | 94.443 | 71     | 71     | 5 |
| 7  | 52      | 166.812 | 90     | 69     | 83     | 5 |
| 8  | 82      | 67      | 94.537 | 77     | 96     | 5 |
| 9  | 206.211 | 166.922 | 84     | 84     | 48.608 | 5 |
| 10 | 40      | 78      | 94.632 | 91     | 21     | 0 |
| 11 | 69      | 167.033 | 79     | 99     | 33     | 9 |
| 12 | 98      | 88      | 94.726 | 85.806 | 46     | 8 |
| 13 | 206.327 | 167.143 | 74     | 14     | 58     | 4 |
| 14 | 56      | 98      | 94.821 | 21     | 71     | 4 |
| 15 | 85      | 167.253 | 68     | 29     | 83     | 5 |
| 16 | 206.414 | 167.309 | 94.916 | 36     | 56     | 4 |
| 17 | 43      | 64      | 63     | 44     | 48.708 | 4 |
| 18 | 72      | 167.419 | 95.011 | 51     | 21     | 4 |
| 19 | 206.502 | 75      | 58     | 59     | 33     | 4 |
| 20 | 31      | 167.530 | 95.106 | 66     | 46     | 0 |
| 21 | 60      | 85      | 74     | 74     | 58     | 9 |
| 22 | 89      | 167.641 | 95.201 | 81     | 71     | 8 |
| 23 | 206.618 | 96      | 48     | 88     | 83     | 7 |
| 24 | 47      | 167.752 | 96     | 96     | 96     | 0 |
| 25 | 76      | 167.807 | 95.344 | 85.903 | 49.808 | 5 |
| 26 | 206.705 | 63      | 91     | 11     | 21     | 5 |
| 27 | 34      | 167.918 | 95.439 | 18     | 33     | 3 |
| 28 | 63      | 74      | 87     | 26     | 46     | 3 |
| 29 | 92      | 168.029 | 95.535 | 33     | 58     | 2 |
| 30 | 206.822 | 85      | 63     | 41     | 71     | 0 |
| 31 | 51      | 168.140 | 95.630 | 48     | 83     | 9 |
| 32 | 80      | 96      | 78     | 55     | 96     | 8 |
| 33 | 206.909 | 168.252 | 95.726 | 63     | 48.908 | 2 |
| 34 | 38      | 168.308 | 74     | 70     | 21     | 6 |
| 35 | 67      | 63      | 95.822 | 78     | 33     | 5 |
| 36 | 96      | 168.419 | 70     | 85     | 46     | 2 |
| 37 | 207.025 | 75      | 95.918 | 93     | 58     | 4 |
| 38 | 54      | 168.531 | 66     | 86.000 | 71     | 3 |
| 39 | 83      | 87      | 96.014 | 7      | 83     | 2 |
| 40 | 207.112 | 168.643 | 62     | 15     | 96     | 0 |
| 41 | 41      | 98      | 96.110 | 22     | 49.008 | 9 |
| 42 | 71      | 168.754 | 58     | 30     | 21     | 8 |
| 43 | 207.200 | 168.810 | 96.206 | 37     | 33     | 1 |
| 44 | 29      | 66      | 55     | 45     | 46     | 6 |
| 45 | 58      | 168.922 | 96.303 | 52     | 58     | 5 |
| 46 | 87      | 79      | 51     | 59     | 71     | 4 |
| 47 | 207.316 | 169.035 | 99     | 67     | 83     | 3 |
| 48 | 45      | 91      | 96.448 | 74     | 96     | 2 |
| 49 | 74      | 169.147 | 96     | 82     | 49.108 | 1 |
| 50 | 207.403 | 169.203 | 95.544 | 89     | 21     | 0 |
| 51 | 32      | 59      | 93     | 96     | 33     | 9 |
| 52 | 61      | 169.315 | 96.641 | 86.104 | 46     | 8 |
| 53 | 91      | 72      | 90     | 11     | 58     | 7 |
| 54 | 207.520 | 169.428 | 96.738 | 19     | 71     | 6 |
| 55 | 49      | 84      | 86     | 26     | 83     | 5 |
| 56 | 78      | 169.541 | 96.835 | 33     | 96     | 4 |
| 57 | 207.607 | 97      | 84     | 41     | 49.209 | 3 |
| 58 | 36      | 169.653 | 96.932 | 48     | 21     | 2 |
| 59 | 65      | 169.710 | 81     | 55     | 34     | 1 |
| 60 | 94      | 66      | 97.029 | 63     | 46     | 0 |

| '  | L       | T       | E       | X      | Y      | '  |
|----|---------|---------|---------|--------|--------|----|
| 0  | 207.694 | 169.766 | 97.029  | 86.163 | 49.246 | 60 |
| 1  | 207.723 | 169.823 | 97.078  | 86.200 | 49.283 | 59 |
| 2  | 52      | 79      | 97.127  | 86.237 | 49.320 | 58 |
| 3  | 81      | 169.936 | 97.175  | 86.274 | 49.357 | 57 |
| 4  | 207.811 | 92      | 97.224  | 86.311 | 49.394 | 56 |
| 5  | 40      | 170.049 | 97.273  | 86.348 | 49.431 | 55 |
| 6  | 69      | 170.106 | 97.322  | 86.385 | 49.468 | 54 |
| 7  | 98      | 62      | 97.371  | 86.422 | 49.505 | 53 |
| 8  | 207.927 | 170.219 | 97.420  | 86.459 | 49.542 | 52 |
| 9  | 56      | 76      | 97.468  | 86.496 | 49.579 | 51 |
| 10 | 85      | 170.332 | 97.517  | 86.533 | 49.616 | 50 |
| 11 | 208.014 | 89      | 97.566  | 86.570 | 49.653 | 49 |
| 12 | 43      | 170.446 | 97.615  | 86.607 | 49.690 | 48 |
| 13 | 72      | 170.503 | 97.664  | 86.644 | 49.727 | 47 |
| 14 | 208.101 | 59      | 97.713  | 86.681 | 49.764 | 46 |
| 15 | 31      | 170.616 | 97.762  | 86.718 | 49.801 | 45 |
| 16 | 60      | 73      | 97.811  | 86.755 | 49.838 | 44 |
| 17 | 89      | 170.730 | 97.860  | 86.792 | 49.875 | 43 |
| 18 | 208.218 | 87      | 97.909  | 86.829 | 49.912 | 42 |
| 19 | 47      | 170.844 | 97.958  | 86.866 | 49.949 | 41 |
| 20 | 76      | 170.901 | 98.008  | 86.903 | 49.986 | 40 |
| 1  | 208.305 | 58      | 98.057  | 86.940 | 50.023 | 39 |
| 2  | 34      | 171.015 | 98.107  | 86.977 | 50.060 | 38 |
| 3  | 63      | 72      | 98.156  | 87.014 | 50.097 | 37 |
| 4  | 208.421 | 92      | 98.205  | 87.051 | 50.134 | 36 |
| 5  | 50      | 87      | 98.255  | 87.088 | 50.171 | 35 |
| 6  | 80      | 171.244 | 98.304  | 87.125 | 50.208 | 34 |
| 7  | 208.509 | 80      | 98.353  | 87.162 | 50.245 | 33 |
| 8  | 38      | 171.301 | 98.403  | 87.199 | 50.282 | 32 |
| 9  | 67      | 171.415 | 98.452  | 87.236 | 50.319 | 31 |
| 0  | 96      | 73      | 98.502  | 87.273 | 50.356 | 30 |
| 1  | 208.625 | 171.530 | 98.551  | 87.310 | 50.393 | 29 |
| 2  | 54      | 87      | 98.601  | 87.347 | 50.430 | 28 |
| 3  | 83      | 171.645 | 98.650  | 87.384 | 50.467 | 27 |
| 4  | 208.712 | 171.702 | 98.700  | 87.421 | 50.504 | 26 |
| 5  | 41      | 60      | 98.750  | 87.458 | 50.541 | 25 |
| 6  | 70      | 171.817 | 98.800  | 87.495 | 50.578 | 24 |
| 7  | 208.800 | 76      | 98.850  | 87.532 | 50.615 | 23 |
| 8  | 29      | 90      | 98.900  | 87.569 | 50.652 | 22 |
| 9  | 58      | 172.047 | 98.950  | 87.606 | 50.689 | 21 |
| 0  | 87      | 172.105 | 99.000  | 87.643 | 50.726 | 20 |
| 1  | 208.916 | 63      | 99.048  | 87.680 | 50.763 | 19 |
| 2  | 45      | 172.220 | 99.098  | 87.717 | 50.800 | 18 |
| 3  | 74      | 78      | 99.148  | 87.754 | 50.837 | 17 |
| 4  | 209.003 | 172.336 | 99.198  | 87.791 | 50.874 | 16 |
| 5  | 22      | 93      | 99.248  | 87.828 | 50.911 | 15 |
| 6  | 61      | 97      | 99.298  | 87.865 | 50.948 | 14 |
| 7  | 209.120 | 172.451 | 99.347  | 87.902 | 50.985 | 13 |
| 8  | 90      | 172.509 | 99.397  | 87.939 | 51.022 | 12 |
| 9  | 209.207 | 67      | 99.447  | 87.976 | 51.059 | 11 |
| 0  | 49      | 172.625 | 99.497  | 88.013 | 51.096 | 10 |
| 1  | 78      | 83      | 99.548  | 88.050 | 51.133 | 9  |
| 2  | 209.297 | 172.741 | 99.598  | 88.087 | 51.170 | 8  |
| 3  | 36      | 99      | 99.648  | 88.124 | 51.207 | 7  |
| 4  | 65      | 172.856 | 99.698  | 88.161 | 51.244 | 6  |
| 5  | 94      | 172.915 | 99.749  | 88.198 | 51.281 | 5  |
| 6  | 209.323 | 73      | 99.799  | 88.235 | 51.318 | 4  |
| 7  | 52      | 173.031 | 99.849  | 88.272 | 51.355 | 3  |
| 8  | 81      | 89      | 99.899  | 88.309 | 51.392 | 2  |
| 9  | 209.410 | 173.147 | 99.950  | 88.346 | 51.429 | 1  |
| 0  | 40      | 173.205 | 100.000 | 88.383 | 51.466 | 0  |

|     | L       | T       | E       | X      | Y      |     |
|-----|---------|---------|---------|--------|--------|-----|
| 0   | 209.440 | 173.205 | 100.000 | 88.602 | 50.000 | 0   |
| 5   | 69      | 63      | 50      | 10     | 13     | 5   |
| 10  | 98      | 173.321 | 100.101 | 17     | 26     | 10  |
| 15  | 209.527 | 80      | 51      | 24     | 38     | 15  |
| 20  | 56      | 173.438 | 100.202 | 32     | 50     | 20  |
| 25  | 85      | 96      | 52      | 39     | 63     | 25  |
| 30  | 209.614 | 173.555 | 100.303 | 46     | 76     | 30  |
| 35  | 43      | 173.613 | 53      | 53     | 88     | 35  |
| 40  | 72      | 71      | 100.404 | 61     | 50.101 | 40  |
| 45  | 209.701 | 173.730 | 55      | 68     | 13     | 45  |
| 50  | 30      | 88      | 100.505 | 75     | 26     | 50  |
| 55  | 59      | 173.847 | 56      | 82     | 39     | 55  |
| 60  | 89      | 173.905 | 100.607 | 90     | 51     | 60  |
| 65  | 209.818 | 64      | 57      | 97     | 64     | 65  |
| 70  | 47      | 174.022 | 100.708 | 86.704 | 76     | 70  |
| 75  | 76      | 81      | 59      | 11     | 89     | 75  |
| 80  | 209.905 | 174.140 | 100.810 | 19     | 50.202 | 80  |
| 85  | 34      | 98      | 61      | 26     | 14     | 85  |
| 90  | 63      | 174.257 | 100.912 | 33     | 27     | 90  |
| 95  | 92      | 174.316 | 63      | 40     | 36     | 95  |
| 100 | 210.021 | 74      | 101.014 | 48     | 52     | 100 |
| 105 | 50      | 174.433 | 65      | 55     | 65     | 105 |
| 110 | 79      | 92      | 101.116 | 62     | 77     | 110 |
| 115 | 210.109 | 174.551 | 67      | 69     | 90     | 115 |
| 120 | 38      | 174.610 | 101.218 | 76     | 50.303 | 120 |
| 125 | 67      | 69      | 69      | 84     | 15     | 125 |
| 130 | 96      | 174.728 | 101.320 | 91     | 28     | 130 |
| 135 | 210.225 | 87      | 71      | 98     | 41     | 135 |
| 140 | 54      | 174.846 | 101.422 | 88.805 | 53     | 140 |
| 145 | 83      | 174.905 | 74      | 13     | 66     | 145 |
| 150 | 210.312 | 64      | 101.525 | 20     | 78     | 150 |
| 155 | 41      | 175.023 | 76      | 27     | 91     | 155 |
| 160 | 70      | 82      | 101.628 | 34     | 50.404 | 160 |
| 165 | 99      | 175.141 | 79      | 41     | 16     | 165 |
| 170 | 210.429 | 175.200 | 101.730 | 49     | 29     | 170 |
| 175 | 58      | 59      | 82      | 56     | 41     | 175 |
| 180 | 87      | 175.319 | 101.833 | 63     | 54     | 180 |
| 185 | 210.516 | 78      | 85      | 70     | 67     | 185 |
| 190 | 45      | 175.437 | 101.936 | 78     | 79     | 190 |
| 195 | 74      | 96      | 88      | 85     | 92     | 195 |
| 200 | 210.603 | 175.556 | 102.039 | 92     | 50.505 | 200 |
| 205 | 32      | 175.615 | 91      | 99     | 17     | 205 |
| 210 | 61      | 75      | 102.142 | 88.906 | 30     | 210 |
| 215 | 90      | 175.734 | 94      | 14     | 43     | 215 |
| 220 | 210.719 | 94      | 102.246 | 21     | 55     | 220 |
| 225 | 49      | 175.853 | 98      | 28     | 68     | 225 |
| 230 | 78      | 175.913 | 102.349 | 35     | 80     | 230 |
| 235 | 210.807 | 72      | 102.401 | 42     | 93     | 235 |
| 240 | 36      | 176.032 | 53      | 49     | 50.606 | 240 |
| 245 | 65      | 91      | 102.505 | 57     | 18     | 245 |
| 250 | 94      | 176.151 | 57      | 64     | 31     | 250 |
| 255 | 210.923 | 176.211 | 102.609 | 71     | 44     | 255 |
| 260 | 52      | 70      | 61      | 78     | 56     | 260 |
| 265 | 81      | 176.330 | 102.712 | 85     | 69     | 265 |
| 270 | 211.010 | 90      | 64      | 93     | 82     | 270 |
| 275 | 39      | 176.450 | 102.816 | 87.000 | 94     | 275 |
| 280 | 68      | 176.510 | 69      | 7      | 50.707 | 280 |
| 285 | 98      | 70      | 102.921 | 14     | 20     | 285 |
| 290 | 211.127 | 176.629 | 73      | 21     | 32     | 290 |
| 295 | 56      | 89      | 103.025 | 28     | 45     | 295 |
| 300 | 85      | 176.749 | 77      | 36     | 58     | 300 |

## 曲線函數表

| '  | L       | T       | E       | X      | Y      | '   |
|----|---------|---------|---------|--------|--------|-----|
| 0  | 211.185 | 176.749 | 103.077 | 87.036 | 50.758 | 6 0 |
| 1  | 211.214 | 176.809 | 103.129 | 43     | 70     | 5 9 |
| 2  | 43      | 69      | 82      | 50     | 83     | 5 8 |
| 3  | 72      | 176.929 | 103.234 | 57     | 96     | 5 7 |
| 4  | 211.301 | 90      | 86      | 64     | 50.808 | 5 6 |
| 5  | 30      | 177.050 | 103.339 | 71     | 21     | 5 5 |
| 6  | 59      | 177.110 | 91      | 78     | 34     | 5 4 |
| 7  | 88      | 70      | 103.443 | 86     | 46     | 5 3 |
| 8  | 211.418 | 177.230 | 96      | 93     | 59     | 5 2 |
| 9  | 47      | 90      | 103.548 | 87.100 | 72     | 5 1 |
| 10 | 76      | 177.351 | 103.653 | 7      | 84     | 5 0 |
| 11 | 211.505 | 177.411 | 83      | 14     | 97     | 4 9 |
| 12 | 34      | 71      | 103.706 | 21     | 50.910 | 4 8 |
| 13 | 63      | 177.532 | 58      | 28     | 22     | 4 7 |
| 14 | 92      | 92      | 103.811 | 36     | 35     | 4 6 |
| 15 | 211.621 | 177.653 | 64      | 43     | 48     | 4 5 |
| 16 | 50      | 177.713 | 103.946 | 50     | 60     | 4 4 |
| 17 | 79      | 74      | 69      | 57     | 73     | 4 3 |
| 18 | 211.708 | 177.834 | 104.022 | 64     | 86     | 4 2 |
| 19 | 36      | 95      | 75      | 71     | 98     | 4 1 |
| 20 | 67      | 177.956 | 104.128 | 78     | 51.011 | 4 0 |
| 21 | 96      | 178.016 | 80      | 86     | 24     | 3 9 |
| 22 | 211.825 | 76      | 104.233 | 93     | 36     | 3 8 |
| 23 | 54      | 178.137 | 86      | 87.200 | 49     | 3 7 |
| 24 | 83      | 98      | 104.339 | 7      | 62     | 3 6 |
| 25 | 211.912 | 178.259 | 92      | 14     | 74     | 3 5 |
| 26 | 41      | 178.319 | 104.445 | 21     | 87     | 3 4 |
| 27 | 70      | 80      | 98      | 28     | 51.100 | 3 3 |
| 28 | 99      | 178.441 | 104.551 | 35     | 12     | 3 2 |
| 29 | 212.028 | 178.502 | 104.604 | 42     | 25     | 3 1 |
| 30 | 58      | 63      | 57      | 50     | 38     | 3 0 |
| 31 | 87      | 178.624 | 104.711 | 57     | 51     | 2 9 |
| 32 | 212.116 | 85      | 64      | 64     | 63     | 2 8 |
| 33 | 45      | 178.746 | 104.817 | 71     | 76     | 2 7 |
| 34 | 74      | 178.807 | 70      | 78     | 89     | 2 6 |
| 35 | 212.203 | 68      | 104.924 | 85     | 51.201 | 2 5 |
| 36 | 32      | 178.929 | 77      | 92     | 14     | 2 4 |
| 37 | 61      | 90      | 105.030 | 99     | 27     | 2 3 |
| 38 | 90      | 179.051 | 84      | 87.306 | 39     | 2 2 |
| 39 | 212.319 | 179.112 | 105.137 | 13     | 52     | 2 1 |
| 40 | 48      | 74      | 91      | 21     | 65     | 2 0 |
| 41 | 77      | 179.235 | 105.244 | 28     | 77     | 1 9 |
| 42 | 212.407 | 96      | 98      | 35     | 90     | 1 8 |
| 43 | 36      | 179.357 | 105.351 | 42     | 51.303 | 1 7 |
| 44 | 65      | 179.419 | 105.405 | 49     | 16     | 1 6 |
| 45 | 94      | 80      | 58      | 56     | 28     | 1 5 |
| 46 | 212.523 | 179.542 | 105.512 | 63     | 41     | 1 4 |
| 47 | 52      | 179.603 | 66      | 70     | 54     | 1 3 |
| 48 | 81      | 64      | 105.619 | 77     | 66     | 1 2 |
| 49 | 212.610 | 179.726 | 73      | 84     | 79     | 1 1 |
| 50 | 33      | 88      | 105.727 | 91     | 92     | 1 0 |
| 51 | 68      | 179.849 | 81      | 98     | 51.405 | 9 9 |
| 52 | 97      | 179.911 | 105.835 | 87.405 | 17     | 9 8 |
| 53 | 212.727 | 72      | 88      | 13     | 30     | 9 7 |
| 54 | 56      | 180.034 | 105.942 | 20     | 43     | 9 6 |
| 55 | 85      | 96      | 96      | 27     | 55     | 9 5 |
| 56 | 212.814 | 180.157 | 105.050 | 34     | 68     | 9 4 |
| 57 | 43      | 180.219 | 106.104 | 41     | 81     | 9 3 |
| 58 | 72      | 81      | 58      | 48     | 94     | 9 2 |
| 59 | 212.901 | 180.343 | 106.212 | 55     | 51.506 | 9 1 |
| 60 | 30      | 180.405 | 66      | 62     | 19     | 9 0 |

|    | L       | T       | E       | X      | Y      |   |
|----|---------|---------|---------|--------|--------|---|
| 0  | 212.930 | 180.405 | 106.266 | 87.462 | 51.519 | 0 |
| 1  | 69      | 67      | 106.321 | 69     | 32     | 9 |
| 2  | 88      | 180.529 | 75      | 76     | 44     | 8 |
| 3  | 213.017 | 91      | 106.429 | 83     | 57     | 7 |
| 4  | 47      | 180.653 | 83      | 90     | 70     | 6 |
| 5  | 76      | 180.715 | 106.538 | 97     | 83     | 5 |
| 6  | 213.105 | 77      | 92      | 87.504 | 95     | 4 |
| 7  | 34      | 180.837 | 106.645 | 11     | 51.606 | 3 |
| 8  | 63      | 180.931 | 106.701 | 18     | 21     | 2 |
| 9  | 92      | 63      | 55      | 25     | 34     | 1 |
| 10 | 213.221 | 181.025 | 106.809 | 32     | 46     | 0 |
| 1  | 50      | 87      | 64      | 39     | 59     | 9 |
| 2  | 79      | 181.150 | 106.918 | 46     | 72     | 8 |
| 3  | 213.308 | 181.212 | 73      | 53     | 84     | 7 |
| 4  | 37      | 74      | 107.027 | 60     | 97     | 6 |
| 5  | 67      | 181.337 | 82      | 67     | 51.710 | 5 |
| 6  | 96      | 99      | 107.137 | 74     | 23     | 4 |
| 7  | 213.425 | 181.461 | 91      | 82     | 35     | 3 |
| 8  | 54      | 181.524 | 107.245 | 89     | 49     | 2 |
| 9  | 83      | 86      | 107.308 | 96     | 61     | 1 |
| 20 | 213.512 | 181.649 | 56      | 87.608 | 74     | 0 |
| 1  | 41      | 181.711 | 107.410 | 10     | 85     | 9 |
| 2  | 70      | 74      | 65      | 17     | 99     | 8 |
| 3  | 99      | 181.837 | 107.520 | 24     | 51.812 | 7 |
| 4  | 213.628 | 99      | 75      | 31     | 25     | 6 |
| 5  | 57      | 181.962 | 107.630 | 38     | 37     | 5 |
| 6  | 85      | 182.025 | 85      | 45     | 50     | 4 |
| 7  | 213.716 | 87      | 107.740 | 52     | 63     | 3 |
| 8  | 45      | 182.150 | 95      | 59     | 76     | 2 |
| 9  | 74      | 182.213 | 107.850 | 66     | 88     | 1 |
| 30 | 213.803 | 76      | 107.905 | 73     | 51.901 | 0 |
| 1  | 32      | 182.339 | 60      | 80     | 14     | 9 |
| 2  | 61      | 182.402 | 108.015 | 87     | 27     | 8 |
| 3  | 90      | 65      | 70      | 94     | 39     | 7 |
| 4  | 213.919 | 182.528 | 108.126 | 87.701 | 52     | 6 |
| 5  | 48      | 91      | 81      | 8      | 65     | 5 |
| 6  | 77      | 182.654 | 108.236 | 15     | 78     | 4 |
| 7  | 214.006 | 182.717 | 92      | 22     | 90     | 3 |
| 8  | 36      | 80      | 108.347 | 29     | 52.003 | 2 |
| 9  | 65      | 182.843 | 108.402 | 36     | 16     | 1 |
| 40 | 94      | 182.906 | 58      | 42     | 29     | 0 |
| 1  | 214.123 | 69      | 108.513 | 49     | 41     | 9 |
| 2  | 52      | 183.033 | 69      | 56     | 54     | 8 |
| 3  | 81      | 96      | 108.624 | 63     | 67     | 7 |
| 4  | 214.210 | 183.159 | 80      | 70     | 80     | 6 |
| 5  | 39      | 183.223 | 108.736 | 77     | 92     | 5 |
| 6  | 68      | 86      | 91      | 84     | 52.105 | 4 |
| 7  | 97      | 183.349 | 108.847 | 91     | 18     | 3 |
| 8  | 214.326 | 183.413 | 108.903 | 93     | 31     | 2 |
| 9  | 56      | 67      | 58      | 87.805 | 44     | 1 |
| 50 | 85      | 183.540 | 109.014 | 12     | 56     | 0 |
| 1  | 214.414 | 183.604 | 70      | 19     | 69     | 9 |
| 2  | 43      | 67      | 109.126 | 26     | 82     | 8 |
| 3  | 72      | 183.731 | 82      | 33     | 95     | 7 |
| 4  | 214.501 | 94      | 109.233 | 40     | 52.207 | 6 |
| 5  | 30      | 183.858 | 99      | 47     | 20     | 5 |
| 6  | 59      | 183.922 | 109.350 | 54     | 33     | 4 |
| 7  | 88      | 86      | 109.406 | 61     | 46     | 3 |
| 8  | 214.617 | 184.049 | 62      | 68     | 59     | 2 |
| 9  | 46      | 184.113 | 109.518 | 75     | 71     | 1 |
| 60 | 75      | 77      | 74      | 82     | 84     | 0 |

|    | L       | T       | E       | X      | Y      |     |
|----|---------|---------|---------|--------|--------|-----|
| 0  | 214.675 | 184.177 | 109.574 | 87.882 | 52.284 | 6 0 |
| 1  | 214.705 | 184.241 | 109.630 | 89     | 97     | 5 9 |
| 2  | 34      | 184.305 | 66      | 96     | 62.310 | 5 8 |
| 3  | 63      | 69      | 109.742 | 37.902 | 22     | 5 7 |
| 4  | 92      | 184.433 | 99      | 9      | 35     | 5 6 |
| 5  | 214.821 | 97      | 109.855 | 16     | 48     | 5 5 |
| 6  | 50      | 184.561 | 109.911 | 23     | 61     | 5 4 |
| 7  | 79      | 184.625 | 68      | 30     | 74     | 5 3 |
| 8  | 214.908 | 89      | 110.024 | 37     | 86     | 5 2 |
| 9  | 37      | 184.753 | 83      | 44     | 99     | 5 1 |
| 10 | 66      | 184.818 | 110.137 | 51     | 52.412 | 5 0 |
| 11 | 95      | 62      | 93      | 58     | 25     | 4 9 |
| 12 | 215.025 | 184.946 | 110.250 | 65     | 38     | 4 8 |
| 13 | 54      | 185.010 | 72      | 72     | 50     | 4 7 |
| 14 | 83      | 75      | 63      | 79     | 63     | 4 6 |
| 15 | 215.112 | 185.139 | 110.420 | 86     | 76     | 4 5 |
| 16 | 41      | 185.204 | 76      | 92     | 89     | 4 4 |
| 17 | 70      | 68      | 110.533 | 99     | 52.502 | 4 3 |
| 18 | 99      | 185.332 | 90      | 88.006 | 14     | 4 2 |
| 19 | 215.228 | 97      | 110.647 | 13     | 27     | 4 1 |
| 20 | 57      | 185.462 | 110.704 | 20     | 40     | 4 0 |
| 1  | 86      | 185.526 | 60      | 27     | 53     | 3 9 |
| 2  | 215.315 | 91      | 110.817 | 34     | 66     | 3 8 |
| 3  | 45      | 185.655 | 74      | 41     | 79     | 3 7 |
| 4  | 74      | 185.720 | 110.931 | 48     | 91     | 3 6 |
| 5  | 215.403 | 85      | 68      | 55     | 52.604 | 3 5 |
| 6  | 32      | 185.850 | 111.045 | 61     | 17     | 3 4 |
| 7  | 61      | 185.914 | 111.102 | 68     | 30     | 3 3 |
| 8  | 90      | 79      | 75      | 75     | 42     | 3 2 |
| 9  | 215.519 | 186.044 | 111.216 | 82     | 55     | 3 1 |
| 30 | 48      | 186.109 | 74      | 89     | 68     | 3 0 |
| 1  | 77      | 74      | 111.331 | 96     | 81     | 2 9 |
| 2  | 215.606 | 186.239 | 88      | 88.103 | 94     | 2 8 |
| 3  | 35      | 186.304 | 111.445 | 10     | 52.706 | 2 7 |
| 4  | 65      | 69      | 111.503 | 17     | 19     | 2 6 |
| 5  | 94      | 186.434 | 60      | 23     | 32     | 2 5 |
| 6  | 215.723 | 99      | 111.617 | 30     | 45     | 2 4 |
| 7  | 52      | 186.564 | 75      | 37     | 58     | 2 3 |
| 8  | 81      | 186.629 | 111.732 | 44     | 71     | 2 2 |
| 9  | 215.810 | 95      | 90      | 51     | 83     | 2 1 |
| 40 | 39      | 186.760 | 111.847 | 58     | 96     | 2 0 |
| 1  | 68      | 186.825 | 111.905 | 65     | 52.809 | 1 9 |
| 2  | 97      | 91      | 62      | 71     | 22     | 1 8 |
| 3  | 215.926 | 186.956 | 112.020 | 78     | 35     | 1 7 |
| 4  | 55      | 187.021 | 78      | 85     | 47     | 1 6 |
| 45 | 84      | 87      | 112.135 | 92     | 60     | 1 5 |
| 6  | 216.014 | 187.152 | 93      | 99     | 73     | 1 4 |
| 7  | 43      | 187.218 | 112.251 | 88.206 | 86     | 1 3 |
| 8  | 72      | 83      | 112.309 | 13     | 99     | 1 2 |
| 9  | 216.101 | 187.349 | 67      | 19     | 52.912 | 1 1 |
| 50 | 30      | 187.415 | 112.425 | 26     | 24     | 1 0 |
| 1  | 59      | 80      | 82      | 33     | 37     | 9 9 |
| 2  | 88      | 187.546 | 112.540 | 40     | 50     | 8 8 |
| 3  | 216.217 | 187.612 | 98      | 47     | 63     | 7 7 |
| 4  | 46      | 77      | 112.656 | 54     | 76     | 6 6 |
| 55 | 75      | 187.743 | 112.715 | 61     | 89     | 5 5 |
| 6  | 216.304 | 187.809 | 73      | 67     | 53.001 | 4 4 |
| 7  | 34      | 75      | 112.831 | 74     | 14     | 3 3 |
| 8  | 63      | 187.941 | 89      | 81     | 27     | 2 2 |
| 9  | 92      | 188.007 | 112.947 | 88     | 40     | 1 1 |
| 60 | 216.421 | 73      | 113.005 | 95     | 53     | 0 0 |

| '   | L       | T       | E       | X      | Y      | '   |
|-----|---------|---------|---------|--------|--------|-----|
| 0   | 216.421 | 188.073 | 113.005 | 88.295 | 53.053 | 6 0 |
| 1   | 50      | 188.139 | 64      | 88.302 | 66     | 5 9 |
| 2   | 79      | 188.205 | 113.122 | 8      | 78     | 5 8 |
| 3   | 216.508 | 78      | 80      | 15     | 91     | 5 7 |
| 4   | 37      | 188.337 | 113.239 | 22     | 53.104 | 5 6 |
| 5   | 66      | 188.403 | 97      | 29     | 17     | 5 5 |
| 6   | 95      | 69      | 113.356 | 36     | 30     | 5 4 |
| 7   | 216.624 | 188.535 | 113.414 | 42     | 43     | 5 3 |
| 8   | 54      | 188.602 | 73      | 49     | 56     | 5 2 |
| 9   | 83      | 68      | 113.531 | 56     | 68     | 5 1 |
| 1 0 | 216.712 | 188.734 | 90      | 63     | 81     | 5 0 |
| 1 1 | 41      | 188.801 | 113.649 | 70     | 94     | 4 9 |
| 1 2 | 70      | 67      | 113.707 | 77     | 53.207 | 4 8 |
| 1 3 | 99      | 188.934 | 66      | 83     | 20     | 4 7 |
| 1 4 | 216.828 | 189.000 | 113.825 | 90     | 33     | 4 6 |
| 1 5 | 57      | 67      | 83      | 97     | 46     | 4 5 |
| 1 6 | 86      | 189.133 | 113.942 | 88.404 | 58     | 4 4 |
| 1 7 | 216.915 | 189.200 | 114.001 | 11     | 71     | 4 3 |
| 1 8 | 44      | 66      | 60      | 17     | 84     | 4 2 |
| 1 9 | 74      | 189.333 | 114.119 | 24     | 97     | 4 1 |
| 2 0 | 217.003 | 189.400 | 78      | 31     | 53.310 | 4 0 |
| 2 1 | 32      | 65      | 114.237 | 38     | 23     | 3 9 |
| 2 2 | 61      | 189.533 | 96      | 44     | 36     | 3 8 |
| 2 3 | 90      | 189.600 | 114.355 | 51     | 48     | 3 7 |
| 2 4 | 217.119 | 67      | 114.414 | 58     | 61     | 3 6 |
| 2 5 | 48      | 188.734 | 73      | 65     | 74     | 3 5 |
| 2 6 | 77      | 189.801 | 114.533 | 72     | 87     | 3 4 |
| 2 7 | 217.206 | 68      | 92      | 78     | 53.400 | 3 3 |
| 2 8 | 35      | 189.935 | 114.651 | 85     | 13     | 3 2 |
| 2 9 | 64      | 190.002 | 114.710 | 92     | 26     | 3 1 |
| 3 0 | 93      | 69      | 70      | 99     | 39     | 3 0 |
| 3 1 | 217.323 | 190.136 | 114.829 | 88.505 | 51     | 2 9 |
| 3 2 | 52      | 190.203 | 89      | 12     | 64     | 2 8 |
| 3 3 | 81      | 70      | 114.948 | 19     | 77     | 2 7 |
| 3 4 | 217.410 | 190.337 | 115.008 | 26     | 90     | 2 6 |
| 3 5 | 39      | 190.405 | 67      | 33     | 53.503 | 2 5 |
| 3 6 | 68      | 72      | 115.127 | 39     | 16     | 2 4 |
| 3 7 | 97      | 190.539 | 86      | 46     | 29     | 2 3 |
| 3 8 | 217.526 | 190.607 | 115.246 | 53     | 42     | 2 2 |
| 3 9 | 55      | 74      | 115.306 | 60     | 54     | 2 1 |
| 4 0 | 84      | 190.741 | 65      | 66     | 67     | 2 0 |
| 4 1 | 217.613 | 190.809 | 115.425 | 73     | 80     | 1 9 |
| 4 2 | 43      | 76      | 85      | 80     | 93     | 1 8 |
| 4 3 | 72      | 190.944 | 115.545 | 87     | 53.606 | 1 7 |
| 4 4 | 217.701 | 191.012 | 115.606 | 93     | 19     | 1 6 |
| 4 5 | 30      | 79      | 65      | 88.600 | 32     | 1 5 |
| 4 6 | 59      | 191.147 | 115.725 | 7      | 45     | 1 4 |
| 4 7 | 88      | 191.215 | 85      | 14     | 57     | 1 3 |
| 4 8 | 217.817 | 82      | 115.845 | 20     | 70     | 1 2 |
| 4 9 | 46      | 191.350 | 115.906 | 27     | 83     | 1 1 |
| 5 0 | 75      | 191.418 | 65      | 34     | 96     | 1 0 |
| 5 1 | 217.904 | 85      | 116.025 | 41     | 53.709 | 9   |
| 5 2 | 33      | 191.554 | 85      | 47     | 22     | 8   |
| 5 3 | 63      | 191.622 | 116.145 | 54     | 35     | 7   |
| 5 4 | 92      | 90      | 116.206 | 61     | 48     | 6   |
| 5 5 | 218.021 | 191.758 | 66      | 67     | 61     | 5   |
| 5 6 | 50      | 191.826 | 116.326 | 74     | 73     | 4   |
| 5 7 | 79      | 94      | 87      | 81     | 86     | 3   |
| 5 8 | 218.108 | 191.962 | 116.447 | 88     | 99     | 2   |
| 5 9 | 37      | 192.030 | 116.508 | 94     | 53.812 | 1   |
| 6 0 | 66      | 98      | 68      | 88.701 | 25     | 0   |



## 曲線函數表

| '  | L       | T       | E       | X      | Y      | '  |
|----|---------|---------|---------|--------|--------|----|
| 0  | 218.166 | 192.098 | 116.568 | 88.701 | 53.825 | 60 |
| 1  | 95      | 192.166 | 116.629 | 8      | 38     | 59 |
| 2  | 218.224 | 192.235 | 116.689 | 14     | 51     | 58 |
| 3  | 53      | 192.303 | 116.750 | 21     | 64     | 57 |
| 4  | 83      | 71      | 116.810 | 28     | 77     | 56 |
| 5  | 218.312 | 192.440 | 71      | 35     | 90     | 55 |
| 6  | 41      | 192.508 | 116.932 | 41     | 53.903 | 54 |
| 7  | 70      | 77      | 92      | 48     | 15     | 53 |
| 8  | 99      | 192.645 | 117.053 | 55     | 28     | 52 |
| 9  | 218.428 | 192.714 | 117.114 | 61     | 41     | 51 |
| 10 | 57      | 82      | 75      | 68     | 54     | 50 |
| 11 | 86      | 192.851 | 117.236 | 75     | 67     | 49 |
| 12 | 218.515 | 192.920 | 97      | 81     | 80     | 48 |
| 13 | 44      | 83      | 117.358 | 88     | 93     | 47 |
| 14 | 73      | 193.057 | 117.419 | 95     | 54.006 | 46 |
| 15 | 218.602 | 193.126 | 80      | 88.802 | 19     | 45 |
| 16 | 32      | 95      | 117.541 | 8      | 32     | 44 |
| 17 | 61      | 193.253 | 117.602 | 15     | 45     | 43 |
| 18 | 90      | 193.322 | 63      | 22     | 57     | 42 |
| 19 | 218.719 | 193.401 | 117.725 | 28     | 70     | 41 |
| 20 | 48      | 70      | 86      | 35     | 83     | 40 |
| 21 | 77      | 193.539 | 117.847 | 42     | 96     | 39 |
| 22 | 218.806 | 193.608 | 117.909 | 48     | 54.109 | 38 |
| 23 | 35      | 77      | 70      | 55     | 22     | 37 |
| 24 | 64      | 193.746 | 118.031 | 62     | 35     | 36 |
| 25 | 93      | 193.816 | 93      | 68     | 48     | 35 |
| 26 | 218.922 | 85      | 118.154 | 75     | 61     | 34 |
| 27 | 52      | 193.954 | 118.216 | 82     | 74     | 33 |
| 28 | 81      | 194.023 | 77      | 88     | 87     | 32 |
| 29 | 219.010 | 93      | 118.339 | 95     | 54.200 | 31 |
| 30 | 39      | 194.162 | 118.401 | 88.902 | 13     | 30 |
| 31 | 68      | 194.231 | 62      | 8      | 25     | 29 |
| 32 | 97      | 194.301 | 118.524 | 15     | 38     | 28 |
| 33 | 219.126 | 70      | 86      | 22     | 51     | 27 |
| 34 | 55      | 194.440 | 118.648 | 28     | 64     | 26 |
| 35 | 84      | 194.509 | 118.710 | 35     | 77     | 25 |
| 36 | 219.213 | 79      | 71      | 42     | 90     | 24 |
| 37 | 42      | 194.649 | 118.833 | 48     | 54.303 | 23 |
| 38 | 72      | 194.718 | 95      | 55     | 16     | 22 |
| 39 | 219.301 | 88      | 118.957 | 62     | 29     | 21 |
| 40 | 30      | 194.858 | 119.019 | 68     | 42     | 20 |
| 41 | 59      | 194.927 | 82      | 75     | 55     | 19 |
| 42 | 88      | 97      | 119.144 | 81     | 68     | 18 |
| 43 | 219.417 | 195.067 | 119.206 | 88     | 81     | 17 |
| 44 | 46      | 195.137 | 68      | 95     | 94     | 16 |
| 45 | 75      | 195.207 | 119.330 | 89.001 | 54.407 | 15 |
| 46 | 219.504 | 77      | 93      | 8      | 20     | 14 |
| 47 | 33      | 195.347 | 119.455 | 15     | 33     | 13 |
| 48 | 62      | 195.417 | 119.517 | 21     | 45     | 12 |
| 49 | 92      | 87      | 80      | 28     | 58     | 11 |
| 50 | 219.621 | 195.557 | 119.642 | 34     | 71     | 10 |
| 51 | 50      | 195.628 | 119.705 | 41     | 84     | 9  |
| 52 | 79      | 98      | 87      | 48     | 97     | 8  |
| 53 | 219.708 | 195.768 | 119.830 | 54     | 54.510 | 7  |
| 54 | 37      | 195.838 | 92      | 61     | 23     | 6  |
| 55 | 66      | 195.909 | 119.955 | 68     | 36     | 5  |
| 56 | 95      | 79      | 120.018 | 74     | 49     | 4  |
| 57 | 219.824 | 196.049 | 80      | 81     | 62     | 3  |
| 58 | 53      | 196.120 | 120.143 | 87     | 75     | 2  |
| 59 | 82      | 90      | 120.206 | 94     | 88     | 1  |
| 60 | 219.911 | 196.261 | 69      | 89.101 | 54.601 | 0  |

| '  | L       | T       | E       | X      | Y      | ' |
|----|---------|---------|---------|--------|--------|---|
| 0  | 219.911 | 196.261 | 120.269 | 89.101 | 54.601 | 0 |
| 1  | 41      | 196.332 | 120.332 | 7      | 14     | 1 |
| 2  | 70      | 196.402 | 120.395 | 14     | 27     | 2 |
| 3  | 99      | 196.473 | 120.458 | 20     | 40     | 3 |
| 4  | 220.028 | 196.544 | 120.521 | 27     | 53     | 4 |
| 5  | 57      | 196.614 | 84      | 34     | 66     | 5 |
| 6  | 86      | 196.685 | 120.547 | 40     | 79     | 6 |
| 7  | 220.115 | 196.756 | 120.710 | 47     | 92     | 7 |
| 8  | 44      | 196.827 | 73      | 53     | 54.705 | 8 |
| 9  | 73      | 196.898 | 120.836 | 60     | 18     | 9 |
| 10 | 220.202 | 196.969 | 120.900 | 67     | 31     | 0 |
| 11 | 31      | 197.040 | 63      | 73     | 44     | 1 |
| 12 | 61      | 197.111 | 121.025 | 80     | 56     | 2 |
| 13 | 90      | 82      | 90      | 86     | 69     | 3 |
| 14 | 220.319 | 197.253 | 121.153 | 93     | 82     | 4 |
| 15 | 48      | 197.324 | 121.217 | 99     | 95     | 5 |
| 16 | 77      | 197.395 | 80      | 89.206 | 54.808 | 6 |
| 17 | 220.406 | 197.466 | 121.344 | 13     | 21     | 7 |
| 18 | 35      | 197.538 | 121.407 | 19     | 34     | 8 |
| 19 | 64      | 197.609 | 71      | 26     | 47     | 9 |
| 20 | 93      | 197.680 | 121.535 | 32     | 60     | 0 |
| 21 | 220.522 | 197.752 | 98      | 39     | 73     | 1 |
| 22 | 51      | 197.823 | 121.662 | 45     | 86     | 2 |
| 23 | 81      | 95      | 121.726 | 52     | 99     | 3 |
| 24 | 220.610 | 197.966 | 90      | 59     | 54.912 | 4 |
| 25 | 39      | 198.038 | 121.854 | 65     | 25     | 5 |
| 26 | 68      | 198.109 | 121.917 | 72     | 38     | 6 |
| 27 | 97      | 81      | 81      | 78     | 51     | 7 |
| 28 | 220.726 | 198.253 | 122.045 | 85     | 64     | 8 |
| 29 | 55      | 198.325 | 122.109 | 91     | 77     | 9 |
| 30 | 84      | 96      | 74      | 98     | 90     | 0 |
| 31 | 220.813 | 198.468 | 122.238 | 89.304 | 55.003 | 1 |
| 32 | 42      | 198.540 | 122.302 | 11     | 16     | 2 |
| 33 | 71      | 198.612 | 66      | 17     | 29     | 3 |
| 34 | 220.931 | 84      | 122.430 | 24     | 42     | 4 |
| 35 | 30      | 198.756 | 95      | 31     | 55     | 5 |
| 36 | 59      | 198.828 | 122.559 | 37     | 68     | 6 |
| 37 | 88      | 198.900 | 122.623 | 44     | 81     | 7 |
| 38 | 221.017 | 72      | 88      | 50     | 94     | 8 |
| 39 | 46      | 199.044 | 122.752 | 57     | 55.107 | 9 |
| 40 | 75      | 199.116 | 122.817 | 63     | 20     | 0 |
| 41 | 221.104 | 89      | 81      | 70     | 33     | 1 |
| 42 | 39      | 199.261 | 122.946 | 76     | 46     | 2 |
| 43 | 62      | 199.333 | 123.011 | 83     | 59     | 3 |
| 44 | 91      | 199.405 | 75      | 89     | 72     | 4 |
| 45 | 221.220 | 78      | 123.140 | 96     | 85     | 5 |
| 46 | 50      | 199.550 | 123.205 | 89.402 | 98     | 6 |
| 47 | 79      | 199.623 | 70      | 9      | 55.211 | 7 |
| 48 | 221.338 | 95      | 123.334 | 15     | 24     | 8 |
| 49 | 37      | 199.768 | 99      | 22     | 37     | 9 |
| 50 | 66      | 199.841 | 123.464 | 29     | 50     | 0 |
| 51 | 95      | 199.913 | 123.529 | 35     | 63     | 1 |
| 52 | 221.424 | 86      | 94      | 41     | 76     | 2 |
| 53 | 53      | 200.059 | 123.659 | 48     | 89     | 3 |
| 54 | 82      | 200.131 | 123.724 | 54     | 55.302 | 4 |
| 55 | 221.511 | 200.204 | 89      | 61     | 15     | 5 |
| 56 | 40      | 77      | 123.855 | 67     | 28     | 6 |
| 57 | 70      | 200.350 | 123.920 | 74     | 41     | 7 |
| 58 | 99      | 200.423 | 85      | 80     | 54     | 8 |
| 59 | 221.628 | 96      | 124.050 | 87     | 67     | 9 |
| 60 | 57      | 200.569 | 124.116 | 93     | 80     | 0 |

## 曲線函數表

|    | L       | T       | E       | X      | Y      |   |
|----|---------|---------|---------|--------|--------|---|
| 0  | 221.657 | 200.569 | 124.116 | 89.493 | 55.390 | 8 |
| 1  | 85      | 200.642 | 81      | 89.500 | 93     | 9 |
| 2  | 221.715 | 200.715 | 124.247 | 6      | 55.405 | 0 |
| 3  | 44      | 88      | 124.312 | 13     | 19     | 1 |
| 4  | 73      | 200.861 | 78      | 19     | 32     | 2 |
| 5  | 221.002 | 200.935 | 124.443 | 26     | 45     | 3 |
| 6  | 31      | 201.008 | 124.509 | 32     | 58     | 4 |
| 7  | 60      | 81      | 75      | 39     | 71     | 5 |
| 8  | 90      | 201.155 | 124.640 | 45     | 84     | 6 |
| 9  | 221.919 | 201.228 | 124.706 | 52     | 97     | 7 |
| 10 | 48      | 281.302 | 72      | 58     | 55.510 | 8 |
| 11 | 77      | 75      | 124.838 | 65     | 23     | 9 |
| 12 | 222.006 | 201.449 | 124.903 | 71     | 36     | 0 |
| 13 | 35      | 201.522 | 69      | 78     | 49     | 1 |
| 14 | 64      | 96      | 125.035 | 84     | 62     | 2 |
| 15 | 93      | 201.670 | 125.101 | 91     | 76     | 3 |
| 16 | 222.122 | 201.743 | 67      | 97     | 89     | 4 |
| 17 | 51      | 201.817 | 125.233 | 89.603 | 55.603 | 5 |
| 18 | 80      | 91      | 125.300 | 10     | 15     | 6 |
| 19 | 222.210 | 201.965 | 66      | 16     | 28     | 7 |
| 20 | 39      | 202.039 | 125.432 | 23     | 41     | 8 |
| 21 | 68      | 202.113 | 98      | 29     | 54     | 9 |
| 22 | 97      | 85      | 125.565 | 36     | 67     | 0 |
| 23 | 222.326 | 202.261 | 125.631 | 42     | 80     | 1 |
| 24 | 55      | 202.335 | 97      | 49     | 93     | 2 |
| 25 | 84      | 202.409 | 125.764 | 55     | 55.705 | 3 |
| 26 | 222.413 | 83      | 125.830 | 61     | 19     | 4 |
| 27 | 42      | 202.567 | 97      | 68     | 32     | 5 |
| 28 | 71      | 202.631 | 125.963 | 74     | 45     | 6 |
| 29 | 222.500 | 202.706 | 126.030 | 81     | 58     | 7 |
| 30 | 20      | 80      | 97      | 87     | 71     | 8 |
| 31 | 59      | 202.854 | 126.163 | 94     | 84     | 9 |
| 32 | 88      | 202.929 | 126.231 | 89.700 | 97     | 0 |
| 33 | 222.617 | 203.003 | 97      | 7      | 55.810 | 1 |
| 34 | 46      | 78      | 126.364 | 13     | 23     | 2 |
| 35 | 75      | 203.152 | 126.431 | 19     | 36     | 3 |
| 36 | 222.704 | 203.227 | 98      | 26     | 49     | 4 |
| 37 | 33      | 203.301 | 126.564 | 32     | 62     | 5 |
| 38 | 62      | 75      | 126.631 | 39     | 75     | 6 |
| 39 | 91      | 203.451 | 99      | 45     | 89     | 7 |
| 40 | 222.820 | 203.526 | 126.766 | 51     | 55.902 | 8 |
| 41 | 49      | 203.600 | 126.833 | 58     | 15     | 9 |
| 42 | 79      | 75      | 126.900 | 64     | 28     | 0 |
| 43 | 222.908 | 203.750 | 67      | 71     | 41     | 1 |
| 44 | 37      | 203.825 | 127.035 | 77     | 54     | 2 |
| 45 | 66      | 203.900 | 127.102 | 84     | 67     | 3 |
| 46 | 95      | 75      | 69      | 90     | 80     | 4 |
| 47 | 223.024 | 204.050 | 127.237 | 96     | 93     | 5 |
| 48 | 53      | 204.125 | 127.304 | 89.803 | 56.006 | 6 |
| 49 | 82      | 204.201 | 72      | 9      | 19     | 7 |
| 50 | 223.111 | 76      | 127.439 | 15     | 32     | 8 |
| 51 | 40      | 204.351 | 127.507 | 22     | 45     | 9 |
| 52 | 69      | 204.426 | 74      | 28     | 58     | 0 |
| 53 | 99      | 204.502 | 127.642 | 35     | 71     | 1 |
| 54 | 223.228 | 77      | 127.710 | 41     | 84     | 2 |
| 55 | 57      | 204.652 | 78      | 47     | 97     | 3 |
| 56 | 86      | 204.728 | 127.845 | 54     | 56.111 | 4 |
| 57 | 223.315 | 204.803 | 127.913 | 60     | 24     | 5 |
| 58 | 44      | 79      | 81      | 67     | 37     | 6 |
| 59 | 73      | 204.955 | 128.049 | 73     | 50     | 7 |
| 60 | 223.402 | 205.030 | 128.117 | 79     | 63     | 8 |

## 曲線函數表

|     | L       | T       | E       | X      | Y      | '   |
|-----|---------|---------|---------|--------|--------|-----|
| 0   | 223.402 | 205.030 | 128.117 | 89.879 | 55.163 | 6 0 |
| 1   | 31      | 205.106 | 85      | 86     | 76     | 5 9 |
| 2   | 60      | 82      | 128.253 | 92     | 89     | 5 8 |
| 3   | 89      | 205.258 | 128.321 | 98     | 56.202 | 5 7 |
| 4   | 223.518 | 205.333 | 90      | 89.905 | 15     | 5 6 |
| 5   | 48      | 205.409 | 128.458 | 11     | 28     | 5 5 |
| 6   | 77      | 85      | 128.526 | 18     | 41     | 5 4 |
| 7   | 223.606 | 205.561 | 94      | 24     | 54     | 5 3 |
| 8   | 35      | 205.637 | 128.663 | 30     | 67     | 5 2 |
| 9   | 64      | 205.713 | 128.731 | 37     | 81     | 5 1 |
| 1 0 | 93      | 89      | 128.800 | 43     | 94     | 5 0 |
| 1 1 | 223.722 | 205.865 | 68      | 49     | 56.377 | 4 9 |
| 1 2 | 51      | 205.942 | 128.937 | 56     | 20     | 4 8 |
| 1 3 | 80      | 206.018 | 129.005 | 62     | 33     | 4 7 |
| 1 4 | 223.809 | 94      | 74      | 68     | 46     | 4 6 |
| 1 5 | 38      | 206.171 | 129.143 | 75     | 59     | 4 5 |
| 1 6 | 68      | 206.247 | 129.211 | 81     | 72     | 4 4 |
| 1 7 | 97      | 206.324 | 80      | 87     | 85     | 4 3 |
| 1 8 | 223.926 | 206.400 | 129.349 | 94     | 98     | 4 2 |
| 1 9 | 55      | 77      | 129.418 | 90.000 | 56.411 | 4 1 |
| 2 0 | 84      | 206.553 | 87      | 6      | 24     | 4 0 |
| 2 1 | 224.013 | 206.650 | 129.556 | 13     | 38     | 3 9 |
| 2 2 | 42      | 206.706 | 129.625 | 19     | 51     | 3 8 |
| 2 3 | 71      | 83      | 94      | 25     | 64     | 3 7 |
| 2 4 | 224.100 | 206.860 | 129.763 | 32     | 77     | 3 6 |
| 2 5 | 29      | 206.937 | 129.832 | 38     | 90     | 3 5 |
| 2 6 | 58      | 207.014 | 129.901 | 44     | 56.503 | 3 4 |
| 2 7 | 88      | 90      | 71      | 51     | 19     | 3 3 |
| 2 8 | 224.217 | 207.167 | 130.040 | 57     | 29     | 3 2 |
| 2 9 | 46      | 207.244 | 130.109 | 63     | 42     | 3 1 |
| 3 0 | 75      | 207.321 | 79      | 70     | 55     | 3 0 |
| 3 1 | 224.304 | 98      | 130.248 | 76     | 69     | 2 9 |
| 3 2 | 33      | 207.476 | 130.317 | 82     | 82     | 2 8 |
| 3 3 | 62      | 207.553 | 87      | 89     | 95     | 2 7 |
| 3 4 | 91      | 207.630 | 130.457 | 95     | 56.608 | 2 6 |
| 3 5 | 224.430 | 207.707 | 130.526 | 90.101 | 21     | 2 5 |
| 3 6 | 49      | 85      | 96      | 8      | 34     | 2 4 |
| 3 7 | 78      | 207.852 | 130.666 | 14     | 47     | 2 3 |
| 3 8 | 224.508 | 207.933 | 130.735 | 20     | 60     | 2 2 |
| 3 9 | 37      | 208.017 | 130.805 | 27     | 73     | 2 1 |
| 4 0 | 66      | 94      | 75      | 33     | 86     | 2 0 |
| 4 1 | 95      | 208.172 | 130.945 | 39     | 56.700 | 1 9 |
| 4 2 | 224.624 | 208.249 | 131.015 | 45     | 13     | 1 8 |
| 4 3 | 53      | 208.327 | 85      | 52     | 26     | 1 7 |
| 4 4 | 82      | 208.405 | 131.155 | 58     | 39     | 1 6 |
| 4 5 | 224.711 | 83      | 131.225 | 64     | 52     | 1 5 |
| 4 6 | 40      | 208.560 | 95      | 71     | 65     | 1 4 |
| 4 7 | 69      | 208.638 | 131.365 | 77     | 78     | 1 3 |
| 4 8 | 98      | 208.716 | 131.435 | 83     | 91     | 1 2 |
| 4 9 | 224.827 | 94      | 131.506 | 89     | 56.804 | 1 1 |
| 5 0 | 57      | 208.872 | 76      | 96     | 18     | 1 0 |
| 5 1 | 86      | 208.950 | 131.646 | 90.202 | 31     | 9 9 |
| 5 2 | 224.915 | 209.028 | 131.717 | 8      | 44     | 8 8 |
| 5 3 | 44      | 209.105 | 87      | 15     | 57     | 7 7 |
| 5 4 | 73      | 84      | 131.858 | 21     | 70     | 6 6 |
| 5 5 | 225.002 | 209.263 | 131.928 | 27     | 83     | 5 5 |
| 5 6 | 31      | 209.341 | 99      | 33     | 96     | 4 4 |
| 5 7 | 60      | 209.419 | 132.070 | 40     | 56.909 | 3 3 |
| 5 8 | 89      | 97      | 132.140 | 46     | 23     | 2 2 |
| 5 9 | 225.118 | 209.576 | 132.211 | 52     | 36     | 1 1 |
| 6 0 | 47      | 209.654 | 82      | 58     | 49     | 0   |

## 曲線函數表

| '  | L       | T       | E       | X      | Y      | '   |
|----|---------|---------|---------|--------|--------|-----|
| 0  | 225.147 | 209.654 | 132.282 | 90.258 | 56.949 | 6 0 |
| 1  | 77      | 209.733 | 132.353 | 66     | 62     | 5 4 |
| 2  | 225.206 | 209.811 | 132.424 | 71     | 75     | 5 8 |
| 3  | 35      | 90      | 95      | 77     | 88     | 5 7 |
| 4  | 64      | 209.969 | 132.566 | 84     | 57.001 | 5 6 |
| 5  | 93      | 210.047 | 132.637 | 90     | 14     | 5 5 |
| 6  | 225.322 | 210.126 | 132.708 | 96     | 28     | 6 3 |
| 7  | 51      | 210.205 | 79      | 90.302 | 41     | 6 2 |
| 8  | 82      | 84      | 132.850 | 9      | 54     | 6 2 |
| 9  | 225.409 | 210.363 | 132.921 | 15     | 67     | 6 1 |
| 10 | 38      | 210.441 | 93      | 21     | 80     | 6 0 |
| 11 | 67      | 210.520 | 133.054 | 27     | 93     | 4 9 |
| 12 | 97      | 99      | 133.135 | 33     | 57.106 | 4 8 |
| 13 | 225.526 | 210.679 | 133.207 | 40     | 20     | 4 7 |
| 14 | 55      | 210.758 | 78      | 46     | 33     | 4 6 |
| 15 | 84      | 210.837 | 133.350 | 52     | 46     | 4 5 |
| 16 | 225.613 | 210.916 | 133.421 | 58     | 59     | 4 4 |
| 17 | 42      | 95      | 93      | 65     | 72     | 4 3 |
| 18 | 71      | 211.075 | 133.565 | 71     | 85     | 4 2 |
| 19 | 225.700 | 211.154 | 133.637 | 77     | 98     | 4 1 |
| 20 | 29      | 211.233 | 133.708 | 83     | 57.212 | 4 0 |
| 21 | 58      | 211.313 | 80      | 90     | 25     | 3 9 |
| 22 | 87      | 92      | 133.852 | 96     | 38     | 3 8 |
| 23 | 225.817 | 211.472 | 133.924 | 90.402 | 51     | 3 7 |
| 24 | 46      | 211.552 | 96      | 8      | 64     | 3 6 |
| 25 | 75      | 211.631 | 134.068 | 14     | 77     | 3 5 |
| 26 | 225.904 | 211.711 | 134.140 | 21     | 90     | 3 4 |
| 27 | 33      | 91      | 134.212 | 27     | 57.304 | 3 3 |
| 28 | 62      | 211.871 | 84      | 33     | 17     | 3 2 |
| 29 | 91      | 211.950 | 134.356 | 39     | 30     | 3 1 |
| 30 | 226.020 | 212.030 | 134.429 | 45     | 43     | 3 0 |
| 31 | 49      | 212.110 | 134.501 | 52     | 56     | 2 9 |
| 32 | 78      | 90      | 73      | 58     | 69     | 2 8 |
| 33 | 226.107 | 212.270 | 134.646 | 64     | 83     | 2 7 |
| 34 | 36      | 212.350 | 134.718 | 70     | 96     | 2 6 |
| 35 | 66      | 212.431 | 91      | 76     | 57.400 | 2 5 |
| 36 | 95      | 212.511 | 134.863 | 83     | 22     | 2 4 |
| 37 | 226.224 | 91      | 134.936 | 89     | 35     | 2 3 |
| 38 | 53      | 212.671 | 135.069 | 95     | 48     | 2 2 |
| 39 | 82      | 212.752 | 81      | 90.501 | 62     | 2 1 |
| 40 | 226.311 | 212.832 | 135.154 | 7      | 75     | 2 0 |
| 41 | 40      | 212.913 | 135.227 | 14     | 88     | 1 9 |
| 42 | 69      | 93      | 135.300 | 20     | 57.501 | 1 8 |
| 43 | 98      | 213.074 | 73      | 26     | 14     | 1 7 |
| 44 | 226.427 | 213.154 | 135.446 | 32     | 27     | 1 6 |
| 45 | 56      | 213.235 | 135.519 | 38     | 40     | 1 5 |
| 46 | 86      | 213.316 | 92      | 44     | 54     | 1 4 |
| 47 | 226.515 | 96      | 135.665 | 51     | 67     | 1 3 |
| 48 | 44      | 213.477 | 135.738 | 57     | 80     | 1 2 |
| 49 | 73      | 213.558 | 135.811 | 63     | 93     | 1 1 |
| 50 | 226.602 | 213.639 | 85      | 69     | 57.606 | 1 0 |
| 51 | 31      | 213.720 | 135.958 | 75     | 20     | 9 9 |
| 52 | 60      | 213.801 | 136.031 | 81     | 33     | 9 8 |
| 53 | 89      | 82      | 136.105 | 88     | 46     | 9 7 |
| 54 | 226.718 | 213.963 | 78      | 94     | 59     | 9 6 |
| 55 | 47      | 214.044 | 136.252 | 90.600 | 72     | 9 5 |
| 56 | 76      | 214.125 | 136.325 | 6      | 85     | 9 4 |
| 57 | 226.806 | 214.207 | 99      | 12     | 99     | 9 3 |
| 58 | 35      | 83      | 136.473 | 18     | 57.712 | 9 2 |
| 59 | 64      | 214.369 | 136.546 | 25     | 25     | 9 1 |
| 60 | 93      | 214.451 | 136.620 | 31     | 38     | 9 0 |

| '   | L       | T       | E       | X      | Y      | '   |
|-----|---------|---------|---------|--------|--------|-----|
| 0   | 226.893 | 214.451 | 136.620 | 90.631 | 57.739 | 6 0 |
| 1   | 226.922 | 214.532 | 94      | 37     | 51     | 5 9 |
| 2   | 51      | 214.614 | 136.768 | 43     | 64     | 5 8 |
| 3   | 80      | 95      | 136.842 | 49     | 78     | 5 7 |
| 4   | 227.009 | 214.777 | 136.916 | 55     | 91     | 5 6 |
| 5   | 38      | 214.858 | 90      | 61     | 57.804 | 5 5 |
| 6   | 67      | 214.940 | 137.064 | 68     | 17     | 5 4 |
| 7   | 96      | 215.022 | 137.138 | 74     | 30     | 5 3 |
| 8   | 227.126 | 215.104 | 137.212 | 80     | 44     | 5 2 |
| 9   | 55      | 86      | 86      | 86     | 57     | 5 1 |
| 1 0 | 84      | 215.268 | 137.361 | 92     | 70     | 5 0 |
| 1 1 | 227.213 | 215.349 | 137.435 | 98     | 83     | 4 9 |
| 1 2 | 42      | 215.432 | 137.509 | 90.704 | 96     | 4 8 |
| 1 3 | 71      | 215.514 | 84      | 10     | 57.910 | 4 7 |
| 1 4 | 227.300 | 96      | 137.658 | 17     | 23     | 4 6 |
| 1 5 | 29      | 215.678 | 137.733 | 23     | 36     | 4 5 |
| 1 6 | 58      | 215.760 | 137.808 | 29     | 49     | 4 4 |
| 1 7 | 87      | 215.842 | 82      | 35     | 62     | 4 3 |
| 1 8 | 227.416 | 215.925 | 137.957 | 41     | 76     | 4 2 |
| 1 9 | 45      | 216.007 | 138.032 | 47     | 89     | 4 1 |
| 2 0 | 75      | 90      | 138.106 | 53     | 58.002 | 4 0 |
| 2 1 | 227.504 | 216.172 | 81      | 59     | 15     | 3 9 |
| 2 2 | 33      | 216.255 | 138.256 | 65     | 28     | 3 8 |
| 2 3 | 62      | 216.337 | 138.331 | 72     | 42     | 3 7 |
| 2 4 | 91      | 216.420 | 138.406 | 78     | 55     | 3 6 |
| 2 5 | 227.620 | 216.502 | 81      | 84     | 68     | 3 5 |
| 2 6 | 49      | 85      | 138.556 | 90     | 81     | 3 4 |
| 2 7 | 78      | 216.668 | 138.632 | 96     | 94     | 3 3 |
| 2 8 | 227.707 | 216.751 | 138.707 | 90.802 | 58.108 | 3 2 |
| 2 9 | 36      | 216.834 | 82      | 8      | 21     | 3 1 |
| 3 0 | 65      | 216.917 | 138.857 | 14     | 34     | 3 0 |
| 3 1 | 95      | 217.000 | 138.933 | 20     | 47     | 2 9 |
| 3 2 | 227.824 | 83      | 139.008 | 26     | 60     | 2 8 |
| 3 3 | 53      | 217.166 | 84      | 33     | 74     | 2 7 |
| 3 4 | 82      | 217.249 | 139.159 | 39     | 87     | 2 6 |
| 3 5 | 227.911 | 217.332 | 139.235 | 45     | 58.200 | 2 5 |
| 3 6 | 40      | 217.416 | 139.310 | 51     | 13     | 2 4 |
| 3 7 | 69      | 99      | 86      | 57     | 26     | 2 3 |
| 3 8 | 98      | 217.582 | 139.462 | 63     | 40     | 2 2 |
| 3 9 | 228.027 | 217.666 | 139.538 | 69     | 53     | 2 1 |
| 4 0 | 56      | 217.749 | 139.614 | 75     | 66     | 2 0 |
| 4 1 | 85      | 217.833 | 90      | 81     | 79     | 1 9 |
| 4 2 | 228.115 | 217.916 | 139.755 | 87     | 93     | 1 8 |
| 4 3 | 44      | 218.000 | 139.842 | 93     | 58.306 | 1 7 |
| 4 4 | 73      | 84      | 139.918 | 99     | 19     | 1 6 |
| 4 5 | 228.202 | 218.167 | 94      | 90.905 | 32     | 1 5 |
| 4 6 | 31      | 218.251 | 140.070 | 11     | 45     | 1 4 |
| 4 7 | 60      | 218.335 | 140.146 | 18     | 59     | 1 3 |
| 4 8 | 89      | 218.419 | 140.222 | 24     | 72     | 1 2 |
| 4 9 | 228.318 | 218.503 | 99      | 30     | 85     | 1 1 |
| 5 0 | 47      | 87      | 140.375 | 36     | 98     | 1 0 |
| 5 1 | 76      | 218.671 | 140.452 | 42     | 58.412 | 9 9 |
| 5 2 | 228.405 | 218.755 | 140.528 | 48     | 25     | 9 8 |
| 5 3 | 35      | 218.839 | 140.605 | 54     | 38     | 9 7 |
| 5 4 | 64      | 218.923 | 81      | 60     | 51     | 9 6 |
| 5 5 | 93      | 219.008 | 140.758 | 66     | 64     | 9 5 |
| 5 6 | 228.522 | 92      | 140.835 | 72     | 78     | 9 4 |
| 5 7 | 51      | 219.176 | 140.911 | 78     | 91     | 9 3 |
| 5 8 | 80      | 219.261 | 88      | 84     | 58.504 | 9 2 |
| 5 9 | 228.609 | 219.346 | 141.065 | 90     | 17     | 9 1 |
| 6 0 | 38      | 219.430 | 141.142 | 96     | 31     | 9 0 |

第九表 曲線偏角表

曲線偏角表

| 半徑<br>公尺 | 60 公尺    |           | 70 公尺    |           | 80 公尺    |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 5        | 2.23.14  | 357.36.46 | 2. 2.46  | 357.57.14 | 1.47.26  | 358.12.34 | 5        |
| 10       | 4.46.29  | 355.13.31 | 4. 5.33  | 356.54.27 | 3.34.51  | 356.25. 9 | 10       |
| 15       | 7.09.43  | 352.50.17 | 6. 8.20  | 353.51.40 | 5.22.17  | 354.37.43 | 15       |
| 20       | 9.32.57  | 350.27. 3 | 8.11. 6  | 351.48.54 | 7. 9.43  | 352.50.17 | 20       |
| 25       | 11.56.12 | 348. 3.48 | 10.13.53 | 349.46. 7 | 8.57. 9  | 351. 2.51 | 25       |
| 30       | 14.19.26 | 345.40.34 | 12.16.39 | 347.43.21 | 10.44.35 | 349.15.25 | 30       |
| 35       | 16.42.40 | 343.17.20 | 14.19.26 | 345.40.34 | 12.32. 0 | 347.28. 0 | 35       |
| 40       | 19. 5.55 | 340.54. 5 | 16.22.13 | 343.37.47 | 14.19.26 | 345.40.34 | 40       |
| 45       | 21.29. 9 | 338.30.51 | 18.24.59 | 341.35. 1 | 16. 6.52 | 343.53. 8 | 45       |
| 50       | 23.52.23 | 336. 7.37 | 20.27.46 | 339.32.14 | 17.54.17 | 342. 5.43 | 50       |
| 55       | 26.15.38 | 333.44.22 | 22.30.32 | 337.29.28 | 19.41.43 | 340.18.17 | 55       |
| 60       | 28.38.52 | 331.21. 8 | 24.33.19 | 335.26.41 | 21.29. 9 | 338.30.51 | 60       |
| 65       | 31. 2. 6 | 329.57.54 | 26.36. 5 | 333.23.55 | 23.16.35 | 336.43.25 | 65       |
| 70       | 33.25.21 | 327.34.39 | 28.38.52 | 331.21. 8 | 25. 4. 0 | 334.56. 0 | 70       |
| 75       | 35.48.35 | 324.11.25 | 30.41.38 | 329.18.22 | 26.51.26 | 333. 8.34 | 75       |
| 80       | 38.11.49 | 321.48.11 | 32.44.25 | 327.15.35 | 28.38.52 | 331.21. 8 | 80       |
| 85       | 40.35. 4 | 319.24.56 | 34.47.12 | 325.12.48 | 30.26.18 | 329.33.42 | 85       |
| 90       | 42.58.18 | 317. 1.42 | 36.49.58 | 323.10. 2 | 32.13.43 | 327.46.17 | 90       |
| 95       | 45.21.32 | 314.33.28 | 38.52.45 | 321. 7.15 | 34. 1. 9 | 325.58.51 | 95       |
| 100      | 47.44.47 | 312.15.13 | 40.55.31 | 319. 4.29 | 35.48.35 | 324.11.25 | 100      |
| 半徑<br>公尺 | 90 公尺    |           | 100 公尺   |           | 110 公尺   |           | 半徑<br>公尺 |
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 5        | 1.35.30  | 358.24.30 | 1.25.56  | 358.34. 4 | 1.18. 8  | 358.41.52 | 5        |
| 10       | 3.10.59  | 356.49. 1 | 2.51.53  | 357. 8. 7 | 2.36.16  | 357.23.44 | 10       |
| 15       | 4.46.29  | 355.13.31 | 4.17.49  | 355.42.11 | 3.54.23  | 356. 5.37 | 15       |
| 20       | 6.21.58  | 353.38. 2 | 5.43.46  | 354.16.14 | 5.12.31  | 354.47.29 | 20       |
| 25       | 7.57.30  | 352. 2.30 | 7. 9.42  | 352.50.18 | 6.30.39  | 353.29.21 | 25       |
| 30       | 9.32.57  | 350.27. 3 | 8.35.39  | 351.24.21 | 7.48.47  | 352.11.13 | 30       |
| 35       | 11. 8.27 | 348.51.33 | 10. 1.35 | 349.58.25 | 9. 6.55  | 350.53. 5 | 35       |
| 40       | 12.43.57 | 347.16. 3 | 11.27.32 | 348.32.28 | 10.25. 2 | 349.34.58 | 40       |
| 45       | 14.19.26 | 345.40.34 | 12.53.29 | 347. 6.31 | 11.43.10 | 348.16.50 | 45       |
| 50       | 15.54.56 | 344. 5. 4 | 14.19.25 | 345.40.35 | 13. 1.18 | 346.58.42 | 50       |
| 55       | 17.30.25 | 342.29.35 | 15.45.22 | 344.14.38 | 14.19.26 | 345.40.34 | 55       |
| 60       | 19. 5.55 | 340.54. 5 | 17.11.19 | 342.48.41 | 15.37.34 | 344.22.26 | 60       |
| 65       | 20.41.24 | 339.18.36 | 18.37.15 | 341.22.45 | 16.55.41 | 343. 4.19 | 65       |
| 70       | 22.16.54 | 337.43. 6 | 20. 3.11 | 339.56.49 | 18.13.49 | 341.46.11 | 70       |
| 75       | 23.52.54 | 335. 7. 6 | 21.29. 9 | 338.30.51 | 19.31.57 | 340.28. 3 | 75       |
| 80       | 25.27.53 | 334.32. 7 | 22.55. 5 | 337. 4.55 | 20.50. 5 | 339. 9.55 | 80       |
| 85       | 27. 3.23 | 332.56.37 | 24.21. 2 | 335.38.58 | 22. 8.13 | 337.51.47 | 85       |
| 90       | 28.38.52 | 331.21. 8 | 25.46.58 | 334.13. 2 | 23.26.20 | 336.33.40 | 90       |
| 95       | 30.14.22 | 329.45.38 | 27.12.55 | 332.47. 5 | 24.44.28 | 335.15.32 | 95       |
| 100      | 31.49.52 | 328.10. 7 | 28.38.52 | 331.21. 8 | 26. 2.37 | 333.57.23 | 100      |

### 曲 線 偏 角 表

| 半徑<br>公尺 | 120 公尺   |           | 130 公尺   |           | 140 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
|          | o . . .  | o . . .   | o . . .  | o . . .   | o . . .  | o . . .   |          |
| 10       | 2.23.14  | 357.36.46 | 2.12.13  | 357.47.47 | 2. 2.47  | 357.57.13 | 10       |
| 20       | 4.46.28  | 355.13.32 | 4.24.26  | 355.35.34 | 4. 5.33  | 355.54.27 | 20       |
| 30       | 7. 9.43  | 352.50.17 | 6.36.40  | 353.23.20 | 6. 8.20  | 353.51.40 | 30       |
| 40       | 9.32.57  | 350.27. 3 | 8.48.53  | 351.11. 7 | 8.11. 6  | 351.48.54 | 40       |
| 50       | 11.56.12 | 348.13.48 | 11. 1. 6 | 348.58.54 | 10.13.53 | 349.46. 7 | 50       |
| 60       | 14.19.26 | 345.40.34 | 13.13.20 | 346.46.40 | 12.16.39 | 347.43.21 | 60       |
| 70       | 16.42.40 | 343.17.20 | 15.25.33 | 344.34.27 | 14.19.26 | 345.40.34 | 70       |
| 80       | 19. 5.55 | 340.54. 5 | 17.37.46 | 342.22.14 | 16.22.12 | 343.37.48 | 80       |
| 90       | 21.29. 9 | 338.30.51 | 19.49.59 | 340.10. 1 | 18.24.59 | 341.35. 1 | 90       |
| 100      | 23.52.23 | 336. 7.37 | 22. 2.13 | 337.57.47 | 20.27.45 | 339.32.14 | 100      |
| 110      | 26.15.38 | 333.44.22 | 24.14.26 | 335.45.34 | 22.30.32 | 337.29.28 | 110      |
| 120      | 28.38.52 | 331.21. 8 | 26.26.39 | 333.33.21 | 24.33.19 | 335.26.41 | 120      |
| 130      | 31. 2. 6 | 328.57.54 | 28.38.52 | 331.21. 8 | 26.36. 5 | 333.23.55 | 130      |
| 140      | 33.25.21 | 326.34.39 | 30.51. 5 | 329. 8.55 | 28.38.52 | 331.21. 8 | 140      |
| 150      | 35.48.35 | 324.11.25 | 33. 3.19 | 326.56.41 | 30.41.38 | 329.18.22 | 150      |
| 160      | 38.11.50 | 321.48.10 | 35.15.32 | 324.44.28 | 32.44.27 | 327.15.33 | 160      |
| 170      | 40.35. 4 | 319.24.56 | 37.27.45 | 322.32.15 | 34.47.12 | 325.12.48 | 170      |
| 180      | 42.58.18 | 317. 1.42 | 39.39.59 | 320.20. 1 | 36.49.58 | 323.10. 2 | 180      |
| 190      | 45.21.32 | 314.38.28 | 41.52.12 | 318. 7.48 | 38.52.45 | 321. 7.15 | 190      |
| 200      | 47.44.47 | 312.15.13 | 44. 4.25 | 315.55.35 | 40.55.31 | 319. 4.29 | 200      |

| 半徑<br>公尺 | 150 公尺   |           | 160 公尺   |           | 170 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
|          | o . . .  | o . . .   | o . . .  | o . . .   | o . . .  | o . . .   |          |
| 10       | 1.54.35  | 358. 5.25 | 1.47.26  | 358.12.34 | 1.41. 7  | 358.18.53 | 10       |
| 20       | 3.49.11  | 356.10.49 | 3.34.51  | 356.25. 9 | 3.22.13  | 356.37.47 | 20       |
| 30       | 5.43.46  | 354.16.14 | 5.22.17  | 354.37.43 | 5. 3.20  | 354.56.40 | 30       |
| 40       | 7.38.22  | 352.21.38 | 7. 9.43  | 352.50.17 | 6.44.26  | 353.15.34 | 40       |
| 50       | 9.32.57  | 350.27. 3 | 8.57. 9  | 351. 2.51 | 8.25.33  | 351.34.27 | 50       |
| 60       | 11.27.33 | 348.32.27 | 10.44.34 | 349.15.26 | 10. 6.40 | 349.53.20 | 60       |
| 70       | 13.22. 8 | 346.37.52 | 12.32.00 | 347.28. 0 | 11.47.46 | 348.12.14 | 70       |
| 80       | 15.16.44 | 344.43.16 | 14.19.26 | 345.40.34 | 13.28.53 | 346.31. 7 | 80       |
| 90       | 17.11.19 | 342.48.41 | 16. 6.52 | 343.53. 8 | 15. 9.59 | 344.50. 1 | 90       |
| 100      | 19. 5.55 | 340.54. 5 | 17.54.17 | 342. 5.43 | 16.51. 6 | 343. 8.54 | 100      |
| 110      | 21. 0.30 | 338.59.30 | 19.41.43 | 340.18.17 | 18.32.13 | 341.27.47 | 110      |
| 120      | 22.55. 5 | 337. 4.55 | 21.29. 9 | 338.30.51 | 20.13.19 | 339.46.41 | 120      |
| 130      | 24.49.41 | 335.10.19 | 23.16.35 | 336.43.25 | 21.54.26 | 338. 6.34 | 130      |
| 140      | 26.44.16 | 333.15.44 | 25. 4. 0 | 334.56. 0 | 23.35.32 | 336.24.28 | 140      |
| 150      | 28.38.52 | 331.21. 8 | 26.51.26 | 333. 8.34 | 25.16.39 | 334.43.21 | 150      |
| 160      | 30.33.27 | 329.26.33 | 28.38.52 | 331.21. 8 | 26.57.46 | 333. 2.14 | 160      |
| 170      | 32.28. 3 | 327.31.57 | 30.26.18 | 329.33.42 | 28.38.52 | 331.21. 8 | 170      |
| 180      | 34.22.38 | 325.37.22 | 32.13.43 | 327.46.17 | 30.19.59 | 329.40. 1 | 180      |
| 190      | 36.17.14 | 323.42.46 | 34. 1. 9 | 325.58.51 | 32.01. 6 | 327.58.55 | 190      |
| 200      | 38.11.49 | 321.48.11 | 35.48.35 | 324.11.25 | 33.42.12 | 326.17.48 | 200      |



### 曲 線 偏 角 表

| 半徑<br>公尺 | 180 公尺   |           | 190 公尺   |           | 200 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 10       | • • •    | • • •     | • • •    | • • •     | • • •    | • • •     | 10       |
| 20       | 1.35.30  | 358.24.30 | 1.30.28  | 358.29.32 | 1.25.57  | 358.34.3  | 20       |
| 30       | 3.10.59  | 356.49.1  | 3.0.56   | 356.59.4  | 2.51.53  | 357.8.7   | 30       |
| 40       | 4.46.28  | 355.13.32 | 4.31.24  | 355.28.36 | 4.17.50  | 355.42.10 | 40       |
| 50       | 6.21.58  | 353.38.2  | 6.1.52   | 353.53.8  | 5.43.46  | 354.16.14 | 50       |
|          | 7.57.28  | 352.2.32  | 7.32.20  | 352.27.40 | 7.9.43   | 352.50.17 |          |
| 60       | 9.32.57  | 350.27.3  | 9.2.48   | 350.57.12 | 8.35.40  | 351.24.20 | 60       |
| 70       | 11.8.27  | 348.51.33 | 10.33.16 | 349.25.44 | 10.1.36  | 349.58.24 | 70       |
| 80       | 12.43.56 | 347.16.4  | 12.3.44  | 347.56.16 | 11.27.33 | 348.32.27 | 80       |
| 90       | 14.19.26 | 345.40.34 | 13.34.12 | 346.25.48 | 12.53.30 | 347.6.30  | 90       |
| 100      | 15.54.55 | 344.5.5   | 15.4.40  | 344.55.20 | 14.19.26 | 345.40.34 | 100      |
| 110      | 17.30.25 | 342.29.35 | 16.35.8  | 343.24.52 | 15.45.23 | 344.14.37 | 110      |
| 120      | 19.5.54  | 340.54.6  | 18.5.36  | 341.54.24 | 17.11.19 | 342.48.41 | 120      |
| 130      | 20.41.24 | 339.18.36 | 19.36.4  | 340.23.56 | 18.37.16 | 341.22.44 | 130      |
| 140      | 22.16.53 | 337.43.7  | 21.6.32  | 338.53.28 | 20.3.13  | 339.56.47 | 140      |
| 150      | 23.52.23 | 336.7.37  | 22.37.0  | 337.23.0  | 21.28.10 | 338.30.50 | 150      |
| 160      | 25.27.52 | 334.32.8  | 24.7.28  | 335.52.32 | 22.55.5  | 337.4.55  | 160      |
| 170      | 27.3.22  | 332.56.38 | 25.37.56 | 334.22.4  | 24.21.2  | 335.38.58 | 170      |
| 180      | 28.38.51 | 331.21.9  | 27.8.24  | 332.51.36 | 25.46.59 | 334.13.1  | 180      |
| 190      | 30.14.21 | 329.45.39 | 28.38.52 | 331.21.8  | 27.12.56 | 332.47.4  | 190      |
| 200      | 31.49.50 | 328.10.10 | 30.9.20  | 329.50.40 | 28.38.52 | 331.21.8  | 200      |
|          |          |           |          |           |          |           |          |
| 半徑<br>公尺 | 210 公尺   |           | 220 公尺   |           | 230 公尺   |           | 半徑<br>公尺 |
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 10       | • • •    | • • •     | • • •    | • • •     | • • •    | • • •     | 10       |
| 20       | 1.21.51  | 358.38.9  | 1.18.8   | 358.41.52 | 1.14.44  | 358.45.16 | 20       |
| 30       | 2.43.42  | 357.16.18 | 2.36.15  | 357.23.44 | 2.29.28  | 357.30.32 | 30       |
| 40       | 4.5.33   | 355.54.27 | 3.54.23  | 356.5.37  | 3.44.12  | 356.15.48 | 40       |
| 50       | 5.27.24  | 354.32.36 | 5.12.31  | 354.47.29 | 4.58.56  | 355.1.4   | 50       |
|          | 6.49.15  | 353.10.45 | 6.30.39  | 353.29.21 | 6.13.40  | 353.46.20 |          |
| 60       | 8.11.6   | 351.48.54 | 7.48.47  | 352.11.13 | 7.28.24  | 352.31.36 | 60       |
| 70       | 9.32.57  | 350.27.3  | 9.6.55   | 350.53.5  | 8.43.8   | 351.16.52 | 70       |
| 80       | 10.54.48 | 349.5.12  | 10.25.3  | 349.34.57 | 9.57.52  | 350.2.8   | 80       |
| 90       | 12.16.40 | 347.43.20 | 11.43.11 | 348.16.59 | 11.12.36 | 348.47.24 | 90       |
| 100      | 13.38.31 | 346.21.29 | 13.1.18  | 346.58.42 | 12.27.20 | 347.32.40 | 100      |
| 110      | 15.00.22 | 344.59.38 | 14.19.26 | 345.40.34 | 13.42.4  | 346.17.56 | 110      |
| 120      | 16.22.13 | 343.37.47 | 15.37.34 | 344.22.26 | 14.56.48 | 345.3.12  | 120      |
| 130      | 17.44.4  | 342.15.56 | 16.55.42 | 343.4.18  | 16.11.32 | 343.48.28 | 130      |
| 140      | 19.5.55  | 340.54.5  | 18.13.50 | 341.46.10 | 17.25.16 | 342.33.44 | 140      |
| 150      | 20.27.46 | 339.32.14 | 19.31.58 | 340.28.2  | 18.41.00 | 341.19.00 | 150      |
| 160      | 21.49.37 | 338.10.23 | 20.50.5  | 339.9.55  | 19.55.44 | 340.4.16  | 160      |
| 170      | 23.11.28 | 336.48.32 | 22.8.13  | 337.51.47 | 21.10.28 | 338.49.32 | 170      |
| 180      | 24.33.19 | 335.26.41 | 23.26.21 | 336.33.39 | 22.25.12 | 337.33.48 | 180      |
| 190      | 25.55.10 | 334.4.50  | 24.44.29 | 335.15.31 | 23.39.56 | 336.20.4  | 190      |
| 200      | 27.17.1  | 332.42.59 | 26.2.35  | 333.57.24 | 24.54.40 | 335.5.20  | 200      |

### 曲線偏角表

| 半徑<br>公尺 | 240 公尺   |           | 250 公尺   |           | 260 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 10       | 1.11.37  | 358.48.23 | 1.8.45   | 358.51.15 | 1.6.7    | 358.53.53 | .5       |
| 20       | 2.23.14  | 357.36.46 | 2.17.31  | 357.42.29 | 2.12.13  | 357.47.47 | 1.       |
| 30       | 3.34.51  | 356.25.8  | 3.26.16  | 356.33.44 | 3.18.20  | 356.41.40 | 1.5      |
| 40       | 4.46.29  | 355.13.31 | 4.35.1   | 355.24.59 | 4.24.26  | 355.35.34 | 2.       |
| 50       | 5.58.6   | 354.1.54  | 5.43.46  | 354.16.14 | 5.30.33  | 354.29.27 | 2.5      |
| 60       | 7.9.43   | 352.50.17 | 6.52.32  | 353.7.28  | 6.36.40  | 353.23.20 | 3.       |
| 70       | 8.21.20  | 351.38.40 | 8.1.17   | 351.58.43 | 7.42.46  | 352.17.14 | 3.5      |
| 80       | 9.32.57  | 350.27.3  | 9.10.2   | 350.49.58 | 8.48.53  | 351.11.7  | 4.       |
| 90       | 10.44.35 | 349.15.25 | 10.18.48 | 349.41.12 | 9.55.0   | 350.5.0   | 4.5      |
| 100      | 11.56.12 | 348.3.48  | 11.27.33 | 348.32.27 | 11.1.6   | 348.58.54 | 5.       |
| 110      | 13.7.49  | 346.52.11 | 12.36.18 | 347.23.42 | 12.7.13  | 347.52.47 | 5.5      |
| 120      | 14.19.26 | 345.40.34 | 13.45.4  | 346.14.56 | 13.13.21 | 346.46.39 | 6.       |
| 130      | 15.31.3  | 344.28.57 | 14.53.49 | 345.6.11  | 14.19.28 | 345.40.32 | 6.5      |
| 140      | 16.42.40 | 343.17.20 | 16.2.34  | 343.57.25 | 15.25.36 | 344.34.24 | 7.       |
| 150      | 17.54.17 | 342.5.43  | 17.11.19 | 342.48.41 | 16.31.42 | 343.28.18 | 7.5      |
| 160      | 19.5.55  | 340.54.5  | 18.20.4  | 341.39.56 | 17.37.49 | 342.22.11 | 8.       |
| 170      | 20.17.32 | 339.42.28 | 19.28.49 | 340.31.11 | 18.43.56 | 341.16.4  | 8.5      |
| 180      | 21.29.9  | 338.30.51 | 20.37.35 | 339.22.26 | 19.50.3  | 340.9.57  | 9.       |
| 190      | 22.40.46 | 337.19.14 | 21.46.21 | 338.13.39 | 20.56.10 | 339.3.50  | 9.5      |
| 200      | 23.52.24 | 336.7.36  | 22.55.6  | 337.4.54  | 22.2.17  | 337.57.43 | 10.      |

| 半徑<br>公尺 | 270 公尺   |           | 280 公尺   |           | 290 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 10       | 1.3.40   | 358.56.20 | 1.1.23   | 358.58.37 | .59.16   | 359.0.44  | .5       |
| 20       | 2.7.19   | 357.52.41 | 2.2.47   | 357.57.13 | 1.58.33  | 358.1.27  | 1.       |
| 30       | 3.10.59  | 356.49.1  | 3.4.10   | 356.55.50 | 2.57.49  | 357.2.11  | 1.5      |
| 40       | 4.14.39  | 355.45.21 | 4.5.33   | 355.54.27 | 3.57.5   | 356.2.55  | 2.       |
| 50       | 5.18.19  | 354.41.41 | 5.6.56   | 354.53.4  | 4.56.21  | 355.3.39  | 2.5      |
| 60       | 6.21.58  | 353.38.2  | 6.8.20   | 353.51.40 | 5.55.38  | 354.4.22  | 3.       |
| 70       | 7.25.38  | 352.34.22 | 7.9.43   | 352.50.17 | 6.54.54  | 353.5.5   | 3.5      |
| 80       | 8.29.18  | 351.30.42 | 8.11.6   | 351.48.54 | 7.54.10  | 352.5.50  | 4.       |
| 90       | 9.32.57  | 350.27.3  | 9.12.30  | 350.47.30 | 8.53.27  | 351.6.33  | 4.5      |
| 100      | 10.36.37 | 349.23.23 | 10.13.53 | 349.46.7  | 9.52.43  | 350.7.17  | 5.       |
| 110      | 11.40.17 | 348.19.43 | 11.15.16 | 348.44.44 | 10.51.59 | 349.8.1   | 5.5      |
| 120      | 12.43.56 | 347.16.4  | 12.16.40 | 347.43.20 | 11.51.15 | 348.8.45  | 6.       |
| 130      | 13.47.36 | 346.12.24 | 13.18.3  | 346.41.57 | 12.50.31 | 347.9.29  | 6.5      |
| 140      | 14.51.16 | 345.8.44  | 14.19.26 | 345.40.34 | 13.49.48 | 346.10.12 | 7.       |
| 150      | 15.54.55 | 344.5.5   | 15.20.49 | 344.39.11 | 14.49.04 | 345.10.56 | 7.5      |
| 160      | 16.58.35 | 343.1.25  | 16.22.13 | 343.37.47 | 15.48.20 | 344.11.40 | 8.       |
| 170      | 18.2.15  | 341.57.46 | 17.23.36 | 342.36.24 | 16.47.36 | 343.12.24 | 8.5      |
| 180      | 19.5.54  | 340.54.6  | 18.24.59 | 341.35.1  | 17.46.52 | 342.13.8  | 9.       |
| 190      | 20.9.34  | 339.50.26 | 19.26.23 | 340.33.37 | 18.46.8  | 341.13.52 | 9.5      |
| 200      | 21.13.14 | 338.46.46 | 20.27.46 | 339.32.14 | 19.45.24 | 340.14.36 | 10.      |

### 曲線偏角表

| 半徑<br>公尺 | 300 公尺    |            | 310 公尺    |            | 320 公尺    |            | 半徑<br>公尺 |
|----------|-----------|------------|-----------|------------|-----------|------------|----------|
|          | 右         | 左          | 右         | 左          | 右         | 左          |          |
| 20       | 0.17      | 0.17       | 0.17      | 0.17       | 0.17      | 0.17       | 1        |
| 40       | 1.54, 35  | 358.5, 25  | 1.50, 54  | 358.9, 6   | 1.47, 26  | 358.12, 31 | 2        |
| 60       | 3.49, 11  | 356.10, 49 | 3.41, 47  | 356.18, 13 | 3.34, 52  | 356.25, 8  | 3        |
| 80       | 5.43, 46  | 354.16, 14 | 5.32, 41  | 354.27, 19 | 5.22, 17  | 354.37, 43 | 4        |
| 100      | 7.38, 22  | 352.21, 38 | 7.23, 35  | 352.36, 25 | 7.9, 43   | 352.50, 17 | 5        |
|          | 9.32, 57  | 350.27, 3  | 9.14, 20  | 350.45, 31 | 8.57, 9   | 351.2, 51  | 6        |
| 120      | 11.27, 33 | 348.32, 27 | 11.5, 22  | 348.54, 38 | 10.44, 35 | 349.15, 25 | 7        |
| 140      | 13.22, 8  | 346.37, 52 | 12.56, 16 | 347.3, 44  | 12.32, 0  | 347.28, 0  | 8        |
| 160      | 15.16, 44 | 344.43, 16 | 14.47, 10 | 345.12, 50 | 14.19, 26 | 345.40, 34 | 9        |
| 180      | 17.11, 19 | 342.48, 41 | 16.38, 3  | 343.21, 57 | 16.6, 52  | 343.53, 8  | 10       |
| 200      | 19.05, 55 | 340.54, 5  | 18.28, 57 | 341.31, 3  | 17.54, 18 | 342.5, 42  | 11       |
| 220      | 21.00, 30 | 338.59, 30 | 20.19, 51 | 339.40, 9  | 19.41, 44 | 340.18, 16 | 12       |
| 240      | 22.95, 6  | 337.4, 54  | 22.10, 44 | 337.49, 16 | 21.29, 9  | 338.30, 51 | 13       |
| 260      | 24.49, 41 | 335.10, 19 | 24.1, 38  | 335.58, 22 | 23.16, 35 | 336.43, 25 | 14       |
| 280      | 26.44, 17 | 333.15, 43 | 25.52, 32 | 334.7, 28  | 25.4, 1   | 334.55, 59 | 15       |
| 300      | 28.38, 52 | 331.21, 8  | 27.43, 26 | 332.16, 34 | 26.51, 27 | 333.8, 33  | 16       |
| 320      | 30.33, 28 | 329.26, 32 | 29.34, 19 | 330.25, 41 | 28.38, 52 | 331.21, 8  | 17       |
| 340      | 32.28, 4  | 327.31, 56 | 31.25, 13 | 328.34, 47 | 30.26, 18 | 329.33, 42 | 18       |
| 360      | 34.22, 39 | 325.37, 21 | 33.16, 7  | 326.43, 53 | 32.13, 44 | 327.46, 16 | 19       |
| 380      | 36.17, 14 | 323.42, 46 | 35.7, 0   | 324.53, 0  | 34.1, 10  | 325.59, 50 | 20       |
| 400      | 38.11, 50 | 321.48, 10 | 36.57, 0  | 323.2, 6   | 35.48, 36 | 324.11, 24 | 21       |
| 420      | 40.06, 25 | 319.53, 35 | 38.43, 48 | 321.11, 12 | 37.36, 1  | 322.23, 59 | 22       |
| 440      | 42.01, 1  | 317.58, 59 | 40.39, 41 | 319.20, 19 | 39.23, 27 | 320.36, 33 | 23       |
| 460      | 43.55, 36 | 316.4, 24  | 42.30, 35 | 317.29, 25 | 41.10, 53 | 318.49, 7  | 24       |
| 480      | 45.50, 11 | 314.9, 49  | 44.21, 29 | 315.38, 31 | 42.58, 19 | 317.1, 14  | 25       |
| 500      | 47.44, 47 | 312.15, 13 | 46.12, 23 | 313.47, 37 | 44.45, 44 | 315.14, 16 | 26       |
| 520      | 49.39, 23 | 310.20, 37 | 48.3, 16  | 311.56, 44 | 46.33, 10 | 313.26, 50 | 27       |
| 540      | 51.33, 58 | 308.26, 2  | 49.54, 10 | 310.5, 50  | 48.20, 36 | 311.39, 24 | 28       |
| 560      | 53.28, 34 | 306.31, 26 | 51.45, 4  | 308.14, 56 | 50.8, 2   | 309.51, 58 | 29       |

| 半徑<br>公尺 | 330 公尺    |            | 340 公尺    |            | 350 公尺    |            | 半徑<br>公尺 |
|----------|-----------|------------|-----------|------------|-----------|------------|----------|
|          | 右         | 左          | 右         | 左          | 右         | 左          |          |
| 20       | 0.17      | 0.17       | 0.17      | 0.17       | 0.17      | 0.17       | 1        |
| 40       | 1.44, 10  | 359.15, 50 | 1.41, 7   | 358.18, 53 | 1.32, 13  | 358.21, 47 | 2        |
| 60       | 3.28, 21  | 356.31, 39 | 3.22, 13  | 356.37, 47 | 3.16, 26  | 356.43, 34 | 3        |
| 80       | 5.12, 31  | 354.47, 29 | 5.3, 20   | 354.56, 40 | 4.56, 40  | 355.5, 20  | 4        |
| 100      | 6.56, 42  | 353.3, 18  | 6.44, 26  | 353.15, 34 | 6.32, 53  | 353.27, 7  | 5        |
|          | 8.40, 52  | 351.19, 0  | 8.25, 33  | 351.34, 27 | 8.11, 06  | 351.48, 54 | 6        |
| 120      | 10.25, 2  | 349.34, 58 | 10.6, 40  | 349.53, 20 | 9.49, 20  | 350.10, 40 | 7        |
| 140      | 12.9, 13  | 347.59, 47 | 11.47, 46 | 348.12, 14 | 11.27, 34 | 348.32, 26 | 8        |
| 160      | 13.53, 23 | 346.5, 37  | 13.28, 53 | 346.31, 7  | 13.5, 46  | 346.54, 14 | 9        |
| 180      | 15.37, 34 | 344.22, 25 | 15.10, 0  | 344.59, 0  | 14.44, 0  | 345.16, 0  | 10       |
| 200      | 17.21, 44 | 342.38, 16 | 16.51, 6  | 343.8, 54  | 16.22, 12 | 343.37, 48 | 11       |
| 220      | 19.5, 55  | 340.54, 5  | 18.32, 13 | 341.27, 47 | 18.0, 26  | 341.59, 34 | 12       |
| 240      | 20.50, 5  | 339.9, 55  | 20.13, 19 | 339.46, 41 | 19.36, 40 | 340.21, 20 | 13       |
| 260      | 22.34, 16 | 337.25, 44 | 21.54, 26 | 337.5, 34  | 21.16, 52 | 338.43, 8  | 14       |
| 280      | 24.18, 26 | 335.41, 34 | 23.35, 33 | 336.24, 27 | 22.55, 6  | 337.4, 54  | 15       |
| 300      | 26.2, 37  | 333.57, 22 | 25.16, 39 | 334.43, 21 | 24.33, 20 | 335.26, 40 | 16       |
| 320      | 27.46, 47 | 332.13, 13 | 26.57, 46 | 333.2, 14  | 26.11, 32 | 333.48, 28 | 17       |
| 340      | 29.30, 57 | 330.29, 3  | 28.38, 52 | 331.21, 8  | 27.49, 46 | 332.10, 14 | 18       |
| 360      | 31.15, 8  | 328.44, 52 | 30.19, 59 | 329.40, 1  | 29.28, 0  | 330.32, 0  | 19       |
| 380      | 32.69, 18 | 327.0, 42  | 32.1, 6   | 327.58, 54 | 31.6, 12  | 328.53, 48 | 20       |
| 400      | 34.43, 29 | 325.16, 31 | 33.42, 12 | 326.17, 48 | 32.44, 26 | 327.15, 34 | 21       |
| 420      | 36.27, 39 | 323.32, 21 | 35.23, 19 | 324.36, 41 | 34.22, 38 | 325.37, 22 | 22       |
| 440      | 38.11, 50 | 321.48, 10 | 37.4, 25  | 322.55, 35 | 36.0, 50  | 323.59, 10 | 23       |
| 460      | 39.56, 0  | 320.4, 0   | 38.45, 32 | 321.14, 28 | 37.39, 6  | 322.10, 54 | 24       |
| 480      | 41.40, 11 | 318.19, 49 | 40.26, 30 | 319.33, 21 | 39.17, 17 | 320.42, 42 | 25       |
| 500      | 43.24, 21 | 316.35, 39 | 42.7, 45  | 317.52, 15 | 40.55, 30 | 319.4, 28  | 26       |
| 520      | 45.8, 31  | 314.51, 29 | 43.48, 52 | 316.11, 8  | 42.33, 43 | 317.26, 14 | 27       |
| 540      | 46.52, 42 | 313.7, 18  | 45.29, 59 | 314.30, 1  | 44.11, 56 | 315.48, 4  | 28       |
| 560      | 48.35, 53 | 311.23, 8  | 47.11, 5  | 312.48, 55 | 45.50, 10 | 314.9, 50  | 29       |

### 曲線偏角表

| 半徑<br>公尺 | 360 公尺   |           | 370 公尺   |           | 380 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 20       | 1.35.29  | 358.24.29 | 1.32.55  | 358.27.5  | 1.30.28  | 358.29.32 | 1        |
| 40       | 3.10.59  | 356.49.1  | 3.5.49   | 356.54.11 | 3.0.56   | 356.59.4  | 2        |
| 60       | 4.46.29  | 355.13.31 | 4.38.44  | 355.21.16 | 4.31.24  | 355.28.36 | 3        |
| 80       | 6.21.58  | 353.38.02 | 6.11.39  | 353.43.21 | 6.1.52   | 353.53.8  | 4        |
| 100      | 7.57.28  | 352.2.32  | 7.44.34  | 352.15.25 | 7.32.20  | 352.27.40 | 5        |
| 120      | 9.32.58  | 350.27.2  | 9.17.28  | 350.42.32 | 9.2.48   | 350.57.12 | 6        |
| 140      | 11.08.27 | 348.51.33 | 10.50.23 | 349.9.37  | 10.33.16 | 349.25.44 | 7        |
| 160      | 12.43.56 | 347.16.4  | 12.23.18 | 347.36.42 | 12.3.44  | 347.56.16 | 8        |
| 180      | 14.19.26 | 345.40.34 | 13.56.12 | 346.3.48  | 13.34.12 | 346.25.48 | 9        |
| 200      | 15.54.56 | 344.5.4   | 15.29.7  | 344.30.53 | 15.4.40  | 344.55.20 | 10       |
| 220      | 17.30.25 | 342.29.35 | 17.2.2   | 342.57.53 | 16.35.8  | 343.24.52 | 11       |
| 240      | 19.5.55  | 340.54.5  | 18.34.57 | 341.25.3  | 18.5.36  | 341.54.24 | 12       |
| 260      | 20.41.25 | 339.18.35 | 20.7.51  | 339.52.9  | 19.36.4  | 340.23.56 | 13       |
| 280      | 22.16.54 | 337.43.6  | 21.40.46 | 338.19.14 | 21.6.32  | 338.53.28 | 14       |
| 300      | 23.52.23 | 335.7.37  | 23.13.41 | 336.46.19 | 22.37.0  | 337.23.0  | 15       |
| 320      | 25.27.53 | 334.32.4  | 24.46.35 | 335.13.24 | 24.7.28  | 335.52.32 | 16       |
| 340      | 27.3.23  | 332.56.37 | 25.19.30 | 333.40.30 | 25.37.56 | 334.22.4  | 17       |
| 360      | 28.38.52 | 331.21.8  | 27.52.25 | 332.7.35  | 27.8.24  | 332.51.36 | 18       |
| 380      | 30.14.22 | 329.45.38 | 29.25.20 | 330.34.40 | 29.38.52 | 331.21.8  | 19       |
| 400      | 31.49.51 | 328.10.9  | 30.58.14 | 329.1.45  | 30.9.20  | 329.50.40 | 20       |
| 420      | 33.25.20 | 326.34.40 | 32.31.9  | 327.28.51 | 31.39.43 | 328.20.12 | 21       |
| 440      | 35.0.50  | 324.59.10 | 34.4.4   | 325.55.56 | 33.10.16 | 326.49.44 | 22       |
| 460      | 36.36.20 | 323.23.40 | 37.38.59 | 322.23.1  | 34.40.45 | 325.19.15 | 23       |
| 480      | 38.11.50 | 321.48.10 | 37.9.53  | 322.50.7  | 36.11.13 | 323.48.47 | 24       |
| 500      | 39.47.19 | 320.12.41 | 38.42.43 | 321.17.12 | 37.41.41 | 322.18.19 | 25       |
| 520      | 41.22.49 | 318.37.11 | 40.15.43 | 319.44.17 | 39.12.9  | 320.47.51 | 26       |
| 540      | 42.58.18 | 317.1.42  | 41.48.38 | 318.11.22 | 40.42.37 | 319.17.23 | 27       |
| 560      | 44.33.48 | 315.26.12 | 43.21.32 | 316.38.28 | 42.13.5  | 317.46.55 | 28       |

| 半徑<br>公尺 | 390 公尺   |           | 400 公尺   |           | 410 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 20       | 1.29.9   | 358.31.51 | 1.25.57  | 358.34.3  | 1.23.51  | 358.36.9  | 1        |
| 40       | 2.56.18  | 357.3.42  | 2.51.53  | 357.8.7   | 2.47.42  | 357.12.18 | 2        |
| 60       | 4.24.25  | 355.35.34 | 4.17.49  | 355.42.11 | 4.11.33  | 355.48.27 | 3        |
| 80       | 5.52.35  | 354.7.25  | 5.43.46  | 354.16.14 | 5.35.24  | 354.24.36 | 4        |
| 100      | 7.20.44  | 352.39.16 | 7.09.43  | 352.50.17 | 6.59.56  | 353.0.4   | 5        |
| 120      | 8.48.53  | 351.11.7  | 8.35.29  | 351.24.21 | 8.23.7   | 351.36.53 | 6        |
| 140      | 9.17.2   | 350.42.58 | 10.1.36  | 349.58.24 | 9.46.58  | 350.13.2  | 7        |
| 160      | 11.45.11 | 348.14.49 | 11.27.32 | 348.32.28 | 11.10.49 | 348.49.11 | 8        |
| 180      | 13.13.20 | 346.46.40 | 12.53.29 | 347.6.31  | 12.34.40 | 347.25.20 | 9        |
| 200      | 14.41.28 | 345.18.32 | 14.19.26 | 345.40.34 | 13.58.31 | 346.1.29  | 10       |
| 220      | 16.9.37  | 343.50.23 | 15.45.22 | 344.14.38 | 15.22.22 | 344.37.38 | 11       |
| 240      | 17.37.46 | 342.22.14 | 17.11.20 | 342.43.40 | 16.46.13 | 343.13.47 | 12       |
| 260      | 19.5.55  | 340.54.5  | 18.37.16 | 341.22.44 | 18.10.5  | 341.49.55 | 13       |
| 280      | 20.34.3  | 339.25.57 | 20.3.13  | 339.56.47 | 19.33.56 | 340.26.4  | 14       |
| 300      | 22.2.12  | 337.57.48 | 21.29.9  | 338.30.51 | 20.57.47 | 339.2.13  | 15       |
| 320      | 23.30.21 | 336.29.39 | 22.55.6  | 337.4.54  | 22.21.38 | 337.38.22 | 16       |
| 340      | 24.58.30 | 335.1.30  | 24.21.3  | 335.33.57 | 23.45.29 | 336.14.31 | 17       |
| 360      | 26.26.39 | 333.33.21 | 25.45.54 | 334.13.1  | 25.9.20  | 334.50.40 | 18       |
| 380      | 27.54.48 | 332.5.12  | 27.12.56 | 332.47.4  | 26.33.11 | 333.26.41 | 19       |
| 400      | 29.22.56 | 330.37.4  | 28.38.52 | 331.21.8  | 27.57.2  | 332.2.58  | 20       |
| 420      | 30.51.5  | 329.8.55  | 30.4.49  | 329.55.11 | 29.20.53 | 330.39.7  | 21       |
| 440      | 32.19.14 | 327.40.46 | 31.30.46 | 328.29.14 | 30.44.45 | 329.15.15 | 22       |
| 460      | 33.47.23 | 326.12.37 | 32.56.43 | 327.3.17  | 32.8.36  | 327.51.24 | 23       |
| 480      | 35.15.32 | 324.44.28 | 34.22.39 | 325.37.21 | 33.32.27 | 326.27.33 | 24       |
| 500      | 36.43.40 | 323.16.20 | 35.48.35 | 324.11.25 | 34.55.18 | 325.3.42  | 25       |
| 520      | 38.11.49 | 321.48.11 | 37.14.32 | 322.45.28 | 36.20.9  | 323.31.51 | 26       |
| 540      | 39.39.58 | 320.20.2  | 38.40.29 | 321.19.31 | 37.44.0  | 322.16.0  | 27       |
| 560      | 41.8.7   | 318.51.53 | 40.6.25  | 319.53.35 | 39.7.51  | 320.52.1  | 28       |

### 曲線偏角表

| 半徑<br>弧長<br>公尺 | 420 公尺     |           | 430 公尺   |           | 440 公尺   |           | 半徑<br>弧長<br>公尺 |
|----------------|------------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右          | 左         | 右        | 左         | 右        | 左         |                |
| 20             | 0. 1.21.51 | 358.38. 9 | 1.19.57  | 368.40. 3 | 1.18. 8  | 358.41.52 | 1              |
| 40             | 2.43.42    | 357.16.18 | 2.39.54  | 357.50. 6 | 2.36.16  | 357.23.44 | 2              |
| 60             | 4. 5.35    | 355.54.27 | 3.59.50  | 356. 0.10 | 3.54.24  | 356. 5.36 | 3              |
| 80             | 5.27.24    | 354.32.36 | 5.19.47  | 354.40.13 | 5.12.31  | 354.47.29 | 4              |
| 100            | 6.49.15    | 353.80.45 | 6.39.44  | 353.20.16 | 6.30.39  | 353.29.21 | 5              |
| 120            | 8.11. 6    | 351.48.54 | 7.59.41  | 352. 0.19 | 7.48.47  | 352.11.13 | 6              |
| 140            | 9.32.57    | 350.27. 3 | 9.19.38  | 350.40.22 | 9. 6.55  | 350.53. 5 | 7              |
| 160            | 10.54.49   | 349. 5.11 | 10.39.35 | 349.20.25 | 10.25. 3 | 349.34.57 | 8              |
| 180            | 12.16.40   | 347.43.20 | 11.59.31 | 348. 0.29 | 11.43.11 | 348.16.49 | 9              |
| 200            | 13.38.31   | 346.21.29 | 13.19.28 | 346.40.32 | 13. 1.18 | 346.58.42 | 10             |
| 220            | 15. 0.22   | 344.59.38 | 14.39.25 | 345.20.35 | 14.19.26 | 345.40.34 | 11             |
| 240            | 16.22.13   | 343.37.47 | 15.59.22 | 344. 0.38 | 15.37.34 | 344.22.25 | 12             |
| 260            | 17.44. 4   | 342.15.56 | 17.19.19 | 342.40.41 | 16.55.42 | 343. 4.18 | 13             |
| 280            | 19. 5.55   | 340.54. 5 | 18.39.15 | 341.20.45 | 18.13.50 | 341.46.10 | 14             |
| 300            | 20.27.46   | 339.32.14 | 19.59.12 | 340. 0.48 | 19.31.58 | 340.28. 2 | 15             |
| 320            | 21.49.37   | 338.10.23 | 21.19. 9 | 338.40.51 | 20.50. 5 | 339. 9.55 | 16             |
| 340            | 23.11.28   | 336.48.32 | 22.39. 5 | 337.20.54 | 22. 8.13 | 337.51.47 | 17             |
| 360            | 24.33.19   | 335.26.41 | 23.59. 3 | 336. 0.57 | 23.26.21 | 336.33.39 | 18             |
| 380            | 25.55.10   | 334. 4.50 | 25.19. 0 | 334.41. 0 | 24.44.29 | 335.15.31 | 19             |
| 400            | 27.17. 1   | 332.42.59 | 26.38.56 | 333.21. 4 | 26. 2.37 | 333.57.23 | 20             |
| 420            | 28.38.52   | 331.21. 8 | 27.58.53 | 332. 1. 7 | 27.20.45 | 332.39.15 | 21             |
| 440            | 30. 0.43   | 329.59.17 | 29.18.50 | 330.41.10 | 28.38.52 | 331.21. 8 | 22             |
| 460            | 31.22.34   | 328.37.26 | 30.38.47 | 329.21.13 | 29.57. 0 | 330. 3. 0 | 23             |
| 480            | 32.44.26   | 327.15.34 | 31.58.44 | 328. 1.16 | 31.15. 8 | 328.44.52 | 24             |
| 500            | 34. 6.17   | 325.53.43 | 33.18.41 | 326.41.19 | 32.33.16 | 327.26.44 | 25             |
| 520            | 35.28. 8   | 324.31.52 | 34.38.37 | 325.21.23 | 33.51.24 | 326. 8.36 | 26             |
| 540            | 36.49.59   | 323.10. 1 | 35.58.34 | 324. 1.26 | 35. 9.32 | 324.50.28 | 27             |
| 560            | 38.11.50   | 321.48.10 | 37.18.31 | 322.41.29 | 36.27.39 | 323.32.21 | 28             |

| 半徑<br>弧長<br>公尺 | 450 公尺   |           | 460 公尺   |           | 470 公尺   |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 20             | 1.16.24  | 358.43.36 | 1.14.44  | 358.45.16 | 1.13. 9  | 358.46.51 | 1              |
| 40             | 2.32.47  | 357.27.13 | 2.29.28  | 357.30.32 | 2.26.17  | 357.33.43 | 2              |
| 60             | 3.49.11  | 356.10.49 | 3.44.12  | 356.15.48 | 3.39.26  | 356.20.34 | 3              |
| 80             | 5. 5.35  | 354.54.25 | 4.58.56  | 355. 1. 4 | 4.52.35  | 355. 7.25 | 4              |
| 100            | 6.21.58  | 353.38. 2 | 6.13.40  | 353.46.20 | 6. 5.43  | 353.54.17 | 5              |
| 120            | 7.38.22  | 352.21.38 | 7.28.24  | 352.31.36 | 7.18.51  | 352.41. 9 | 6              |
| 140            | 8.54.45  | 351. 5.15 | 8.43. 8  | 351.16.52 | 8.30.12  | 351.28. 0 | 7              |
| 160            | 10.11. 9 | 349.48.51 | 9.57.52  | 350. 2. 8 | 9.45. 9  | 350.14.51 | 8              |
| 180            | 11.27.33 | 348.32.27 | 11.12.36 | 348.47.24 | 10.58.17 | 349. 1.43 | 9              |
| 200            | 12.43.56 | 347.16. 4 | 12.27.20 | 347.32.40 | 12.11.26 | 347.48.34 | 10             |
| 220            | 14. 0.20 | 345.59.40 | 13.42. 4 | 346.17.56 | 13.24.34 | 346.35.26 | 11             |
| 240            | 15.16.44 | 344.43.16 | 14.56.48 | 345. 3.12 | 14.37.43 | 345.22.17 | 12             |
| 260            | 16.33. 7 | 343.26.57 | 16.11.32 | 343.48.28 | 15.50.51 | 344. 9. 1 | 13             |
| 280            | 17.49.31 | 342.10.29 | 17.26.16 | 342.33.44 | 17. 4. 0 | 342.55. 0 | 14             |
| 300            | 19. 5.55 | 340.54. 5 | 18.41. 0 | 341.19. 0 | 18.17. 9 | 341.42.51 | 15             |
| 320            | 20.22.18 | 339.37.42 | 19.55.44 | 340. 4.16 | 19.30.17 | 340.29.43 | 16             |
| 340            | 21.38.42 | 338.21.18 | 21.10.28 | 338.49.32 | 20.43.26 | 339.16.34 | 17             |
| 360            | 22.55. 5 | 337. 4.55 | 22.25.12 | 337.34.48 | 21.56.34 | 338. 3.36 | 18             |
| 380            | 24.11.29 | 335.48.31 | 23.39.56 | 336.20. 4 | 23. 9.43 | 336.50.17 | 19             |
| 400            | 25.27.53 | 334.32. 7 | 24.54.40 | 335. 5.20 | 24.22.52 | 335.37. 8 | 20             |
| 420            | 26.44.16 | 333.15.44 | 26. 9.24 | 333.50.36 | 25.36.00 | 334.24. 0 | 21             |
| 440            | 28. 0.40 | 331.59.16 | 27.24. 8 | 332.35.52 | 26.49. 9 | 333.10.51 | 22             |
| 460            | 29.17. 4 | 330.42.56 | 28.38.52 | 331.21. 8 | 28. 2.17 | 331.57.43 | 23             |
| 480            | 30.33.27 | 329.26.33 | 29.53.36 | 330. 6.24 | 29.15.26 | 330.44.34 | 24             |
| 500            | 31.49.51 | 328.10. 9 | 31. 8.20 | 328.51.42 | 30.28.34 | 329.31.26 | 25             |
| 520            | 33. 6.15 | 326.53.45 | 32.23. 4 | 327.36.56 | 31.41.43 | 328.18.17 | 26             |
| 540            | 34.22.38 | 325.37.22 | 33.37.48 | 326.22.12 | 32.54.52 | 327. 5. 8 | 27             |
| 560            | 35.39. 2 | 324.20.58 | 34.52.32 | 325. 7.28 | 34. 8. 1 | 325.52. 0 | 28             |

## 曲線偏角表

| 半徑<br>公尺 | 480 公尺   |           | 490 公尺   |           | 500 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 20       | 1.11.37  | 358.48.23 | 1.10.9   | 358.49.51 | 1.8.45   | 358.51.15 | 1        |
| 40       | 2.23.14  | 357.36.46 | 2.20.19  | 357.39.41 | 2.17.31  | 357.48.29 | 2        |
| 60       | 3.34.52  | 356.25.8  | 3.30.29  | 356.29.31 | 3.26.16  | 356.33.44 | 3        |
| 80       | 4.46.29  | 355.13.31 | 4.40.38  | 355.19.22 | 4.35.1   | 355.24.49 | 4        |
| 100      | 5.58.6   | 354.1.54  | 5.50.47  | 354.9.13  | 5.43.46  | 354.16.14 | 5        |
| 120      | 7.9.43   | 352.50.17 | 7.09.57  | 352.59.3  | 6.52.31  | 353.7.29  | 6        |
| 140      | 8.21.20  | 351.38.40 | 8.11.6   | 351.48.54 | 8.1.17   | 351.58.43 | 7        |
| 160      | 9.32.57  | 350.27.3  | 9.21.16  | 350.38.44 | 9.10.2   | 350.49.58 | 8        |
| 180      | 10.44.35 | 349.15.25 | 10.31.25 | 349.28.35 | 10.18.48 | 349.41.12 | 9        |
| 200      | 11.56.12 | 348.3.48  | 11.41.35 | 348.18.25 | 11.27.33 | 348.32.27 | 10       |
| 220      | 13.7.49  | 346.52.11 | 12.51.44 | 347.8.16  | 12.36.18 | 347.23.42 | 11       |
| 240      | 14.19.26 | 345.40.34 | 14.1.54  | 345.58.6  | 13.45.3  | 346.14.57 | 12       |
| 260      | 15.31.3  | 344.28.57 | 15.12.3  | 344.47.57 | 14.53.49 | 345.6.11  | 13       |
| 280      | 16.42.41 | 343.17.19 | 16.22.13 | 343.37.47 | 16.2.34  | 343.57.26 | 14       |
| 300      | 17.54.18 | 342.5.42  | 17.32.22 | 342.27.33 | 17.11.20 | 342.48.40 | 15       |
| 320      | 19.5.55  | 340.54.5  | 18.42.32 | 341.17.28 | 18.20.4  | 341.39.56 | 16       |
| 340      | 20.17.32 | 339.42.28 | 19.52.41 | 340.7.19  | 19.28.50 | 340.31.10 | 17       |
| 360      | 21.29.9  | 338.30.51 | 21.2.51  | 338.57.9  | 20.37.35 | 339.22.25 | 18       |
| 380      | 22.40.46 | 337.19.14 | 22.13.0  | 337.47.0  | 21.46.20 | 338.13.40 | 19       |
| 400      | 23.52.24 | 336.7.36  | 23.23.10 | 336.36.50 | 22.55.6  | 337.4.54  | 20       |
| 420      | 25.4.1   | 334.55.59 | 24.33.19 | 335.26.41 | 24.3.51  | 335.56.9  | 21       |
| 440      | 26.15.36 | 333.44.22 | 25.43.29 | 334.16.31 | 25.12.37 | 334.47.23 | 22       |
| 460      | 27.27.15 | 332.32.45 | 26.53.38 | 333.6.22  | 26.21.22 | 333.38.38 | 23       |
| 480      | 28.38.52 | 331.21.8  | 28.3.48  | 331.56.12 | 27.30.7  | 332.29.53 | 24       |
| 500      | 29.50.30 | 330.9.30  | 29.13.57 | 330.46.3  | 28.38.52 | 331.21.8  | 25       |
| 520      | 31.2.7   | 328.57.53 | 30.24.6  | 329.35.54 | 29.47.38 | 330.12.22 | 26       |
| 540      | 32.13.44 | 327.46.16 | 31.34.16 | 328.25.44 | 30.56.23 | 329.3.37  | 27       |
| 560      | 33.25.21 | 326.34.39 | 32.44.25 | 327.15.35 | 32.5.28  | 327.54.52 | 28       |

| 半徑<br>公尺 | 510 公尺   |           | 520 公尺   |           | 530 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 20       | 1.7.24   | 358.52.36 | 1.6.7    | 358.53.53 | 1.4.52   | 358.55.8  | 1        |
| 40       | 2.14.49  | 357.45.11 | 2.12.13  | 357.47.47 | 2.9.44   | 357.50.16 | 2        |
| 60       | 3.22.13  | 356.37.47 | 3.18.20  | 356.41.40 | 3.14.35  | 356.45.25 | 3        |
| 80       | 4.29.38  | 355.30.22 | 4.24.27  | 355.35.33 | 4.19.27  | 355.40.33 | 4        |
| 100      | 5.37.2   | 354.22.58 | 5.30.33  | 354.29.27 | 5.24.19  | 354.35.41 | 5        |
| 120      | 6.44.27  | 353.15.33 | 6.36.40  | 353.23.20 | 6.29.11  | 353.30.49 | 6        |
| 140      | 7.51.51  | 352.8.9   | 7.42.46  | 352.17.14 | 7.34.2   | 352.25.58 | 7        |
| 160      | 8.59.15  | 351.0.45  | 8.48.53  | 351.11.7  | 8.38.54  | 351.21.6  | 8        |
| 180      | 10.6.40  | 349.53.20 | 9.55.0   | 350.5.0   | 9.43.46  | 350.16.14 | 9        |
| 200      | 11.14.4  | 348.45.56 | 11.1.6   | 348.58.54 | 10.48.33 | 349.11.22 | 10       |
| 220      | 12.21.28 | 347.38.32 | 12.7.13  | 347.52.47 | 11.53.30 | 348.6.30  | 11       |
| 240      | 13.28.53 | 346.31.7  | 13.13.20 | 346.46.40 | 12.58.21 | 347.1.39  | 12       |
| 260      | 14.36.17 | 345.23.43 | 14.19.25 | 345.40.34 | 14.3.13  | 345.56.47 | 13       |
| 280      | 15.43.42 | 344.16.18 | 15.25.33 | 344.34.27 | 15.8.5   | 344.51.55 | 14       |
| 300      | 16.51.6  | 343.8.54  | 16.31.39 | 343.28.21 | 16.12.57 | 343.47.3  | 15       |
| 320      | 17.58.31 | 342.1.29  | 17.37.46 | 342.22.14 | 17.17.48 | 342.42.12 | 16       |
| 340      | 19.5.55  | 340.54.5  | 18.43.53 | 341.16.7  | 18.22.40 | 341.37.20 | 17       |
| 360      | 20.13.20 | 339.46.40 | 19.49.59 | 340.10.1  | 19.27.32 | 340.32.28 | 18       |
| 380      | 21.20.44 | 338.39.16 | 20.56.6  | 339.3.54  | 20.32.24 | 339.27.36 | 19       |
| 400      | 22.28.8  | 337.31.52 | 22.2.13  | 337.57.47 | 21.37.16 | 338.22.44 | 20       |
| 420      | 23.35.33 | 336.24.27 | 23.8.19  | 336.51.41 | 22.42.7  | 337.17.53 | 21       |
| 440      | 24.42.57 | 335.17.3  | 24.14.26 | 335.45.34 | 23.46.58 | 336.13.2  | 22       |
| 460      | 25.50.22 | 334.9.38  | 25.20.32 | 334.39.28 | 24.51.51 | 335.8.9   | 23       |
| 480      | 26.57.46 | 333.2.14  | 26.26.39 | 333.33.21 | 25.56.43 | 334.4.17  | 24       |
| 500      | 28.5.11  | 331.54.49 | 27.32.46 | 332.27.14 | 27.1.34  | 332.58.26 | 25       |
| 520      | 29.12.35 | 329.47.25 | 28.38.52 | 331.21.8  | 28.6.26  | 331.53.34 | 26       |
| 540      | 30.19.59 | 329.40.1  | 29.44.59 | 330.15.1  | 29.11.18 | 330.48.42 | 27       |
| 560      | 31.27.24 | 328.32.36 | 30.51.6  | 329.8.54  | 30.16.10 | 329.43.50 | 28       |

## 曲線偏角表

| 半徑<br>弧長<br>公尺 | 540 公尺   |           | 550 公尺   |           | 560 公尺   |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 2 0            | 0.3.40   | 358.56.20 | 1.2.90   | 358.57.30 | 1.1.23   | 358.58.37 | 1              |
| 4 0            | 2.7.19   | 357.52.41 | 2.5.0    | 357.55.0  | 2.2.47   | 357.57.13 | 2              |
| 6 0            | 3.10.59  | 356.49.1  | 3.7.31   | 356.52.29 | 3.4.10   | 356.55.50 | 3              |
| 8 0            | 4.14.30  | 355.45.21 | 4.10.1   | 355.49.59 | 4.5.33   | 355.54.27 | 4              |
| 1 0 0          | 5.18.13  | 354.41.42 | 5.12.31  | 354.47.29 | 5.6.56   | 354.53.4  | 5              |
| 1 2 0          | 6.21.53  | 353.38.2  | 6.15.1   | 353.44.59 | 6.8.20   | 353.51.40 | 6              |
| 1 4 0          | 7.25.33  | 352.34.22 | 7.17.32  | 352.42.28 | 7.9.43   | 352.50.17 | 7              |
| 1 6 0          | 8.29.18  | 351.30.42 | 8.20.2   | 351.39.58 | 8.11.6   | 351.48.54 | 8              |
| 1 8 0          | 9.32.58  | 350.27.3  | 9.22.32  | 350.37.28 | 9.12.29  | 350.47.31 | 9              |
| 2 0 0          | 10.36.38 | 349.23.22 | 10.25.2  | 349.34.58 | 10.13.53 | 349.46.7  | 10             |
| 2 2 0          | 11.40.17 | 348.19.43 | 11.27.33 | 348.32.27 | 11.15.16 | 348.44.44 | 11             |
| 2 4 0          | 12.43.57 | 347.16.3  | 12.30.3  | 347.29.57 | 12.16.40 | 347.43.20 | 12             |
| 2 6 0          | 13.47.36 | 346.12.24 | 13.32.53 | 346.27.27 | 13.18.3  | 346.41.57 | 13             |
| 2 8 0          | 14.51.16 | 345.8.44  | 14.35.3  | 345.24.57 | 14.19.26 | 345.40.34 | 14             |
| 3 0 0          | 15.54.56 | 344.5.4   | 15.37.34 | 344.22.26 | 15.20.49 | 344.39.11 | 15             |
| 3 2 0          | 16.58.35 | 343.1.24  | 16.40.4  | 343.19.56 | 16.22.13 | 343.37.47 | 16             |
| 3 4 0          | 18.2.15  | 341.57.45 | 17.42.34 | 342.17.26 | 17.23.36 | 342.36.24 | 17             |
| 3 6 0          | 19.5.56  | 340.54.5  | 18.45.4  | 341.14.56 | 18.25.0  | 341.35.0  | 18             |
| 3 8 0          | 20.9.35  | 339.50.25 | 19.47.55 | 340.12.25 | 19.26.23 | 340.33.37 | 19             |
| 4 0 0          | 21.13.15 | 338.46.45 | 20.50.5  | 339.9.55  | 20.27.46 | 339.32.14 | 20             |
| 4 2 0          | 22.16.54 | 337.43.6  | 21.52.35 | 338.7.25  | 21.29.9  | 338.30.51 | 21             |
| 4 4 0          | 23.20.34 | 336.39.26 | 22.55.5  | 337.4.55  | 22.30.32 | 337.29.28 | 22             |
| 4 6 0          | 24.24.14 | 335.35.46 | 23.57.36 | 336.2.24  | 23.31.56 | 336.28.4  | 23             |
| 4 8 0          | 25.27.53 | 334.32.7  | 25.00.6  | 334.59.54 | 24.33.19 | 335.26.41 | 24             |
| 5 0 0          | 26.31.33 | 333.28.27 | 26.2.59  | 333.57.24 | 25.34.42 | 334.25.18 | 25             |
| 5 2 0          | 27.35.13 | 332.24.47 | 27.5.6   | 332.54.54 | 26.36.5  | 333.23.55 | 26             |
| 5 4 0          | 28.38.53 | 331.21.7  | 28.7.36  | 331.52.24 | 27.37.29 | 332.22.31 | 27             |
| 5 6 0          | 29.42.32 | 330.17.28 | 29.10.7  | 330.49.53 | 28.38.52 | 331.21.8  | 28             |

| 半徑<br>弧長<br>公尺 | 570 公尺  |           | 580 公尺   |           | 590 公尺   |           | 半徑<br>弧長<br>公尺 |
|----------------|---------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右       | 左         | 右        | 左         | 右        | 左         |                |
| 2 0            | 1.0.19  | 358.59.41 | 0.59.16  | 359.0.44  | 0.58.16  | 359.1.44  | 1              |
| 4 0            | 2.0.37  | 357.59.23 | 1.58.33  | 358.1.27  | 1.56.32  | 358.3.28  | 2              |
| 6 0            | 3.0.56  | 356.59.4  | 2.57.49  | 357.2.11  | 2.54.48  | 357.5.12  | 3              |
| 8 0            | 4.1.15  | 355.59.5  | 3.57.5   | 356.2.55  | 3.53.4   | 356.6.56  | 4              |
| 1 0 0          | 5.1.33  | 354.58.27 | 4.56.21  | 355.3.39  | 4.51.20  | 355.8.40  | 5              |
| 1 2 0          | 6.1.52  | 353.58.8  | 5.55.38  | 354.4.22  | 5.49.36  | 354.10.24 | 6              |
| 1 4 0          | 7.2.10  | 352.57.50 | 6.54.54  | 353.5.6   | 6.47.52  | 353.12.8  | 7              |
| 1 6 0          | 8.2.29  | 351.57.31 | 7.54.10  | 352.5.50  | 7.46.8   | 352.13.52 | 8              |
| 1 8 0          | 9.2.48  | 350.57.12 | 8.53.27  | 351.6.33  | 8.44.24  | 351.15.36 | 9              |
| 2 0 0          | 10.3.6  | 349.56.54 | 9.52.43  | 350.7.17  | 9.42.40  | 350.17.20 | 10             |
| 2 2 0          | 11.3.25 | 348.56.35 | 10.51.59 | 349.8.1   | 10.40.56 | 349.19.4  | 11             |
| 2 4 0          | 12.3.44 | 347.56.16 | 11.51.15 | 348.8.45  | 11.39.12 | 348.20.48 | 12             |
| 2 6 0          | 13.4.3  | 346.55.57 | 12.50.32 | 347.9.28  | 12.37.28 | 347.22.32 | 13             |
| 2 8 0          | 14.4.21 | 345.55.39 | 13.49.48 | 346.10.12 | 13.35.44 | 346.24.16 | 14             |
| 3 0 0          | 15.4.40 | 344.55.20 | 14.49.4  | 345.10.56 | 14.34.0  | 345.26.0  | 15             |
| 3 2 0          | 16.4.59 | 343.55.1  | 15.48.21 | 344.11.39 | 15.32.16 | 344.27.44 | 16             |
| 3 4 0          | 17.5.17 | 342.54.33 | 16.47.37 | 343.12.23 | 16.30.32 | 343.29.28 | 17             |
| 3 6 0          | 18.5.36 | 341.54.24 | 17.46.53 | 342.13.7  | 17.28.48 | 342.31.12 | 18             |
| 3 8 0          | 19.5.54 | 340.54.6  | 18.46.9  | 341.13.51 | 18.27.4  | 341.32.56 | 19             |
| 4 0 0          | 20.6.13 | 339.53.47 | 19.45.26 | 340.14.34 | 19.25.20 | 340.34.40 | 20             |
| 4 2 0          | 21.6.32 | 338.53.28 | 20.44.42 | 339.15.18 | 20.23.36 | 339.36.24 | 21             |
| 4 4 0          | 22.6.51 | 337.53.9  | 21.43.58 | 338.16.2  | 21.21.52 | 338.38.8  | 22             |
| 4 6 0          | 23.7.9  | 336.52.51 | 22.43.14 | 337.16.46 | 22.20.8  | 337.39.52 | 23             |
| 4 8 0          | 24.7.28 | 335.52.32 | 23.42.31 | 336.17.29 | 23.18.24 | 336.41.36 | 24             |
| 5 0 0          | 25.7.47 | 334.52.13 | 24.41.47 | 335.18.13 | 24.16.40 | 335.43.20 | 25             |
| 5 2 0          | 26.8.5  | 333.51.55 | 25.41.3  | 334.18.57 | 25.14.56 | 334.45.4  | 26             |
| 5 4 0          | 27.8.24 | 332.51.36 | 26.40.20 | 333.19.40 | 26.13.12 | 333.46.48 | 27             |
| 5 6 0          | 28.8.42 | 331.51.18 | 27.39.36 | 332.20.23 | 27.11.28 | 332.48.32 | 28             |

# 曲線偏角表

| 半徑<br>弧長<br>公尺 | 600 公尺   |           | 610 公尺   |           | 620 公尺   |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 2 0            | .57.18   | 359. 2.42 | 0.56.22  | 359. 3.38 | .55.27   | 359. 4.33 | 1              |
| 4 0            | 1.54.35  | 358. 5.25 | 1.52.43  | 358. 7.17 | 1.50.54  | 358. 9. 6 | 2              |
| 6 0            | 2.51.53  | 357. 8. 7 | 2.49. 4  | 357.10.56 | 2.46.21  | 357.13.39 | 3              |
| 8 0            | 3.49.11  | 356.10.49 | 3.45.25  | 356.14.35 | 3.41.47  | 356.18.13 | 4              |
| 1 0 0          | 4.46.28  | 355.13.32 | 4.41.47  | 355.18.13 | 4.37.14  | 355.22.46 | 5              |
| 1 2 0          | 5.43.46  | 354.16.14 | 5.38. 8  | 354.21.52 | 5.32.41  | 354.27.19 | 6              |
| 1 4 0          | 6.41. 4  | 353.18.56 | 6.34.30  | 353.25.30 | 6.28. 8  | 353.31.52 | 7              |
| 1 6 0          | 7.39.22  | 352.21.38 | 7.30.51  | 352.29. 9 | 7.23.35  | 352.36.25 | 8              |
| 1 8 0          | 8.35.40  | 351.24.20 | 8.27.12  | 351.32.48 | 8.19. 2  | 351.40.58 | 9              |
| 2 0 0          | 9.32.57  | 350.27. 3 | 9.23.35  | 350.36.25 | 9.14.28  | 350.45.32 | 10             |
| 2 2 0          | 10.30.15 | 349.29.45 | 10.19.55 | 349.40. 5 | 10. 9.55 | 349.50. 5 | 11             |
| 2 4 0          | 11.27.33 | 349.32.27 | 11.16.16 | 348.43.44 | 11. 5.22 | 348.54.38 | 12             |
| 2 6 0          | 12.24.51 | 347.35. 9 | 12.12.38 | 347.47.22 | 12. 0.49 | 347.59.11 | 13             |
| 2 8 0          | 13.22. 8 | 346.37.52 | 13. 8.59 | 346.51. 1 | 12.56.16 | 347. 3.44 | 14             |
| 3 0 0          | 14.19.26 | 345.40.34 | 14. 5.21 | 345.54.39 | 13.51.43 | 346. 8.17 | 15             |
| 3 2 0          | 15.16.44 | 344.43.16 | 15.1.42  | 344.58.18 | 14.47. 9 | 345.12.51 | 16             |
| 3 4 0          | 16.14. 2 | 343.45.58 | 15.58. 4 | 344. 1.56 | 15.42.36 | 344.17.24 | 17             |
| 3 6 0          | 17.11.20 | 342.48.40 | 16.54.25 | 343. 5.35 | 16.38. 3 | 343.21.57 | 18             |
| 3 8 0          | 18. 8.37 | 341.51.23 | 17.50.46 | 342. 9.14 | 17.33.30 | 342.26.30 | 19             |
| 4 0 0          | 19. 5.55 | 340.54.05 | 18.47. 8 | 341.12.52 | 18.28.57 | 341.31. 3 | 20             |
| 4 2 0          | 20. 3.13 | 339.56.47 | 19.43.29 | 340.16.31 | 19.24.24 | 340.35.36 | 21             |
| 4 4 0          | 21. 0.30 | 338.59.30 | 20.39.50 | 339.20.10 | 20.19.51 | 339.40. 9 | 22             |
| 4 6 0          | 21.57.48 | 338. 2.12 | 21.36.12 | 338.23.48 | 21.15.17 | 338.44.43 | 23             |
| 4 8 0          | 22.55. 6 | 337. 4.54 | 22.32.33 | 337.27.27 | 22.10.44 | 337.49.16 | 24             |
| 5 0 0          | 23.52.24 | 336. 7.36 | 23.28.54 | 336.31. 6 | 23. 6.11 | 336.53.49 | 25             |
| 5 2 0          | 24.49.41 | 335.10.19 | 24.25.16 | 335.34.44 | 24. 1.38 | 335.58.22 | 26             |
| 5 4 0          | 25.46.59 | 334.13. 1 | 25.21.37 | 334.38.23 | 24.57. 6 | 335. 2.55 | 27             |
| 5 6 0          | 26.44.17 | 333.15.43 | 26.17.59 | 333.42. 1 | 25.52.32 | 334. 7.28 | 28             |

| 半徑<br>弧長<br>公尺 | 630 公尺   |           | 640 公尺   |           | 650 公尺   |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 2 0            | 0.54.34  | 359. 5.26 | .53.43   | 359. 6.17 | .52.53   | 359. 7. 7 | 1              |
| 4 0            | 1.49. 8  | 358.10.52 | 1.47.26  | 358.12.34 | 1.45.47  | 358.14.13 | 2              |
| 6 0            | 2.43.42  | 357.16.18 | 2.41. 9  | 357.18.51 | 2.38.40  | 357.21.20 | 3              |
| 8 0            | 3.38.15  | 356.21.44 | 3.34.52  | 356.25. 8 | 3.31.33  | 356.28.27 | 4              |
| 1 0 0          | 4.32.50  | 355.27.10 | 4.28.35  | 355.31.25 | 4.24.27  | 355.35.32 | 5              |
| 1 2 0          | 5.27.24  | 354.32.36 | 5.22.17  | 354.37.43 | 5.17.20  | 354.42.40 | 6              |
| 1 4 0          | 6.21.58  | 353.38. 2 | 6.16. 1  | 353.43.59 | 6.10.13  | 353.49.47 | 7              |
| 1 6 0          | 7.16.32  | 352.43.28 | 7. 9.43  | 352.50.17 | 7. 3. 6  | 352.55.54 | 8              |
| 1 8 0          | 8.11. 6  | 351.48.54 | 8. 3.26  | 351.56.34 | 7.56. 0  | 352. 4. 0 | 9              |
| 2 0 0          | 9. 5.40  | 350.54.20 | 8.57. 9  | 351. 2.51 | 8.48.53  | 351.11. 7 | 10             |
| 2 2 0          | 10. 0.14 | 349.59.46 | 9.50.52  | 350. 9. 8 | 9.41.46  | 350.18.14 | 11             |
| 2 4 0          | 10.54.48 | 349. 5.12 | 10.44.35 | 349.15.25 | 10.34.40 | 349.25.20 | 12             |
| 2 6 0          | 11.49.22 | 348.10.38 | 11.38.18 | 348.21.42 | 11.27.33 | 348.32.27 | 13             |
| 2 8 0          | 12.43.57 | 347.16. 3 | 12.32. 1 | 347.27.59 | 12.20.26 | 347.39.34 | 14             |
| 3 0 0          | 13.38.30 | 346.21.30 | 13.25.44 | 346.34.15 | 13.13.20 | 346.46.40 | 15             |
| 3 2 0          | 14.33. 5 | 345.26.55 | 14.19.26 | 345.40.34 | 14. 6.13 | 345.53.47 | 16             |
| 3 4 0          | 15.27.39 | 344.32.21 | 15.13. 9 | 344.46.51 | 14.59. 6 | 345. 0.54 | 17             |
| 3 6 0          | 16.22.13 | 343.37.47 | 15. 6.52 | 343.53. 8 | 15.51.59 | 344. 8. 1 | 18             |
| 3 8 0          | 17.16.47 | 342.43.13 | 17. 0.35 | 342.59.25 | 16.44.53 | 343.15. 7 | 19             |
| 4 0 0          | 18.11.21 | 341.48.39 | 17.54.18 | 342. 5.42 | 17.37.46 | 342.22.14 | 20             |
| 4 2 0          | 19. 5.55 | 340.54. 5 | 18.48. 1 | 341.11.59 | 18.30.39 | 341.29.21 | 21             |
| 4 4 0          | 20. 0.29 | 339.59.31 | 19.41.44 | 340.18.16 | 19.23.33 | 340.36.27 | 22             |
| 4 6 0          | 20.55. 3 | 339. 4.57 | 20.36.27 | 339.24.36 | 20.16.26 | 339.43.34 | 23             |
| 4 8 0          | 21.49.37 | 338.10.23 | 21.29.10 | 338.30.50 | 21. 9.19 | 338.50.41 | 24             |
| 5 0 0          | 22.44.11 | 337.15.49 | 22.22.53 | 337.37. 7 | 22. 2.12 | 337.57.48 | 25             |
| 5 2 0          | 23.38.45 | 336.21.15 | 23.16.35 | 336.43.25 | 22.55. 6 | 337. 4.54 | 26             |
| 5 4 0          | 24.33.19 | 335.26.41 | 24.10.18 | 335.49.42 | 23.47.59 | 336.12. 1 | 27             |
| 5 6 0          | 25.27.53 | 334.32. 7 | 25. 4. 1 | 334.55.59 | 24.40.52 | 335.19. 8 | 28             |



## 曲線偏角表

| 半徑<br>公尺 | 660 公尺   |           | 670 公尺   |           | 680 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 20       | 0.52.5   | 359.7.65  | 0.51.18  | 359.8.42  | 0.50.33  | 359.9.27  | 1        |
| 40       | 1.44.10  | 358.15.50 | 1.42.37  | 358.17.23 | 1.41.7   | 358.18.53 | 2        |
| 60       | 2.36.15  | 357.23.45 | 2.33.56  | 357.26.4  | 2.31.40  | 357.28.20 | 3        |
| 80       | 3.28.21  | 356.31.39 | 3.25.14  | 356.34.46 | 3.22.13  | 356.37.47 | 4        |
| 100      | 4.20.26  | 355.39.34 | 4.16.33  | 355.43.27 | 4.12.47  | 355.47.13 | 5        |
| 120      | 5.12.31  | 354.47.29 | 5.7.51   | 354.52.9  | 5.3.20   | 354.56.40 | 6        |
| 140      | 6.4.36   | 353.55.24 | 5.59.10  | 354.0.50  | 5.50.53  | 354.9.7   | 7        |
| 160      | 6.56.42  | 353.3.18  | 6.50.29  | 353.9.31  | 6.44.26  | 353.15.34 | 8        |
| 180      | 7.48.47  | 352.11.13 | 7.41.47  | 352.18.13 | 7.34.89  | 352.25.1  | 9        |
| 200      | 8.40.52  | 351.19.8  | 8.33.6   | 351.26.54 | 8.25.33  | 351.34.27 | 10       |
| 220      | 9.32.57  | 350.27.3  | 9.24.24  | 350.35.26 | 9.16.6   | 350.43.54 | 11       |
| 240      | 10.25.3  | 349.34.57 | 10.15.43 | 349.44.17 | 10.6.40  | 349.53.20 | 12       |
| 260      | 11.17.8  | 348.42.52 | 11.7.1   | 348.52.55 | 10.57.13 | 349.2.47  | 13       |
| 280      | 12.9.13  | 347.50.47 | 11.58.20 | 348.1.40  | 11.47.46 | 348.12.14 | 14       |
| 300      | 13.1.18  | 346.58.41 | 12.49.33 | 347.10.21 | 12.38.20 | 347.21.40 | 15       |
| 320      | 13.53.24 | 346.6.36  | 13.40.57 | 346.19.3  | 13.28.53 | 346.31.7  | 16       |
| 340      | 14.45.29 | 345.14.31 | 14.32.16 | 345.27.44 | 14.19.26 | 345.40.34 | 17       |
| 360      | 15.37.34 | 344.22.26 | 15.23.34 | 344.36.26 | 15.9.59  | 344.50.1  | 18       |
| 380      | 16.29.39 | 343.30.21 | 16.14.53 | 343.45.7  | 16.0.33  | 343.59.27 | 19       |
| 400      | 17.21.45 | 342.38.15 | 17.6.11  | 342.53.49 | 16.51.6  | 343.8.54  | 20       |
| 420      | 18.13.50 | 341.46.10 | 17.57.30 | 342.2.30  | 17.41.39 | 342.18.21 | 21       |
| 440      | 19.5.55  | 340.54.5  | 18.48.49 | 341.11.11 | 18.32.13 | 341.27.47 | 22       |
| 460      | 19.58.0  | 340.2.0   | 19.40.7  | 340.19.53 | 19.22.46 | 340.37.14 | 23       |
| 480      | 20.50.5  | 339.9.55  | 20.31.26 | 339.28.34 | 20.13.19 | 339.46.41 | 24       |
| 500      | 21.42.10 | 338.17.50 | 21.22.44 | 338.37.16 | 21.3.53  | 338.56.7  | 25       |
| 520      | 22.34.16 | 337.25.44 | 22.14.3  | 337.45.57 | 21.54.26 | 338.5.34  | 26       |
| 540      | 23.26.21 | 336.33.39 | 23.5.21  | 336.54.39 | 22.44.59 | 337.15.1  | 27       |
| 560      | 24.18.25 | 335.41.34 | 23.56.40 | 336.3.20  | 23.35.32 | 336.24.28 | 28       |

| 半徑<br>公尺 | 690 公尺   |           | 700 公尺   |           | 710 公尺   |           | 半徑<br>公尺 |
|----------|----------|-----------|----------|-----------|----------|-----------|----------|
|          | 右        | 左         | 右        | 左         | 右        | 左         |          |
| 20       | 0.49.49  | 359.10.11 | 0.49.6   | 359.10.54 | 0.48.25  | 359.11.35 | 1        |
| 40       | 1.39.39  | 358.20.21 | 1.38.13  | 358.21.47 | 1.36.50  | 358.23.10 | 2        |
| 60       | 2.29.28  | 357.30.32 | 2.27.20  | 357.32.40 | 2.25.15  | 357.34.45 | 3        |
| 80       | 3.19.17  | 356.40.43 | 3.16.26  | 356.43.34 | 3.13.41  | 356.46.19 | 4        |
| 100      | 4.9.7    | 355.50.53 | 4.5.33   | 355.54.27 | 4.2.6    | 355.57.54 | 5        |
| 120      | 4.58.56  | 355.1.4   | 4.54.40  | 355.5.20  | 4.50.31  | 355.9.29  | 6        |
| 140      | 5.48.45  | 354.11.15 | 5.43.47  | 354.16.13 | 5.38.56  | 354.21.4  | 7        |
| 160      | 6.38.36  | 353.21.25 | 6.32.53  | 353.27.7  | 6.27.21  | 353.32.39 | 8        |
| 180      | 7.28.24  | 352.31.36 | 7.22.0   | 352.38.0  | 7.15.46  | 352.41.14 | 9        |
| 200      | 8.18.13  | 351.41.47 | 8.11.6   | 351.48.54 | 8.4.11   | 351.56.49 | 10       |
| 220      | 9.8.3    | 350.51.57 | 9.0.13   | 350.59.47 | 8.52.36  | 351.7.24  | 11       |
| 240      | 9.57.52  | 350.2.8   | 9.49.20  | 350.10.40 | 9.41.2   | 350.18.58 | 12       |
| 260      | 10.47.41 | 349.12.19 | 10.38.26 | 349.21.34 | 10.29.27 | 349.30.33 | 13       |
| 280      | 11.37.31 | 348.22.29 | 11.27.33 | 348.32.27 | 11.17.52 | 348.42.8  | 14       |
| 300      | 12.27.20 | 347.32.40 | 12.16.40 | 347.43.20 | 12.6.17  | 347.53.43 | 15       |
| 320      | 13.17.9  | 346.42.51 | 13.5.46  | 346.54.14 | 12.54.42 | 347.5.18  | 16       |
| 340      | 14.6.59  | 345.53.1  | 13.54.53 | 346.5.7   | 13.43.7  | 346.16.53 | 17       |
| 360      | 14.56.48 | 345.3.12  | 14.44.0  | 345.16.0  | 14.31.32 | 345.28.28 | 18       |
| 380      | 15.46.37 | 344.13.23 | 15.33.6  | 344.26.54 | 15.19.58 | 344.40.1  | 19       |
| 400      | 16.36.27 | 343.23.33 | 16.22.13 | 343.37.47 | 16.8.23  | 343.51.37 | 20       |
| 420      | 17.26.16 | 342.33.44 | 17.11.19 | 342.48.41 | 16.56.48 | 343.3.12  | 21       |
| 440      | 18.16.5  | 341.43.55 | 18.0.26  | 341.59.34 | 17.45.13 | 342.14.47 | 22       |
| 460      | 19.5.55  | 340.54.5  | 18.49.33 | 341.10.27 | 18.33.58 | 341.26.22 | 23       |
| 480      | 19.55.44 | 340.4.16  | 19.38.39 | 340.21.21 | 19.22.3  | 340.37.57 | 24       |
| 500      | 20.45.33 | 339.14.27 | 20.27.46 | 339.32.14 | 20.10.28 | 339.49.32 | 25       |
| 520      | 21.35.23 | 338.24.37 | 21.16.53 | 338.43.7  | 20.58.53 | 339.1.7   | 26       |
| 540      | 22.25.12 | 337.34.48 | 22.5.59  | 337.54.7  | 21.47.19 | 338.12.41 | 27       |
| 560      | 23.15.1  | 336.44.59 | 22.55.5  | 337.4.55  | 22.35.44 | 337.24.16 | 28       |

## 曲線偏角表

| 半徑<br>弧長<br>公尺 | 720 公尺   |           | 730 公尺   |           | 740 公尺   |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 20             | .47.44   | 359.12.16 | .47.5    | 359.12.25 | .46.27   | 359.13.33 | 1              |
| 40             | 1.35.30  | 358.24.30 | 1.34.11  | 358.25.43 | 1.32.55  | 358.27.5  | 2              |
| 60             | 2.23.14  | 357.36.46 | 2.21.17  | 357.38.43 | 2.19.22  | 357.40.38 | 3              |
| 80             | 3.10.59  | 356.49.1  | 3.8.22   | 356.51.33 | 3.5.49   | 356.54.11 | 4              |
| 100            | 3.58.44  | 356.1.16  | 3.55.28  | 356.4.32  | 3.52.17  | 356.7.43  | 5              |
| 120            | 4.46.29  | 355.13.31 | 4.42.33  | 355.17.27 | 4.38.44  | 355.21.16 | 6              |
| 140            | 5.34.13  | 354.25.47 | 5.29.39  | 354.30.21 | 5.25.11  | 354.34.49 | 7              |
| 160            | 6.21.58  | 353.38.2  | 6.16.44  | 353.43.16 | 6.11.39  | 353.48.21 | 8              |
| 180            | 7.9.43   | 352.50.17 | 7.3.50   | 352.56.10 | 6.58.6   | 353.1.54  | 9              |
| 200            | 7.57.28  | 352.2.32  | 7.50.55  | 352.9.5   | 7.44.34  | 352.15.25 | 10             |
| 220            | 8.45.13  | 351.14.47 | 8.38.1   | 351.21.59 | 8.31.1   | 351.28.59 | 11             |
| 240            | 9.32.57  | 350.27.3  | 9.25.6   | 350.34.54 | 9.17.28  | 350.42.32 | 12             |
| 260            | 10.20.42 | 349.39.18 | 10.12.12 | 349.47.43 | 10.3.56  | 349.56.4  | 13             |
| 280            | 11.8.27  | 348.51.33 | 10.59.18 | 349.0.42  | 10.50.23 | 349.9.37  | 14             |
| 300            | 11.56.12 | 348.4.43  | 11.46.23 | 348.13.37 | 11.36.50 | 348.23.10 | 15             |
| 320            | 12.43.56 | 347.16.4  | 12.33.29 | 347.26.31 | 12.23.18 | 347.36.42 | 16             |
| 340            | 13.31.41 | 346.28.19 | 13.20.34 | 346.39.26 | 13.9.45  | 346.50.15 | 17             |
| 360            | 14.19.26 | 345.40.34 | 14.7.40  | 345.52.20 | 13.56.12 | 346.3.48  | 18             |
| 380            | 15.7.11  | 344.52.49 | 14.54.45 | 345.5.15  | 14.42.40 | 345.17.20 | 19             |
| 400            | 15.54.55 | 344.5.5   | 15.41.51 | 344.18.9  | 15.29.7  | 344.30.53 | 20             |
| 420            | 16.42.40 | 343.13.20 | 16.28.56 | 343.31.4  | 16.15.34 | 343.44.26 | 21             |
| 440            | 17.30.25 | 342.29.35 | 17.16.2  | 342.43.53 | 17.2.2   | 342.57.58 | 22             |
| 460            | 18.18.10 | 341.41.50 | 18.3.7   | 341.56.53 | 17.48.29 | 342.11.31 | 23             |
| 480            | 19.5.55  | 340.54.5  | 18.50.13 | 341.9.47  | 18.34.57 | 341.25.3  | 24             |
| 500            | 19.53.39 | 340.6.21  | 19.37.19 | 340.22.41 | 19.21.24 | 340.39.36 | 25             |
| 520            | 20.41.24 | 339.18.36 | 20.24.24 | 339.35.36 | 20.7.51  | 339.52.9  | 26             |
| 540            | 21.29.9  | 338.30.51 | 21.11.30 | 338.48.30 | 20.54.19 | 339.5.41  | 27             |
| 560            | 22.16.53 | 337.43.7  | 21.58.35 | 338.1.25  | 21.40.45 | 338.19.15 | 28             |

| 半徑<br>弧長<br>公尺 | 750 公尺   |           | 800 公尺   |           | 850 公尺   |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 20             | .45.50   | 359.14.10 | .42.58   | 359.17.2  | .40.27   | 359.19.33 | 1              |
| 40             | 1.31.40  | 358.28.20 | 1.25.57  | 358.34.3  | 1.20.53  | 358.39.7  | 2              |
| 60             | 2.17.31  | 357.42.29 | 2.8.55   | 357.51.5  | 2.1.20   | 357.58.40 | 3              |
| 80             | 3.3.21   | 356.56.39 | 2.51.53  | 357.8.7   | 2.41.47  | 357.18.13 | 4              |
| 100            | 3.49.11  | 356.10.49 | 3.34.51  | 356.25.9  | 3.22.13  | 356.37.47 | 5              |
| 120            | 4.35.1   | 355.24.59 | 4.17.50  | 355.42.10 | 4.2.40   | 355.57.20 | 6              |
| 140            | 5.20.51  | 354.39.9  | 5.0.48   | 354.59.12 | 4.43.6   | 355.16.54 | 7              |
| 160            | 6.6.42   | 353.53.18 | 5.43.46  | 354.16.14 | 5.23.33  | 354.36.27 | 8              |
| 180            | 6.52.32  | 353.7.28  | 6.26.45  | 353.33.15 | 6.4.0    | 353.56.0  | 9              |
| 200            | 7.38.22  | 352.21.38 | 7.9.43   | 352.50.17 | 6.44.27  | 353.15.33 | 10             |
| 220            | 8.24.12  | 351.35.48 | 7.52.41  | 352.7.19  | 7.24.53  | 352.35.7  | 11             |
| 240            | 9.10.2   | 350.49.58 | 8.35.40  | 351.24.20 | 8.5.20   | 351.54.40 | 12             |
| 260            | 9.55.53  | 350.4.7   | 9.18.38  | 350.41.22 | 8.45.46  | 351.14.14 | 13             |
| 280            | 10.41.43 | 349.18.17 | 10.1.36  | 349.58.24 | 9.26.13  | 350.33.47 | 14             |
| 300            | 11.27.33 | 348.32.27 | 10.44.34 | 349.15.26 | 10.6.40  | 349.53.20 | 15             |
| 320            | 12.13.23 | 347.46.37 | 11.27.33 | 348.32.27 | 10.47.6  | 349.12.54 | 16             |
| 340            | 12.59.13 | 347.0.47  | 12.10.31 | 347.49.29 | 11.27.33 | 348.32.27 | 17             |
| 360            | 13.45.3  | 346.14.57 | 12.53.29 | 347.6.52  | 12.8.00  | 347.52.0  | 18             |
| 380            | 14.30.54 | 345.29.6  | 13.36.28 | 346.23.32 | 12.48.26 | 347.11.34 | 19             |
| 400            | 15.16.44 | 344.43.16 | 14.19.26 | 345.40.34 | 13.28.53 | 346.31.7  | 20             |
| 420            | 16.2.34  | 343.57.26 | 15.2.24  | 344.57.36 | 14.9.19  | 345.50.41 | 21             |
| 440            | 16.48.24 | 343.11.36 | 15.45.23 | 344.14.37 | 14.49.46 | 345.10.14 | 22             |
| 460            | 17.34.14 | 342.25.46 | 16.28.21 | 343.31.39 | 15.30.13 | 344.29.47 | 23             |
| 480            | 18.20.5  | 341.39.55 | 17.11.19 | 342.48.41 | 16.10.39 | 343.49.21 | 24             |
| 500            | 19.5.55  | 340.54.5  | 17.54.18 | 342.5.42  | 16.51.6  | 343.8.54  | 25             |
| 520            | 19.51.45 | 340.8.15  | 18.37.16 | 341.22.44 | 17.31.33 | 342.28.27 | 26             |
| 540            | 20.37.35 | 339.22.25 | 19.20.14 | 339.39.46 | 18.11.59 | 341.48.1  | 27             |
| 560            | 21.23.25 | 338.36.35 | 20.3.12  | 339.56.48 | 18.52.26 | 341.7.34  | 28             |

### 曲線偏角表

| 半徑<br>弧長<br>公尺 | 900 公尺   |           | 950 公尺   |           | 1,000 公尺 |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 20             | .38.12   | 359.21.48 | .36.11   | 359.23.49 | .34.22   | 359.25.38 | 1              |
| 40             | 1.16.24  | 358.43.36 | 1.12.22  | 358.47.38 | 1. 8.44  | 358.51.16 | 2              |
| 60             | 1.54.36  | 358. 5.24 | 1.48.34  | 358.11.26 | 1. 8. 6  | 358.16.54 | 3              |
| 80             | 2.32.48  | 357.27.12 | 2.24.45  | 357.35.15 | 2.17.28  | 357.42.32 | 4              |
| 100            | 3.11. 0  | 356.49. 0 | 3. 0.56  | 356.59. 4 | 2.51.50  | 357. 8.10 | 5              |
| 120            | 3.49.12  | 356.10.48 | 3.37. 7  | 356.22.53 | 3.26.12  | 356.33.48 | 6              |
| 140            | 4.27.24  | 355.32.36 | 4.13.18  | 355.46.42 | 4. 0.34  | 355.59.26 | 7              |
| 160            | 5. 5.36  | 354.54.24 | 4.49.30  | 355.10.30 | 4.34.56  | 355.25. 4 | 8              |
| 180            | 5.43.48  | 354.16.12 | 5.25.41  | 354.34.19 | 5. 9.13  | 354.50.42 | 9              |
| 200            | 6.22. 0  | 353.38. 0 | 6. 1.52  | 353.58. 8 | 5.43.40  | 354.16.20 | 10             |
| 220            | 7. 0.12  | 352.59.48 | 6.38. 3  | 353.21.57 | 6.18. 2  | 353.41.58 | 11             |
| 240            | 7.38.24  | 352.21.36 | 7.14.14  | 352.45.46 | 6.52.24  | 353. 7.36 | 12             |
| 260            | 8.16.36  | 351.43.24 | 7.50.26  | 352. 9.34 | 7.26.46  | 352.33.14 | 13             |
| 280            | 8.54.48  | 351. 5.12 | 8.26.37  | 351.33.23 | 8. 1. 8  | 351.58.52 | 14             |
| 300            | 9.33. 0  | 350.27. 0 | 9. 2.47  | 350.57.13 | 8.35.30  | 351.24.30 | 15             |
| 320            | 10.11.12 | 349.48.48 | 9.38.50  | 350.21. 1 | 9.09.52  | 350.50. 8 | 16             |
| 340            | 10.49.24 | 349.10.36 | 10.15.10 | 349.44.50 | 9.44.14  | 350.15.46 | 17             |
| 360            | 11.27.36 | 348.32.24 | 10.51.21 | 349. 8.39 | 10.18.36 | 349.41.24 | 18             |
| 380            | 12. 5.48 | 347.54.12 | 11.27.33 | 348.32.27 | 10.52.58 | 349. 7. 2 | 19             |
| 400            | 12.44. 0 | 347.16. 0 | 12. 3.44 | 347.56.16 | 11.27.20 | 348.32.40 | 20             |
| 420            | 13.22.12 | 346.37.48 | 12.39.55 | 347.20. 5 | 12. 1.42 | 347.58.18 | 21             |
| 440            | 14. 0.24 | 345.59.36 | 13.16. 6 | 346.43.54 | 12.36. 4 | 347.23.56 | 22             |
| 460            | 14.38.36 | 345.21.24 | 13.52.18 | 345. 7.42 | 13.10.26 | 346.49.34 | 23             |
| 480            | 15.16.48 | 344.43.12 | 14.28.28 | 345.21.32 | 13.44.48 | 345.15.12 | 24             |
| 500            | 15.55. 0 | 344. 5. 0 | 15. 4.40 | 344.55.20 | 14.19.10 | 345.40.50 | 25             |
| 520            | 16.33.12 | 343.26.48 | 15.40.51 | 344.19. 9 | 14.53.32 | 345. 6.28 | 26             |
| 540            | 17.11.24 | 342.48.36 | 16.17. 2 | 343.42.58 | 15.27.54 | 344.32. 6 | 27             |
| 560            | 17.49.36 | 342.10.24 | 16.53.14 | 343. 6.46 | 16. 2.16 | 343.57.44 | 28             |

| 半徑<br>弧長<br>公尺 | 1,100 公尺 |           | 1,200 公尺 |           | 1,300 公尺 |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 20             | .31.14   | 359.28.46 | .28.39   | 359.31.21 | .26.26   | 359.33.34 | 1              |
| 40             | 1. 2.28  | 358.57.32 | .57.18   | 359. 2.42 | .52.52   | 359. 7. 8 | 2              |
| 60             | 1.33.42  | 358.26.18 | 1.25.57  | 358.34. 3 | 1.19.18  | 358.40.42 | 3              |
| 80             | 2. 4.56  | 357.55. 4 | 1.54.36  | 358. 5.24 | 1.45.44  | 358.14.16 | 4              |
| 100            | 2.36.10  | 357.23.50 | 2.23.14  | 357.36.46 | 2.12.10  | 357.47.50 | 5              |
| 120            | 3. 7.24  | 356.52.36 | 2.51.53  | 357. 8. 7 | 2.38.36  | 357.21.24 | 6              |
| 140            | 3.38.38  | 356.21.22 | 3.20.32  | 356.39.23 | 3. 5. 2  | 356.54.58 | 7              |
| 160            | 4. 9.52  | 355.50. 8 | 3.49.11  | 356.10.49 | 3.31.23  | 356.28.32 | 8              |
| 180            | 4.41. 6  | 355.18.54 | 4.17.50  | 355.42.10 | 3.57.54  | 356. 2. 6 | 9              |
| 200            | 5.12.20  | 354.47.40 | 4.46.29  | 355.13.31 | 4.24.20  | 355.35.40 | 10             |
| 220            | 5.43.34  | 354.16.26 | 5.15. 8  | 354.44.52 | 4.50.46  | 355. 9.14 | 11             |
| 240            | 6.14.48  | 353.45.12 | 5.43.47  | 354.16.13 | 5.17.12  | 354.42.48 | 12             |
| 260            | 6.46. 2  | 353.13.58 | 6.12.25  | 353.47.35 | 5.43.38  | 354.16.22 | 13             |
| 280            | 7.17.16  | 352.42.44 | 6.41. 4  | 353.18.53 | 6.10. 4  | 353.49.56 | 14             |
| 300            | 7.48.30  | 352.11.30 | 7. 9.43  | 352.50.17 | 6.36.30  | 353.23.30 | 15             |
| 320            | 8.19.44  | 351.40.16 | 7.38.22  | 352.21.33 | 7. 2.56  | 352.57. 4 | 16             |
| 340            | 8.50.58  | 351. 9. 2 | 8. 7. 1  | 351.52.59 | 7.29.22  | 352.30.38 | 17             |
| 360            | 9.22.12  | 350.37.48 | 8.35.40  | 351.24.20 | 7.55.48  | 352. 4.12 | 18             |
| 380            | 9.53.26  | 350. 6.34 | 9. 4.19  | 350.56.41 | 8.22.14  | 351.37.45 | 19             |
| 400            | 10.24.40 | 349.35.20 | 9.32.57  | 350.27. 3 | 8.48.40  | 351.11.20 | 20             |
| 420            | 10.55.54 | 349. 4. 6 | 10. 1.36 | 349.58.24 | 9.15. 6  | 350.44.54 | 21             |
| 440            | 11.27. 8 | 348.32.52 | 10.30.15 | 349.29.45 | 9.41.32  | 350.18.28 | 22             |
| 460            | 11.58.22 | 348. 1.38 | 10.58.54 | 349. 1. 6 | 10. 7.58 | 349.52. 2 | 23             |
| 480            | 12.29.36 | 347.30.24 | 11.27.33 | 348.32.27 | 10.34.24 | 349.25.36 | 24             |
| 500            | 13. 0.50 | 346.59.10 | 11.56.12 | 348. 3.48 | 11. 0.50 | 348.59.10 | 25             |
| 520            | 13.32. 4 | 346.27.56 | 12.24.51 | 347.35. 9 | 11.27.16 | 348.32.44 | 26             |
| 540            | 14. 3.18 | 345.56.42 | 12.53.30 | 347. 6.30 | 11.53.42 | 348. 6.18 | 27             |
| 560            | 14.34.32 | 345.25.28 | 13.22. 8 | 346.37.52 | 12.20. 8 | 347.39.52 | 28             |

## 曲線偏角表

| 半徑<br>弧長<br>公尺 | 1.400 公尺 |           | 1.500 公尺 |           | 1.600 公尺 |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 2 0            | .24.33   | 359.35.27 | .22.55   | 359.37.5  | .21.29   | 359.38.31 | 1 2            |
| 4 0            | .49.6    | 359.10.54 | .45.50   | 359.14.10 | .42.58   | 359.17.2  | 3 4            |
| 6 0            | 1.13.39  | 358.46.21 | 1.8.45   | 358.51.15 | 1.4.27   | 358.56.33 | 5 6            |
| 8 0            | 1.58.12  | 358.21.48 | 1.31.40  | 358.29.20 | 1.25.57  | 358.34.3  | 7 8            |
| 1 0 0          | 2.2.45   | 357.57.15 | 1.54.35  | 358.5.25  | 1.47.25  | 358.12.34 | 9 10           |
| 1 2 0          | 2.27.18  | 357.32.42 | 2.17.30  | 357.42.30 | 2.8.55   | 357.51.5  | 6 7            |
| 1 4 0          | 2.51.51  | 357.8.9   | 2.40.25  | 357.19.35 | 2.30.24  | 357.29.36 | 8 9            |
| 1 6 0          | 3.16.24  | 356.43.36 | 3.3.20   | 356.56.40 | 2.51.53  | 357.8.7   | 7 8            |
| 1 8 0          | 3.40.57  | 356.19.03 | 3.26.15  | 356.33.45 | 3.13.22  | 356.46.38 | 9 10           |
| 2 0 0          | 4.5.30   | 355.54.30 | 3.49.10  | 356.10.50 | 3.34.52  | 356.25.8  | 1 10           |
| 2 2 0          | 4.30.3   | 355.29.57 | 4.12.5   | 355.47.55 | 3.56.21  | 356.3.39  | 1 12           |
| 2 4 0          | 4.54.36  | 355.5.24  | 4.35.0   | 355.25.0  | 4.17.50  | 355.42.10 | 1 12           |
| 2 6 0          | 5.19.9   | 354.40.51 | 4.57.55  | 355.2.5   | 4.39.19  | 355.20.41 | 1 13           |
| 2 8 0          | 5.43.42  | 354.16.18 | 5.20.50  | 354.39.10 | 5.0.48   | 354.59.12 | 1 14           |
| 3 0 0          | 6.8.15   | 353.51.45 | 5.43.45  | 354.16.15 | 5.22.17  | 354.37.43 | 1 15           |
| 3 2 0          | 6.32.48  | 353.27.12 | 6.6.40   | 353.53.20 | 5.43.47  | 354.16.13 | 1 16           |
| 3 4 0          | 6.57.21  | 353.2.39  | 6.29.35  | 353.30.25 | 6.5.16   | 353.54.44 | 1 17           |
| 3 6 0          | 7.21.54  | 352.38.6  | 6.52.30  | 353.7.30  | 6.26.44  | 353.33.16 | 1 18           |
| 3 8 0          | 7.46.27  | 352.13.33 | 7.15.25  | 352.44.35 | 6.49.13  | 353.11.47 | 1 19           |
| 4 0 0          | 8.11.0   | 351.49.0  | 7.38.20  | 352.21.40 | 7.9.43   | 352.50.17 | 2 0            |
| 4 2 0          | 8.35.33  | 351.24.27 | 8.1.15   | 351.58.45 | 7.31.12  | 352.28.48 | 2 1            |
| 4 4 0          | 9.0.6    | 350.59.54 | 8.24.10  | 351.35.50 | 7.52.41  | 352.7.19  | 2 2            |
| 4 6 0          | 9.24.39  | 350.35.21 | 8.47.5   | 351.12.55 | 8.14.10  | 351.45.50 | 2 3            |
| 4 8 0          | 9.49.12  | 350.10.48 | 9.10.0   | 350.50.0  | 8.35.33  | 351.24.21 | 2 4            |
| 5 0 0          | 10.13.45 | 349.46.15 | 9.32.55  | 350.27.5  | 8.57.9   | 351.2.52  | 2 5            |
| 5 2 0          | 10.38.18 | 349.21.42 | 9.55.50  | 350.4.10  | 9.18.37  | 350.41.23 | 2 6            |
| 5 4 0          | 11.2.51  | 348.57.9  | 10.18.45 | 349.41.15 | 9.40.6   | 350.19.54 | 2 7            |
| 5 6 0          | 11.27.24 | 348.32.36 | 10.41.40 | 349.18.20 | 10.1.35  | 349.58.25 | 2 8            |

| 半徑<br>弧長<br>公尺 | 1.700 公尺 |           | 1.800 公尺 |           | 1.900 公尺 |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 2 0            | .20.13   | 359.39.47 | .19.6    | 359.40.54 | .18.6    | 359.41.54 | 1 2            |
| 4 0            | .40.27   | 359.19.33 | .38.11   | 359.21.49 | .36.11   | 359.23.49 | 3 4            |
| 6 0            | 1.1.40   | 358.59.20 | .57.17   | 359.2.43  | .54.17   | 359.5.43  | 5 6            |
| 8 0            | 1.20.53  | 358.38.7  | 1.16.23  | 358.43.37 | 1.12.23  | 358.47.37 | 7 8            |
| 1 0 0          | 1.41.7   | 358.18.53 | 1.35.28  | 358.24.32 | 1.30.28  | 358.29.32 | 9 10           |
| 1 2 0          | 2.1.20   | 357.58.40 | 1.54.34  | 358.5.26  | 1.48.34  | 358.11.26 | 6 7            |
| 1 4 0          | 2.21.33  | 357.38.27 | 2.13.39  | 357.46.21 | 2.6.39   | 357.53.21 | 8 9            |
| 1 6 0          | 2.41.47  | 357.18.13 | 2.32.45  | 357.27.15 | 2.24.45  | 357.35.15 | 7 8            |
| 1 8 0          | 3.2.0    | 356.58.0  | 2.51.51  | 357.8.9   | 2.42.50  | 357.17.10 | 9 10           |
| 2 0 0          | 3.22.13  | 356.37.47 | 3.10.57  | 356.49.3  | 3.0.56   | 356.59.4  | 1 10           |
| 2 2 0          | 3.42.27  | 356.17.33 | 3.30.2   | 356.29.58 | 3.19.2   | 356.40.58 | 1 12           |
| 2 4 0          | 4.2.40   | 355.57.20 | 3.49.8   | 356.10.52 | 3.37.7   | 356.22.53 | 1 12           |
| 2 6 0          | 4.22.53  | 355.37.7  | 4.8.13   | 355.51.47 | 3.55.13  | 356.4.47  | 1 13           |
| 2 8 0          | 4.43.6   | 355.16.54 | 4.27.19  | 355.32.41 | 4.13.18  | 355.46.42 | 1 14           |
| 3 0 0          | 5.3.20   | 354.56.40 | 4.46.25  | 355.13.35 | 4.31.24  | 355.28.36 | 1 15           |
| 3 2 0          | 5.23.33  | 354.36.27 | 5.5.30   | 354.54.30 | 4.49.30  | 355.10.30 | 1 16           |
| 3 4 0          | 5.43.47  | 354.16.13 | 5.24.36  | 354.35.24 | 5.7.35   | 354.52.25 | 2 0            |
| 3 6 0          | 6.4.10   | 353.56.0  | 5.43.42  | 354.16.18 | 5.25.41  | 354.34.19 | 1 16           |
| 3 8 0          | 6.24.13  | 353.35.47 | 6.2.47   | 353.57.13 | 5.43.47  | 354.16.13 | 1 19           |
| 4 0 0          | 6.44.26  | 353.15.34 | 6.21.53  | 353.38.7  | 6.1.52   | 353.58.8  | 2 0            |
| 4 2 0          | 7.4.40   | 352.55.20 | 6.40.58  | 353.19.2  | 6.19.58  | 353.40.2  | 2 1            |
| 4 4 0          | 7.24.53  | 352.35.7  | 7.0.4    | 352.59.53 | 6.38.3   | 353.21.57 | 2 2            |
| 4 6 0          | 7.45.6   | 352.14.54 | 7.19.10  | 352.40.50 | 6.56.9   | 353.3.51  | 2 3            |
| 4 8 0          | 8.5.20   | 351.54.40 | 7.38.15  | 352.21.45 | 7.14.15  | 352.45.45 | 2 4            |
| 5 0 0          | 8.25.33  | 351.34.27 | 7.57.21  | 352.2.39  | 7.32.20  | 352.27.40 | 2 5            |
| 5 2 0          | 8.45.46  | 351.14.14 | 8.16.27  | 351.43.33 | 7.50.26  | 352.9.34  | 2 6            |
| 5 4 0          | 9.5.59   | 350.54.1  | 8.35.33  | 351.24.27 | 8.8.31   | 351.51.29 | 2 7            |
| 5 6 0          | 9.26.13  | 350.33.47 | 8.54.38  | 351.5.22  | 8.26.37  | 351.33.23 | 2 8            |

### 曲 線 偏 角 表

| 半徑<br>弧長<br>公尺 | 2.000 公尺 |           | 2.400 公尺 |           | 2.500 公尺 |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 2 0            | .17,11   | 359.42.49 | .14,19   | 359.45.41 | .13,45   | 359.46.15 | 1              |
| 4 0            | .34,23   | 359.25.37 | .28,39   | 359.31.21 | .27,30   | 359.23.30 | 2              |
| 6 0            | .51,34   | 359. 8.36 | .42,58   | 359.17. 2 | .41,15   | 359.18.45 | 3              |
| 8 0            | 1. 8.45  | 358.51.15 | .57,18   | 359. 2.42 | .55, 0   | 359.5. 0  | 4              |
| 1 0 0          | 1.25.57  | 358.34. 3 | 1.11.37  | 358.48.23 | 1. 8.45  | 358.51.15 | 5              |
| 1 2 0          | 1.43. 8  | 358.16.52 | 1.25.57  | 358.34. 3 | 1.22.30  | 358.37.30 | 6              |
| 1 4 0          | 2. 0.19  | 357.59.41 | 1.40.16  | 358.19.44 | 1.36.15  | 358.23.45 | 7              |
| 1 6 0          | 2.17.31  | 357.42.29 | 1.54.36  | 358. 5.24 | 1.50. 0  | 358.10. 0 | 8              |
| 1 8 0          | 2.34.42  | 357.25.18 | 2. 8.55  | 357.51. 5 | 2. 3.45  | 357.56.15 | 9              |
| 2 0 0          | 2.51.53  | 357. 8. 7 | 2.23.14  | 357.36.46 | 2.17.30  | 357.42.30 | 10             |
| 2 2 0          | 3. 9. 3  | 356.50.56 | 2.37.34  | 357.22.26 | 2.31.15  | 357.28.46 | 11             |
| 2 4 0          | 3.26.16  | 356.33.44 | 2.51.53  | 357. 8. 7 | 2.45. 0  | 357.15. 0 | 12             |
| 2 6 0          | 3.43.28  | 356.16.32 | 3. 6.13  | 356.53.47 | 2.58.45  | 357. 1.15 | 13             |
| 2 8 0          | 4. 0.39  | 356.59.21 | 3.20.32  | 356.39.26 | 3.12.30  | 356.47.30 | 14             |
| 3 0 0          | 4.17.50  | 356.42.10 | 3.34.52  | 356.25. 8 | 3.26.15  | 356.33.46 | 15             |
| 3 2 0          | 4.35. 1  | 356.24.58 | 3.49.11  | 356.10.40 | 3.40. 0  | 356.20. 0 | 16             |
| 3 4 0          | 4.52.13  | 356. 7.47 | 4. 3.30  | 355.56.30 | 3.53.45  | 356. 6.15 | 17             |
| 3 6 0          | 5. 9.24  | 354.50.36 | 4.17.50  | 355.42.10 | 4. 7.30  | 355.52.29 | 18             |
| 3 8 0          | 5.26.36  | 354.33.24 | 4.32. 9  | 355.27.51 | 4.21.15  | 355.38.45 | 19             |
| 4 0 0          | 5.43.47  | 354.16.13 | 4.46.29  | 355.13.31 | 4.35. 0  | 355.25. 0 | 20             |
| 4 2 0          | 6. 0.58  | 353.59. 2 | 5. 0.48  | 354.59.12 | 4.48.45  | 355.11.15 | 21             |
| 4 4 0          | 6.18. 9  | 353.41.51 | 5.15. 7  | 354.44.53 | 5. 2.30  | 354.57.30 | 22             |
| 4 6 0          | 6.35.21  | 353.24.39 | 5.29.26  | 354.30.34 | 5.16.15  | 354.43.45 | 23             |
| 4 8 0          | 6.52.32  | 353. 7.28 | 5.43.45  | 354.16.15 | 5.30. 0  | 354.30. 0 | 24             |
| 5 0 0          | 7. 9.44  | 352.50.16 | 5.58. 4  | 354. 1.56 | 5.43.45  | 354.16.15 | 25             |
| 5 2 0          | 7.26.55  | 352.33. 5 | 6.12.23  | 353.47.37 | 5.57.30  | 354. 2.30 | 26             |
| 5 4 0          | 7.44. 6  | 352.15.54 | 6.26.42  | 353.33.18 | 6.11.15  | 353.48.45 | 27             |
| 5 6 0          | 8. 1.17  | 351.58.43 | 6.41. 1  | 353.18.59 | 6.25. 0  | 353.35.58 | 28             |

| 半徑<br>弧長<br>公尺 | 3.000 公尺 |           | 3.500 公尺 |           | 4.000 公尺 |           | 半徑<br>弧長<br>公尺 |
|----------------|----------|-----------|----------|-----------|----------|-----------|----------------|
|                | 右        | 左         | 右        | 左         | 右        | 左         |                |
| 2 0            | .11,28   | 359.48.32 | . 9.49   | 359.50.11 | . 8.36   | 359.51.24 | 1              |
| 4 0            | .22,55   | 359.37. 5 | .19,39   | 359.40.21 | .17,11   | 359.42.49 | 2              |
| 6 0            | .34,23   | 359.25.37 | .29,28   | 359.30.32 | .25,47   | 359.34.13 | 3              |
| 8 0            | .45,50   | 359.14.10 | .39,17   | 359.20.43 | .34,23   | 359.25.37 | 4              |
| 1 0 0          | .57,18   | 359. 2.42 | .49, 7   | 359.10.53 | .42,58   | 359.17. 2 | 5              |
| 1 2 0          | 1. 8.45  | 358.51.15 | .58,55   | 359. 1. 4 | .51,34   | 359. 8.25 | 6              |
| 1 4 0          | 1.20.13  | 358.39.47 | 1. 8.45  | 358.51.15 | 1. 0.10  | 358.59.50 | 7              |
| 1 6 0          | 1.31.40  | 358.28.20 | 1.18.35  | 358.41.25 | 1. 8.45  | 358.51.15 | 8              |
| 1 8 0          | 1.43. 8  | 358.16.52 | 1.28.24  | 358.31.36 | 1.17.21  | 358.42.39 | 9              |
| 2 0 0          | 1.54.35  | 358. 5.25 | 1.38.13  | 358.21.47 | 1.25.57  | 358.34. 3 | 10             |
| 2 2 0          | 2. 6. 3  | 357.53.57 | 1.48. 2  | 358.11.58 | 1.34.32  | 358.25.26 | 11             |
| 2 4 0          | 2.17.31  | 357.42.29 | 1.57.52  | 358. 2. 8 | 1.43. 8  | 358.16.52 | 12             |
| 2 6 0          | 2.28.58  | 357.31. 2 | 2. 7.41  | 357.52.19 | 1.51.44  | 358. 8.15 | 13             |
| 2 8 0          | 2.40.26  | 357.19.34 | 2.17.30  | 357.42.30 | 2. 0.19  | 357.59.41 | 14             |
| 3 0 0          | 2.51.53  | 357. 8. 7 | 2.27.20  | 357.32.40 | 2. 8.55  | 357.51. 5 | 15             |
| 3 2 0          | 3. 3.21  | 356.56.39 | 2.37. 9  | 357.22.51 | 2.17.31  | 357.42.29 | 16             |
| 3 4 0          | 3.14.48  | 356.45.12 | 2.46.59  | 357.13. 1 | 2.26. 6  | 357.33.54 | 17             |
| 3 6 0          | 3.26.16  | 356.33.44 | 2.56.48  | 357. 3.12 | 2.34.42  | 357.25.18 | 18             |
| 3 8 0          | 3.37.43  | 356.22.17 | 3. 6.37  | 356.53.23 | 2.43.18  | 357.16.42 | 19             |
| 4 0 0          | 3.49.11  | 356.10.49 | 3.16.26  | 356.43.34 | 2.51.53  | 357. 8. 7 | 20             |
| 4 2 0          | 4. 0.39  | 355.59.21 | 3.26.16  | 356.33.44 | 3. 0.29  | 356.59.31 | 21             |
| 4 4 0          | 4.12. 7  | 355.47.53 | 3.36. 5  | 356.23.55 | 3. 9. 5  | 356.50.55 | 22             |
| 4 6 0          | 4.23.35  | 355.36.25 | 3.45.54  | 356.14. 6 | 3.17.40  | 356.42.29 | 23             |
| 4 8 0          | 4.35. 3  | 355.24.57 | 3.55.44  | 356. 4.16 | 3.26.16  | 356.43.44 | 24             |
| 5 0 0          | 4.46.31  | 355.13.29 | 4. 5.33  | 355.54.26 | 3.34.52  | 356.25. 8 | 25             |
| 5 2 0          | 4.57.59  | 355. 2. 1 | 4.15.22  | 355.44.38 | 3.43.27  | 356.16.33 | 26             |
| 5 4 0          | 5. 9.27  | 354.51.33 | 4.25.12  | 355.34.43 | 3.52. 3  | 356. 7.57 | 27             |
| 5 6 0          | 5.20.55  | 354.39. 5 | 4.35. 1  | 355.24.59 | 4. 0.39  | 355.59.21 | 28             |

第十表 曲線偏角累計表(弧長百分之一)

曲線偏角累計表(弧長百分之一)

| 弧長百分之一 | R=60公尺  |           | R=70公尺  |           | R=80公尺  |           | R=90公尺  |           |
|--------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|
|        | 右       | 左         | 右       | 左         | 右       | 左         | 右       | 左         |
| .01    | 0.543   | 359.54.17 | 0.4.55  | 359.55.5  | 0.4.18  | 359.55.42 | 0.3.49  | 359.56.11 |
| .02    | 11.27   | 48.33     | 9.49    | 50.11     | 8.36    | 51.24     | 7.38    | 52.22     |
| .03    | 17.11   | 42.49     | 14.44   | 45.16     | 12.53   | 47.7      | 11.28   | 48.32     |
| .04    | 22.55   | 37.5      | 19.39   | 40.21     | 17.11   | 42.49     | 15.17   | 44.43     |
| .05    | 28.39   | 31.21     | 24.33   | 35.27     | 21.29   | 38.31     | 19.6    | 40.54     |
| .06    | 34.23   | 25.37     | 29.28   | 30.32     | 25.47   | 34.13     | 22.55   | 37.5      |
| .07    | 40.6    | 19.54     | 34.23   | 25.37     | 30.5    | 29.55     | 26.46   | 33.14     |
| .08    | 45.50   | 14.10     | 39.17   | 20.43     | 34.23   | 25.37     | 30.34   | 29.26     |
| .09    | 51.34   | 8.26      | 44.12   | 15.48     | 38.41   | 21.19     | 34.23   | 25.37     |
| .10    | 0.57.18 | 358.2.42  | 0.49.7  | 359.10.53 | 0.42.58 | 359.17.2  | 0.38.12 | 359.21.48 |
| .11    | 1.3.1   | 358.56.59 | 0.54.1  | 359.5.59  | 0.47.16 | 359.12.44 | 0.42.1  | 359.17.59 |
| .12    | 8.45    | 51.15     | 58.56   | 1.4       | 51.34   | 8.26      | 45.50   | 14.10     |
| .13    | 14.29   | 45.31     | 1.3.51  | 358.56.9  | 55.52   | 4.8       | 49.40   | 10.20     |
| .14    | 20.13   | 39.47     | 8.45    | 51.15     | 1.0.9   | 358.59.51 | 53.29   | 6.31      |
| .15    | 25.57   | 34.3      | 13.40   | 46.20     | 4.27    | 65.33     | 57.18   | 2.42      |
| .16    | 31.40   | 28.20     | 18.35   | 41.25     | 8.45    | 51.15     | 1.1.7   | 358.58.53 |
| .17    | 37.24   | 22.36     | 23.29   | 36.31     | 13.3    | 45.57     | 1.56    | 58.4      |
| .18    | 43.8    | 16.52     | 28.24   | 31.36     | 17.21   | 42.39     | 8.46    | 51.14     |
| .19    | 48.52   | 11.8      | 33.18   | 26.42     | 21.39   | 38.21     | 12.35   | 47.25     |
| .20    | 1.54.36 | 358.5.24  | 1.39.13 | 358.21.47 | 1.25.56 | 358.34.4  | 1.16.24 | 358.43.36 |
| .21    | 2.0.19  | 357.59.41 | 1.43.8  | 358.16.52 | 1.30.14 | 358.29.46 | 1.20.13 | 358.39.47 |
| .22    | 6.3     | 53.57     | 48.3    | 11.57     | 34.32   | 25.28     | 24.2    | 35.58     |
| .23    | 11.47   | 48.13     | 52.57   | 7.3       | 38.50   | 21.10     | 27.49   | 32.11     |
| .24    | 17.31   | 42.29     | 57.52   | 2.8       | 43.3    | 16.52     | 31.41   | 28.19     |
| .25    | 23.14   | 36.46     | 2.2.46  | 357.57.14 | 47.25   | 12.34     | 35.30   | 24.30     |
| .26    | 28.58   | 31.2      | 7.41    | 357.52.19 | 51.44   | 8.16      | 39.19   | 20.41     |
| .27    | 34.42   | 25.16     | 12.36   | 47.24     | 55.1    | 3.59      | 43.8    | 16.52     |
| .28    | 40.26   | 19.34     | 17.30   | 42.39     | 2.0.19  | 357.59.41 | 46.58   | 13.2      |
| .29    | 45.10   | 13.59     | 22.25   | 37.35     | 4.37    | 55.23     | 50.45   | 9.14      |
| .30    | 2.51.53 | 357.8.7   | 2.27.20 | 357.32.40 | 2.8.55  | 357.51.5  | 1.54.36 | 358.5.24  |
| .31    | 2.57.37 | 357.2.23  | 2.32.14 | 357.27.46 | 2.13.12 | 357.46.48 | 1.58.25 | 358.1.35  |
| .32    | 3.3.21  | 356.56.39 | 37.9    | 22.51     | 17.30   | 42.30     | 2.2.14  | 357.57.46 |
| .33    | 9.5     | 50.56     | 42.4    | 18.56     | 21.48   | 38.12     | 6.4     | 53.56     |
| .34    | 14.48   | 45.12     | 46.58   | 13.2      | 25.6    | 33.54     | 9.53    | 50.7      |
| .35    | 20.32   | 39.28     | 51.53   | 8.7       | 30.24   | 29.36     | 13.42   | 46.18     |
| .36    | 26.16   | 33.44     | 56.48   | 3.12      | 34.41   | 25.19     | 17.31   | 42.29     |
| .37    | 32.0    | 28.0      | 3.1.42  | 356.58.18 | 38.59   | 21.1      | 21.20   | 38.40     |
| .38    | 37.43   | 22.17     | 6.37    | 53.23     | 43.17   | 16.43     | 25.10   | 34.50     |
| .39    | 43.27   | 16.33     | 11.31   | 48.29     | 47.35   | 12.25     | 28.69   | 31.1      |
| .40    | 3.49.11 | 356.10.49 | 3.16.26 | 356.43.34 | 2.51.53 | 357.8.7   | 2.32.49 | 357.27.11 |
| .41    | 3.54.55 | 356.5.5   | 3.21.21 | 356.38.39 | 2.56.11 | 357.3.49  | 2.36.37 | 357.23.23 |
| .42    | 4.0.39  | 355.59.21 | 26.16   | 33.44     | 3.0.29  | 356.59.31 | 40.26   | 19.34     |
| .43    | 6.22    | 53.38     | 31.10   | 28.50     | 4.47    | 55.13     | 44.16   | 15.44     |
| .44    | 12.6    | 47.54     | 36.5    | 23.65     | 9.5     | 50.55     | 49.5    | 11.55     |
| .45    | 17.50   | 42.10     | 41.0    | 19.0      | 13.22   | 46.38     | 51.54   | 8.6       |
| .46    | 23.34   | 36.26     | 45.54   | 14.6      | 17.40   | 42.20     | 55.43   | 4.17      |
| .47    | 29.30   | 30.30     | 50.49   | 9.11      | 21.58   | 38.2      | 59.32   | 0.28      |
| .48    | 35.1    | 24.59     | 55.44   | 4.16      | 26.16   | 33.44     | 3.3.22  | 356.56.38 |
| .49    | 40.45   | 19.15     | 4.0.38  | 355.59.22 | 30.34   | 29.26     | 7.11    | 52.49     |
| .50    | 4.46.29 | 355.13.31 | 4.5.33  | 355.54.27 | 3.34.52 | 356.25.8  | 3.11.0  | 356.49.0  |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=60 公尺 |           | R=70 公尺 |           | R=80 公尺 |           | R=90 公尺 |           |
|--------|---------|-----------|---------|-----------|---------|-----------|---------|-----------|
|        | 右       | 左         | 右       | 左         | 右       | 左         | 右       | 左         |
| .5 1   | 4.52.13 | 355.7.47  | 4.10.28 | 355.49.32 | 3.39.9  | 356.20.51 | 3.14.49 | 356.45.11 |
| .5 2   | 57.56   | 2.4       | 15.22   | 44.38     | 43.27   | 16.33     | 18.38   | 41.22     |
| .5 3   | 5.3.40  | 354.56.20 | 20.17   | 39.43     | 47.45   | 12.15     | 22.28   | 37.32     |
| .5 4   | 9.24    | 50.35     | 25.11   | 34.49     | 52.3    | 7.57      | 26.17   | 33.43     |
| .5 5   | 15.8    | 44.52     | 30.6    | 29.54     | 56.21   | 3.39      | 30.6    | 29.54     |
| .5 6   | 20.51   | 39.9      | 35.01   | 24.59     | 4.0.39  | 355.59.21 | 33.55   | 26.5      |
| .5 7   | 25.35   | 33.25     | 39.56   | 20.4      | 4.56    | 55.4      | 37.44   | 22.16     |
| .5 8   | 32.19   | 27.41     | 44.50   | 15.10     | 9.14    | 50.46     | 41.34   | 18.26     |
| .5 9   | 38.3    | 21.57     | 49.45   | 10.15     | 13.32   | 46.28     | 45.23   | 14.37     |
| .6 0   | 5.43.47 | 354.16.13 | 4.54.40 | 355.5.20  | 4.17.50 | 355.42.10 | 3.49.12 | 356.10.48 |
| .6 1   | 5.49.31 | 354.10.29 | 4.59.34 | 355.0.26  | 4.22.8  | 355.37.52 | 3.53.1  | 356.6.59  |
| .6 2   | 55.15   | 4.45      | 5.4.29  | 354.55.31 | 25.25   | 33.34     | 56.50   | 3.10      |
| .6 3   | 6.0.58  | 353.59.2  | 9.24    | 50.36     | 30.44   | 29.16     | 4.0.40  | 355.59.20 |
| .6 4   | 6.42    | 53.18     | 14.18   | 45.42     | 35.2    | 24.58     | 4.29    | 55.31     |
| .6 5   | 12.26   | 47.34     | 19.13   | 40.47     | 39.19   | 20.41     | 8.18    | 51.42     |
| .6 6   | 18.10   | 41.50     | 24.8    | 35.52     | 43.37   | 16.23     | 12.7    | 47.53     |
| .6 7   | 23.53   | 36.7      | 29.4    | 30.56     | 47.55   | 12.5      | 15.56   | 44.4      |
| .6 8   | 29.33   | 30.22     | 33.57   | 26.3      | 52.13   | 7.47      | 19.46   | 40.14     |
| .6 9   | 35.21   | 24.39     | 38.51   | 21.9      | 56.31   | 3.29      | 23.35   | 36.25     |
| .7 0   | 6.41.4  | 353.18.56 | 5.43.46 | 354.16.16 | 5.0.48  | 354.59.12 | 4.27.24 | 355.32.36 |
| .7 1   | 6.46.48 | 353.13.12 | 5.48.41 | 354.11.19 | 5.5.6   | 354.54.54 | 4.31.13 | 355.28.47 |
| .7 2   | 52.32   | 7.28      | 53.36   | 6.24      | 9.24    | 50.36     | 35.2    | 24.58     |
| .7 3   | 58.15   | 1.45      | 58.30   | 1.30      | 13.42   | 46.18     | 38.52   | 21.8      |
| .7 4   | 7.3.59  | 352.56.1  | 6.3.25  | 353.56.35 | 18.0    | 4.0       | 42.41   | 17.19     |
| .7 5   | 9.43    | 50.17     | 8.20    | 51.40     | 22.18   | 37.42     | 46.30   | 13.30     |
| .7 6   | 15.27   | 44.33     | 13.14   | 46.46     | 26.35   | 33.25     | 50.19   | 9.41      |
| .7 7   | 21.11   | 38.49     | 18.9    | 41.51     | 30.53   | 29.7      | 54.8    | 5.52      |
| .7 8   | 26.54   | 33.6      | 23.3    | 36.57     | 35.11   | 24.49     | 57.58   | 2.2       |
| .7 9   | 32.38   | 27.22     | 27.58   | 32.2      | 39.29   | 20.31     | 5.1.47  | 354.58.13 |
| .8 0   | 7.38.22 | 352.21.38 | 6.32.53 | 353.27.7  | 5.43.47 | 354.16.13 | 5.5.36  | 354.54.24 |
| .8 1   | 7.44.5  | 352.15.55 | 6.37.47 | 353.22.13 | 5.48.5  | 354.11.55 | 5.9.24  | 354.50.36 |
| .8 2   | 49.50   | 10.10     | 42.42   | 17.18     | 52.22   | 7.38      | 13.13   | 46.47     |
| .8 3   | 55.33   | 4.27      | 47.36   | 12.24     | 56.40   | 3.20      | 17.2    | 42.58     |
| .8 4   | 8.1.17  | 351.58.43 | 52.31   | 7.23      | 6.0.58  | 353.59.2  | 20.52   | 39.8      |
| .8 5   | 7.1     | 52.59     | 57.25   | 2.35      | 5.16    | 54.44     | 24.41   | 35.19     |
| .8 6   | 12.45   | 47.15     | 7.2.20  | 352.57.40 | 9.34    | 50.26     | 28.30   | 31.30     |
| .8 7   | 18.29   | 41.31     | 7.15    | 52.45     | 13.51   | 46.9      | 32.19   | 27.41     |
| .8 8   | 24.12   | 35.48     | 12.9    | 47.51     | 18.9    | 41.51     | 36.8    | 23.52     |
| .8 9   | 29.56   | 30.4      | 17.4    | 42.56     | 22.27   | 37.33     | 39.58   | 20.2      |
| .9 0   | 8.35.40 | 351.24.20 | 7.21.59 | 352.38.1  | 6.26.45 | 353.33.15 | 5.43.47 | 354.16.13 |
| .9 1   | 8.41.24 | 351.18.36 | 7.26.54 | 352.33.6  | 6.31.3  | 353.28.57 | 5.47.36 | 354.12.24 |
| .9 2   | 47.7    | 12.53     | 31.48   | 28.12     | 35.21   | 24.39     | 51.25   | 8.35      |
| .9 3   | 52.51   | 7.9       | 35.43   | 23.17     | 39.38   | 20.22     | 55.14   | 4.46      |
| .9 4   | 58.35   | 1.24      | 41.38   | 18.22     | 43.56   | 16.4      | 59.4    | 0.56      |
| .9 5   | 9.4.20  | 350.55.40 | 46.32   | 13.28     | 48.14   | 11.46     | 6.2.53  | 353.57.7  |
| .9 6   | 10.3    | 49.57     | 51.27   | 8.33      | 52.32   | 7.28      | 6.42    | 53.18     |
| .9 7   | 15.47   | 44.13     | 56.21   | 3.39      | 56.50   | 3.10      | 10.31   | 49.23     |
| .9 8   | 21.31   | 38.29     | 8.1.16  | 351.58.44 | 7.1.7   | 352.56.53 | 14.20   | 45.40     |
| .9 9   | 27.14   | 32.46     | 6.11    | 53.49     | 5.25    | 54.95     | 18.10   | 41.50     |
| 1.0 0  | 9.32.57 | 350.27.3  | 8.11.6  | 351.48.54 | 7.9.43  | 352.50.17 | 6.21.59 | 353.38.1  |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=100 公尺 |           | R=110 公尺 |           | R=120 公尺 |           | R=130 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0. 3.26  | 359.56.34 | 0. 3. 7  | 359.56.53 | 0. 2.52  | 359.57. 8 | 0. 2.39  | 359.57.21 |
| .02    | 6.53     | 53. 7     | 6.15     | 53.45     | 5.44     | 54.16     | 5.17     | 54.43     |
| .03    | 10.19    | 49.41     | 9.23     | 50.37     | 8.36     | 51.24     | 7.56     | 52. 4     |
| .04    | 13.45    | 46.15     | 12.30    | 47.30     | 11.28    | 48.32     | 10.55    | 49.25     |
| .05    | 17.11    | 42.49     | 15.37    | 44.23     | 14.19    | 45.41     | 13.13    | 46.47     |
| .06    | 20.38    | 39.22     | 18.45    | 41.15     | 17.11    | 42.49     | 15.52    | 44. 8     |
| .07    | 24. 4    | 35.56     | 21.53    | 38. 7     | 20. 3    | 39.57     | 18.31    | 41.29     |
| .08    | 27.30    | 32.30     | 25. 0    | 35. 0     | 22.55    | 37. 5     | 21. 9    | 38.51     |
| .09    | 30.57    | 29. 3     | 28. 8    | 31.52     | 25.47    | 34.13     | 23.48    | 36.12     |
| .10    | 0.34.23  | 359.25.37 | 0.31.15  | 359.28.45 | 0.28.39  | 359.31.21 | 0.26.27  | 359.33.33 |
| .11    | 0.37.49  | 359.22.11 | 0.34.23  | 359.25.37 | 0.31.31  | 359.28.29 | 0.29. 5  | 359.30.55 |
| .12    | 41.15    | 18.45     | 37.30    | 22.30     | 34.23    | 25.37     | 31.44    | 28.16     |
| .13    | 44.42    | 15.18     | 40.38    | 19.22     | 37.15    | 22.45     | 34.23    | 25.37     |
| .14    | 48.19    | 11.41     | 43.45    | 16.15     | 40. 6    | 19.54     | 37. 1    | 22.59     |
| .15    | 51.34    | 8.26      | 46.53    | 13. 7     | 42.58    | 17. 2     | 39.40    | 20.60     |
| .16    | 55. 0    | 5. 0      | 50. 0    | 10. 0     | 45.50    | 14.10     | 42.19    | 17.41     |
| .17    | 58.27    | 1.33      | 53. 8    | 6.52      | 48.42    | 11.18     | 44.57    | 15. 3     |
| .18    | 1. 1.53  | 358.58. 7 | 56.15    | 3.45      | 51.34    | 8.26      | 47.36    | 12.24     |
| .19    | 5.19     | 54.41     | 59.23    | 37        | 54.26    | 5.34      | 50.15    | 9.45      |
| .20    | 1. 8.46  | 358.51.14 | 1. 2.30  | 358.57.30 | 0.57.18  | 359. 2.42 | 0.52.53  | 359. 7. 7 |
| .21    | 1.12.12  | 358.47.48 | 1. 5.38  | 358.54.22 | 1. 0.10  | 358.59.50 | 0.55.32  | 359. 4.28 |
| .22    | 15.38    | 44.22     | 8.45     | 51.15     | 3. 2     | 56.58     | 58.11    | 1.49      |
| .23    | 19. 4    | 40.56     | 11.53    | 48. 7     | 5.53     | 54.07     | 1. 0.50  | 358.59.10 |
| .24    | 22.31    | 37.29     | 15. 0    | 45. 0     | 8.45     | 51.15     | 3.28     | 54.32     |
| .25    | 25.57    | 34. 3     | 18. 8    | 41.52     | 11.37    | 48.23     | 6. 6     | 53.54     |
| .26    | 29.23    | 30.37     | 21.15    | 38.45     | 14.29    | 45.31     | 8.45     | 51.12     |
| .27    | 32.50    | 27.10     | 24.23    | 35.37     | 17.21    | 42.39     | 11.24    | 48.36     |
| .28    | 36.16    | 23.44     | 27.30    | 32.30     | 20.13    | 39.47     | 14. 2    | 45.58     |
| .29    | 39.42    | 20.18     | 30.38    | 29.22     | 23. 5    | 36.55     | 16.41    | 43.19     |
| .30    | 1.43. 8  | 358.16.52 | 1.33.45  | 358.28.15 | 1.25.57  | 358.34.03 | 1.19.20  | 358.40.40 |
| .31    | 1.46.35  | 358.13.25 | 1.36.53  | 358.23. 7 | 1.28.49  | 358.31.11 | 1.21.58  | 358.38. 2 |
| .32    | 50. 1    | 9.69      | 40. 0    | 20. 0     | 31.40    | 28.20     | 24.37    | 35.23     |
| .33    | 53.27    | 6.33      | 43. 8    | 16.52     | 34.32    | 25.23     | 27.16    | 32.44     |
| .34    | 56.54    | 3. 6      | 46.15    | 13.45     | 37.24    | 22.36     | 29.54    | 30. 6     |
| .35    | 2. 0.19  | 357.59.41 | 49.23    | 10.37     | 40.16    | 19.44     | 32.33    | 27.27     |
| .36    | 3.46     | 56.14     | 52.30    | 7.30      | 43. 8    | 16.52     | 35.12    | 24.48     |
| .37    | 7.12     | 52.48     | 56.38    | 3.22      | 46. 0    | 14. 0     | 37.50    | 22.10     |
| .38    | 10.39    | 49.21     | 59.46    | 1.15      | 48.52    | 11. 8     | 40.29    | 19.31     |
| .39    | 14. 5    | 45.55     | 2. 1.53  | 357.58. 7 | 51.44    | 8.16      | 43. 8    | 16.52     |
| .40    | 2.17.31  | 357.42.29 | 2. 5. 0  | 357.55. 0 | 1.54.36  | 358. 5.24 | 1.45.47  | 358.14.13 |
| .41    | 2.20.57  | 357.39. 3 | 2. 8. 8  | 357.51.52 | 1.57.27  | 358. 2.33 | 1.48.25  | 358.11.35 |
| .42    | 24.24    | 35.36     | 11.15    | 48.45     | 2. 0.19  | 357.59.41 | 51. 4    | 8.56      |
| .43    | 27.50    | 32.10     | 14.23    | 45.37     | 3.11     | 56.49     | 53.42    | 6.18      |
| .44    | 31.16    | 28.44     | 17.30    | 42.30     | 6. 3     | 53.57     | 56.21    | 3.39      |
| .45    | 34.42    | 25.18     | 20.38    | 39.22     | 8.55     | 51. 5     | 59. 0    | 1. 0      |
| .46    | 38. 9    | 21.51     | 23.45    | 36.15     | 11.47    | 48.13     | 2. 1.38  | 357.58.22 |
| .47    | 41.35    | 18.25     | 26.53    | 33. 7     | 14.39    | 45.21     | 4.17     | 55.43     |
| .48    | 45. 1    | 14.59     | 30. 0    | 30. 0     | 17.31    | 42.29     | 6.55     | 53. 5     |
| .49    | 48.28    | 11.32     | 33. 8    | 26.52     | 20.23    | 39.37     | 9.34     | 50.26     |
| .50    | 2.51.54  | 357. 8. 6 | 2.36.15  | 357.23.45 | 2.25.14  | 357.36.46 | 2.12.13  | 357.47.47 |



曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=100 公尺 |           | R=110 公尺 |           | R=120 公尺 |           | R=130 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .5 1   | 2.55.20  | 357. 4.40 | 2.39.23  | 357.20.37 | 2.26.66  | 357.33.54 | 2.14.52  | 357.45. 8 |
| .5 2   | 58.47    | 1.13      | 42.30    | 17.30     | 28.58    | 31. 2     | 17.30    | 42.30     |
| .5 3   | 2.13     | 356.57.47 | 45.38    | 14.22     | 31.50    | 28.10     | 20. 9    | 39.51     |
| .5 4   | 5.39     | 54.21     | 48.45    | 11.15     | 34.42    | 25.18     | 22.48    | 37.12     |
| .5 5   | 9. 5     | 50.55     | 51.53    | 8. 7      | 37.34    | 22.26     | 25.28    | 34.34     |
| .5 6   | 12.32    | 47.28     | 55. 0    | 5. 0      | 40.26    | 19.34     | 26. 5    | 31.55     |
| .5 7   | 15.58    | 44. 2     | 58. 8    | 1.52      | 43.18    | 16.42     | 30.44    | 29.16     |
| .5 8   | 19.24    | 40.36     | 3. 1.15  | 356.58.46 | 46.10    | 13.50     | 33.22    | 26.38     |
| .5 9   | 22.50    | 37.10     | 4.23     | 55.37     | 49. 1    | 10.99     | 36. 1    | 23.59     |
| .6 0   | 3.26.17  | 356.33.43 | 3. 7.30  | 356.52.30 | 2.51.53  | 357. 8. 7 | 2.38.40  | 357.21.20 |
| .6 1   | 3.29.43  | 356.30.17 | 3.10.38  | 356.49.22 | 2.54.45  | 357. 5.15 | 2.41.18  | 357.18.42 |
| .6 2   | 33. 9    | 26.51     | 13.45    | 46.15     | 57.37    | 2.23      | 43.57    | 16. 3     |
| .6 3   | 36.36    | 23.24     | 16.53    | 43. 7     | 3. 0.29  | 356.59.31 | 46.36    | 13.24     |
| .6 4   | 40. 2    | 19.58     | 20. 0    | 40. 0     | 3.21     | 56.39     | 49.14    | 10.46     |
| .6 5   | 43.28    | 16.32     | 23. 8    | 36.52     | 6.13     | 53.47     | 51.53    | 8. 7      |
| .6 6   | 46.54    | 13. 6     | 26.15    | 33.35     | 9. 5     | 50.55     | 54.32    | 5.28      |
| .6 7   | 50.21    | 9.39      | 29.23    | 30.37     | 11.57    | 48. 3     | 57.10    | 2.50      |
| .6 8   | 53.47    | 6.13      | 32.30    | 27.30     | 14.48    | 45.12     | 59.49    | 0.11      |
| .6 9   | 57.13    | 2.47      | 35.38    | 24.22     | 17.40    | 42.20     | 3. 2.28  | 356.57.32 |
| .7 0   | 4. 0.39  | 355.59.21 | 3.38.45  | 356.21.15 | 3.20.32  | 356.39.28 | 3. 5. 6  | 356.54.54 |
| .7 1   | 4. 4. 6  | 355.55.54 | 3.41.53  | 356.18. 7 | 3.23.24  | 356.36.36 | 3. 7.45  | 356.52.15 |
| .7 2   | 7.32     | 52.28     | 45. 0    | 15. 0     | 26.16    | 33.44     | 10.24    | 49.36     |
| .7 3   | 10.58    | 49. 2     | 48. 8    | 11.52     | 29. 8    | 30.52     | 13. 2    | 46.58     |
| .7 4   | 14.25    | 45.36     | 51.15    | 8.45      | 32. 0    | 28. 0     | 15.41    | 44.19     |
| .7 5   | 17.51    | 42. 9     | 54.23    | 5.37      | 34.52    | 25. 8     | 18.19    | 41.41     |
| .7 6   | 21.17    | 38.43     | 57.30    | 2.30      | 37.44    | 22.16     | 20.58    | 39. 2     |
| .7 7   | 24.44    | 35.16     | 4. 0.33  | 355.59.22 | 40.35    | 19.25     | 23.37    | 36.23     |
| .7 8   | 28.10    | 31.50     | 3.45     | 56.15     | 43.27    | 16.33     | 26.15    | 33.45     |
| .7 9   | 31.36    | 28.24     | 6.53     | 53. 7     | 46.19    | 13.41     | 29.54    | 31. 6     |
| .8 0   | 4.35. 2  | 355.24.58 | 4.10. 0  | 356.50. 0 | 3.49.11  | 356.10.49 | 3.31.33  | 356.28.27 |
| .8 1   | 4.38.29  | 355.21.31 | 4.13. 8  | 355.46.52 | 3.52. 3  | 356. 7.57 | 3.34.12  | 356.25.58 |
| .8 2   | 41.55    | 18. 5     | 16.15    | 43.45     | 54.55    | 5. 5      | 36.50    | 23.10     |
| .8 3   | 45.21    | 14.39     | 19.23    | 40.37     | 57.47    | 2.13      | 39.29    | 20.31     |
| .8 4   | 48.47    | 11.13     | 22.30    | 37.30     | 4. 0.39  | 355.59.21 | 42. 8    | 17.52     |
| .8 5   | 52.14    | 7.46      | 25.38    | 34.22     | 3.31     | 56.29     | 44.46    | 15.14     |
| .8 6   | 55.40    | 4.20      | 28.45    | 31.15     | 6.22     | 53.38     | 47.25    | 12.35     |
| .8 7   | 59. 6    | 54        | 31.53    | 28. 7     | 9.14     | 50.46     | 50. 4    | 9.66      |
| .8 8   | 5. 2.33  | 354.57.27 | 35. 0    | 25. 0     | 12. 6    | 47.54     | 52.42    | 7.18      |
| .8 9   | 5.59     | 54. 1     | 38. 8    | 21.52     | 14.58    | 45. 2     | 55.21    | 4.39      |
| .9 0   | 5. 9.25  | 354.50.35 | 4.41.15  | 355.18.45 | 4.17.50  | 355.42.10 | 3.57.59  | 356. 3. 1 |
| .9 1   | 5.12.51  | 354.47. 9 | 4.44.23  | 355.15.37 | 4.20.42  | 355.39.18 | 4. 0.38  | 355.59.22 |
| .9 2   | 16.18    | 43.42     | 47.30    | 12.30     | 23.34    | 36.26     | 3.17     | 56.43     |
| .9 3   | 19.44    | 40.16     | 50.38    | 9.22      | 26.26    | 33.34     | 5.56     | 54. 4     |
| .9 4   | 23.10    | 36.50     | 53.45    | 6.15      | 29.18    | 30.42     | 8.34     | 51.26     |
| .9 5   | 26.37    | 33.23     | 56.53    | 3. 7      | 32. 9    | 27.51     | 11.13    | 48.47     |
| .9 6   | 30. 3    | 29.57     | 5. 0. 0  | 355. 0. 0 | 35. 1    | 24.59     | 13.51    | 46. 9     |
| .9 7   | 33.29    | 26.31     | 3. 8     | 354.56.52 | 37.53    | 22. 7     | 16.10    | 43.50     |
| .9 8   | 36.56    | 23. 4     | 6.15     | 53.45     | 40.45    | 19.15     | 19. 9    | 40.51     |
| .9 9   | 40.22    | 19.38     | 9.23     | 50.37     | 43.37    | 16.23     | 21.47    | 38.13     |
| 1.0 0  | 5.43.48  | 354.16.12 | 5.12.30  | 354.47.30 | 4.48.29  | 355.13.31 | 4.24.26  | 355.35.34 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=140 公尺 |           | R=150 公尺 |           | R=160 公尺 |           | R=170 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0.02.27  | 359.57.33 | 0. 2.18  | 359.57.42 | 0. 2. 9  | 359.57.51 | 0. 2. 1  | 359.57.59 |
| .02    | 4.55     | 55. 5     | 4.35     | 55.25     | 4.18     | 55.42     | 4. 3     | 55.57     |
| .03    | 7.22     | 52.38     | 6.53     | 53. 7     | 6.27     | 53.33     | 6. 4     | 53.56     |
| .04    | 9.49     | 50.11     | 9.10     | 50.50     | 8.35     | 51.25     | 8. 5     | 51.55     |
| .05    | 12.17    | 47.43     | 11.28    | 48.32     | 10.45    | 49.15     | 10. 7    | 49.53     |
| .06    | 14.44    | 45.16     | 13.45    | 46.15     | 12.54    | 47. 6     | 12. 8    | 47.52     |
| .07    | 17.11    | 42.49     | 16. 3    | 43.57     | 15. 3    | 44.57     | 14. 9    | 45.51     |
| .08    | 19.39    | 40.21     | 18.20    | 41.40     | 17.11    | 42.49     | 16.11    | 43.49     |
| .09    | 22. 6    | 37.54     | 20.38    | 39.22     | 19.20    | 40.40     | 18.12    | 41.48     |
| .10    | 0.24.33  | 359.35.27 | 0.22.55  | 359.37. 5 | 0.21.29  | 359.38.31 | 0.20.13  | 359.39.47 |
| .11    | 0.27. 1  | 359.32.59 | 0.25.13  | 359.34.47 | 0.23.38  | 359.36.22 | 0.22.15  | 359.37.45 |
| .12    | 29.28    | 30.32     | 27.30    | 32.30     | 25.47    | 34.13     | 24.16    | 35.44     |
| .13    | 31.55    | 38. 5     | 29.48    | 30.12     | 27.55    | 32. 5     | 26.17    | 33.43     |
| .14    | 34.23    | 25.37     | 32. 5    | 27.55     | 30. 5    | 29.55     | 28.18    | 31.42     |
| .15    | 36.50    | 23.10     | 34.23    | 25.37     | 32.13    | 27.47     | 30.20    | 29.40     |
| .16    | 39.17    | 20.43     | 36.40    | 23.20     | 34.23    | 25.37     | 32.21    | 27.39     |
| .17    | 41.45    | 18.15     | 38.58    | 21. 2     | 36.31    | 23.29     | 34.22    | 25.38     |
| .18    | 44.12    | 15.48     | 41.15    | 18.45     | 38.40    | 21.20     | 36.24    | 23.36     |
| .19    | 46.39    | 13.21     | 43.33    | 16.27     | 40.49    | 19.11     | 38.25    | 21.35     |
| .20    | 0.49. 7  | 359.10.53 | 0.45.50  | 359.14.10 | 0.42.58  | 359.17. 2 | 0.40.27  | 359.19.33 |
| .21    | 0.51.34  | 359. 8.26 | 0.48. 8  | 359.11.52 | 0.45. 7  | 359.14.53 | 0.42.27  | 359.17.33 |
| .22    | 54. 1    | 5.59      | 50.25    | 9.35      | 47.16    | 12.44     | 44.29    | 15.31     |
| .23    | 56.29    | 3.31      | 52.43    | 7.17      | 49.25    | 10.35     | 46.31    | 13.29     |
| .24    | 58.56    | 1. 4      | 55. 0    | 5. 0      | 51.34    | 8.26      | 48.32    | 11.28     |
| .25    | 1. 1.23  | 358.58.37 | 57.18    | 2.42      | 53.43    | 6.17      | 50.33    | 9.27      |
| .26    | 3.51     | 56. 9     | 59.35    | 0.25      | 55.52    | 4. 8      | 52.35    | 7.25      |
| .27    | 6.18     | 53.42     | 1. 1.53  | 358.58. 7 | 58. 1    | 1.59      | 54.36    | 5.24      |
| .28    | 8.46     | 51.15     | 4.10     | 55.50     | 1. 0.10  | 358.59.50 | 56.37    | 3.23      |
| .29    | 11.13    | 48.47     | 6.28     | 53.32     | 2.19     | 57.41     | 58.38    | 1.22      |
| .30    | 1.13.40  | 358.46.20 | 1. 8.45  | 358.51.15 | 1. 4.27  | 358.55.33 | 1. 0.40  | 358.59.20 |
| .31    | 1.16. 7  | 358.43.53 | 1.11. 3  | 358.48.57 | 1. 6.36  | 358.53.24 | 1. 2.41  | 358.57.19 |
| .32    | 18.35    | 41.26     | 13.20    | 46.40     | 8.45     | 51.15     | 4.42     | 55.18     |
| .33    | 21. 2    | 38.58     | 15.38    | 44.22     | 10.55    | 49. 5     | 6.44     | 53.16     |
| .34    | 23.29    | 36.31     | 17.55    | 42. 5     | 13. 3    | 46.57     | 8.45     | 51.15     |
| .35    | 26.57    | 34. 3     | 20.13    | 39.47     | 15.12    | 44.48     | 10.46    | 49.14     |
| .36    | 28.24    | 31.36     | 22.31    | 37.29     | 17.21    | 42.39     | 12.48    | 47.12     |
| .37    | 30.51    | 28. 9     | 24.48    | 35.12     | 19.30    | 40.30     | 14.49    | 45.11     |
| .38    | 32.78    | 26.41     | 27. 6    | 32.54     | 21.39    | 38.21     | 16.50    | 43.10     |
| .39    | 35.45    | 24.14     | 29.24    | 30.36     | 23.48    | 36.12     | 18.52    | 41. 8     |
| .40    | 1.38.13  | 358.21.47 | 1.31.40  | 358.28.20 | 1.25.57  | 358.34. 3 | 1.20.53  | 358.39. 7 |
| .41    | 1.40.41  | 358.19.19 | 1.33.58  | 358.26. 2 | 1.28. 6  | 358.31.54 | 1.22.55  | 358.37. 5 |
| .42    | 43. 8    | 16.52     | 36.15    | 23.45     | 30.14    | 29.46     | 24.56    | 35. 4     |
| .43    | 45.35    | 14.25     | 38.33    | 21.27     | 32.23    | 27.37     | 26.57    | 33. 3     |
| .44    | 48. 3    | 11.57     | 40.50    | 19.10     | 34.32    | 25.28     | 28.59    | 31. 1     |
| .45    | 50.30    | 9.30      | 43. 8    | 16.52     | 36.41    | 23.19     | 31. 0    | 29. 0     |
| .46    | 52.57    | 7. 3      | 45.25    | 14.35     | 38.50    | 21.10     | 33. 1    | 26.59     |
| .47    | 55.25    | 4.35      | 47.43    | 12.17     | 40.59    | 19. 1     | 35. 3    | 24.57     |
| .48    | 57.52    | 2. 8      | 50. 0    | 10. 0     | 43. 8    | 16.52     | 37. 4    | 22.56     |
| .49    | 2. 0.19  | 357.59.41 | 52.18    | 7.42      | 45.17    | 14.43     | 39. 5    | 20.55     |
| .50    | 2. 2.47  | 357.57.13 | 1.54.35  | 358. 5.25 | 1.47.26  | 358.12.34 | 1.41. 6  | 358.18.54 |

曲線偏角累計表(弧長百分之一)

| 弧長百分之一 | R=140 公尺 |           | R=150 公尺 |           | R=160 公尺 |           | R=170 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .5 1   | 2. 5.14  | 357.54.46 | 1.56.53  | 358. 3. 7 | 1.49.35  | 358.10.25 | 1.43. 8  | 358.16.52 |
| .5 2   | 7.41     | 52.19     | 59.10    | 0.50      | 51.44    | 8.16      | 45. 9    | 14.51     |
| .5 3   | 10. 8    | 49.52     | 2. 1.28  | 357.58.32 | 53.52    | 6. 8      | 47.10    | 12.50     |
| .5 4   | 12.36    | 47.24     | 3.45     | 56.15     | 56. 1    | 3.59      | 49.12    | 10.48     |
| .5 5   | 15. 3    | 44.57     | 6. 3     | 53.57     | 58.10    | 1.50      | 51.13    | 8.47      |
| .5 6   | 17.30    | 42.30     | 8.21     | 51.39     | 2. 0.19  | 357.59.41 | 53.15    | 6.45      |
| .5 7   | 19.58    | 40. 2     | 10.38    | 49.22     | 2.28     | 57.32     | 55.16    | 6.44      |
| .5 8   | 22.25    | 37.35     | 12.55    | 47. 5     | 4.37     | 55.23     | 57.17    | 2.43      |
| .5 9   | 24.52    | 35. 8     | 15.13    | 44.47     | 6.46     | 53.14     | 59.19    | .41       |
| .6 0   | 2.27.20  | 357.32.40 | 2.17.31  | 357.42.29 | 2. 8.55  | 357.51. 5 | 2. 1.20  | 357.58.40 |
| .6 1   | 2.29.47  | 357.30.13 | 2.19.48  | 357.40.12 | 2.11. 4  | 357.48.56 | 2. 3.21  | 357.56.39 |
| .6 2   | 32.14    | 27.46     | 22. 5    | 37.55     | 13.13    | 46.47     | 5.23     | 54.37     |
| .6 3   | 34.42    | 25.18     | 24.23    | 35.37     | 15.22    | 44.38     | 7.24     | 52.36     |
| .6 4   | 37. 9    | 22.51     | 26.40    | 33.20     | 17.31    | 42.29     | 9.25     | 50.35     |
| .6 5   | 39.36    | 20.24     | 28.58    | 31. 2     | 19.40    | 40.20     | 11.27    | 48.33     |
| .6 6   | 42. 4    | 17.56     | 31.15    | 28.45     | 21.49    | 38.11     | 13.28    | 46.32     |
| .6 7   | 44.31    | 15.29     | 33.33    | 26.27     | 23.57    | 36. 3     | 15.29    | 44.31     |
| .6 8   | 46.58    | 13. 2     | 35.50    | 24.10     | 26. 6    | 33.54     | 17.30    | 42.30     |
| .6 9   | 49.26    | 10.34     | 38. 8    | 21.52     | 28.15    | 31.45     | 19.32    | 40.28     |
| .7 0   | 2.51.53  | 357. 8. 7 | 2.40.25  | 357.19.35 | 2.30.24  | 357.29.36 | 2.21.53  | 357.38.27 |
| .7 1   | 2.54.20  | 357. 5.40 | 2.42.43  | 357.17.17 | 2.32.33  | 357.27.27 | 2.23.34  | 357.36.26 |
| .7 2   | 56.48    | 9.12      | 45. 1    | 14.59     | 34.42    | 25.18     | 25.36    | 34.24     |
| .7 3   | 59.15    | 0.45      | 47.18    | 12.42     | 36.51    | 23. 9     | 27.37    | 32.23     |
| .7 4   | 3. 1.42  | 356.58.18 | 49.36    | 10.24     | 39. 0    | 21. 0     | 29.38    | 30.22     |
| .7 5   | 4.10     | 55.50     | 51.53    | 8. 7      | 41. 9    | 18.51     | 31.40    | 28.20     |
| .7 6   | 6.37     | 53.23     | 54.10    | 5.50      | 43.18    | 16.42     | 33.41    | 26.19     |
| .7 7   | 9. 4     | 50.56     | 56.28    | 3.32      | 45.27    | 14.33     | 35.42    | 24.18     |
| .7 8   | 11.32    | 48.28     | 58.45    | 1.14      | 47.36    | 12.24     | 37.44    | 22.16     |
| .7 9   | 13.59    | 46. 1     | 3. 1. 3  | 356.58.57 | 49.44    | 10.16     | 39.45    | 20.15     |
| .8 0   | 3.16.28  | 356.43.34 | 3. 3.21  | 356.56.39 | 2.51.53  | 357. 8. 7 | 2.41.47  | 357.18.13 |
| .8 1   | 3.18.54  | 856.41. 6 | 3. 5.33  | 356.54.22 | 2.54. 2  | 357. 5.58 | 2.43.48  | 357.16.12 |
| .8 2   | 21.21    | 38.39     | 7.55     | 52. 5     | 56.11    | 3.49      | 45.49    | 14.11     |
| .8 3   | 23.48    | 36.12     | 10.13    | 49. 7     | 58.20    | 1.40      | 47.51    | 12. 9     |
| .8 4   | 25.15    | 34.44     | 12.31    | 47.29     | 3. 0.29  | 356.59.31 | 49.52    | 10. 8     |
| .8 5   | 28.43    | 31.17     | 14.49    | 45.12     | 2.53     | 57.22     | 51.53    | 9. 7      |
| .8 6   | 31.10    | 28.50     | 17. 6    | 42.54     | 4.47     | 55.13     | 53.54    | 6. 6      |
| .8 7   | 33.38    | 26.22     | 19.23    | 40.37     | 6.56     | 53. 4     | 55.56    | 4. 4      |
| .8 8   | 35. 5    | 23.55     | 21.41    | 38.19     | 9. 5     | 50.55     | 57.57    | 2. 3      |
| .8 9   | 38.32    | 21.28     | 23.58    | 36. 2     | 11.14    | 48.46     | 59.58    | 0. 2      |
| .9 0   | 3.41. 0  | 356.19. 0 | 3.26.16  | 356.33.44 | 3.13.23  | 356.46.37 | 3. 2. 0  | 356.58. 0 |
| .9 1   | 3.43.27  | 356.16.33 | 3.28.33  | 356.31.27 | 3.15.32  | 356.44.28 | 3. 4. 1  | 356.55.59 |
| .9 2   | 45.54    | 14. 6     | 30.51    | 29. 9     | 17.43    | 42.20     | 6. 2     | 53.58     |
| .9 3   | 48.22    | 11.38     | 33. 8    | 26.52     | 19.49    | 40.11     | 8. 4     | 51.56     |
| .9 4   | 50.49    | 9.11      | 35.26    | 24.34     | 21.58    | 38. 2     | 10. 5    | 49.55     |
| .9 5   | 53.16    | 6.44      | 37.44    | 22.16     | 24. 7    | 35.53     | 12. 6    | 47.54     |
| .9 6   | 55.44    | 04.16     | 40. 1    | 19.59     | 26.16    | 33.44     | 14. 8    | 45.52     |
| .9 7   | 58.11    | 01.49     | 42.18    | 17.42     | 28.25    | 31.35     | 16. 9    | 43.51     |
| .9 8   | 4. 0.38  | 355.59.22 | 44.36    | 15.24     | 30.34    | 29.26     | 18.10    | 41.50     |
| .9 9   | 3. 6     | 56.54     | 46.54    | 13. 6     | 32.43    | 27.17     | 20.12    | 39.48     |
| 1.0 0  | 4. 5.53  | 355.54.27 | 3.49.11  | 356.10.49 | 3.34.52  | 356.25. 8 | 3.22.13  | 356.37.47 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R-180 公尺 |           | R-190 公尺 |           | R-200 公尺 |           | R-210 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| 0.1    | 0.155    | 359.58.5  | 0.148    | 359.58.12 | 0.143    | 359.58.17 | 0.133    | 359.58.22 |
| .02    | 3.49     | 56.11     | 3.37     | 56.23     | 3.26     | 56.34     | 3.17     | 56.43     |
| .03    | 5.44     | 54.16     | 5.26     | 54.34     | 5.9      | 54.51     | 4.55     | 56.5      |
| .04    | 7.38     | 52.22     | 7.14     | 52.46     | 6.53     | 53.7      | 6.33     | 53.27     |
| .05    | 9.33     | 50.27     | 9.3      | 50.57     | 8.36     | 51.24     | 8.11     | 51.49     |
| .06    | 11.28    | 48.32     | 10.51    | 49.9      | 10.19    | 49.41     | 9.49     | 50.11     |
| .07    | 13.22    | 46.38     | 12.40    | 47.20     | 12.2     | 47.58     | 11.27    | 48.33     |
| .08    | 15.17    | 44.43     | 14.28    | 45.32     | 13.45    | 46.15     | 13.6     | 46.54     |
| .09    | 17.11    | 42.49     | 16.17    | 43.43     | 15.28    | 44.32     | 14.44    | 45.16     |
| .10    | 0.19.6   | 359.40.54 | 0.18.5   | 359.41.55 | 0.17.11  | 359.42.43 | 0.16.22  | 359.43.38 |
| .11    | 0.21.1   | 359.38.59 | 0.19.54  | 359.40.6  | 0.16.55  | 359.41.5  | 0.18.0   | 359.42.0  |
| .12    | 22.55    | 37.5      | 21.42    | 38.18     | 20.38    | 39.22     | 19.39    | 40.21     |
| .13    | 24.50    | 35.10     | 23.31    | 36.29     | 22.21    | 37.39     | 21.17    | 38.43     |
| .14    | 26.44    | 33.16     | 25.20    | 34.40     | 24.4     | 35.56     | 22.55    | 37.5      |
| .15    | 28.39    | 31.21     | 27.8     | 32.52     | 25.47    | 34.13     | 24.33    | 35.27     |
| .16    | 30.33    | 29.27     | 28.57    | 31.3      | 27.30    | 32.30     | 26.12    | 33.48     |
| .17    | 32.28    | 27.32     | 30.45    | 29.15     | 29.13    | 30.47     | 27.50    | 32.10     |
| .18    | 34.23    | 25.37     | 32.34    | 27.26     | 30.57    | 29.3      | 29.28    | 30.32     |
| .19    | 36.17    | 23.43     | 34.23    | 25.37     | 32.40    | 27.20     | 31.6     | 28.54     |
| .20    | 0.38.12  | 359.21.48 | 0.36.11  | 359.23.49 | 0.34.23  | 359.25.37 | 0.32.44  | 359.27.16 |
| .21    | 0.40.6   | 359.19.54 | 0.38.0   | 359.22.0  | 0.36.6   | 359.23.54 | 0.34.23  | 359.25.37 |
| .22    | 42.1     | 17.59     | 39.48    | 20.12     | 37.49    | 22.11     | 36.1     | 23.59     |
| .23    | 43.56    | 16.4      | 41.37    | 18.23     | 39.32    | 20.26     | 37.39    | 22.21     |
| .24    | 45.50    | 14.10     | 43.25    | 16.35     | 41.15    | 18.45     | 39.17    | 20.43     |
| .25    | 47.45    | 12.15     | 45.14    | 14.46     | 42.58    | 17.2      | 40.56    | 19.4      |
| .26    | 49.39    | 10.21     | 47.9     | 12.57     | 44.42    | 15.18     | 42.34    | 17.26     |
| .27    | 51.34    | 8.26      | 48.51    | 11.9      | 46.25    | 13.35     | 44.12    | 15.48     |
| .28    | 53.29    | 6.31      | 50.39    | 9.21      | 48.8     | 11.52     | 45.50    | 14.10     |
| .29    | 55.23    | 4.37      | 52.28    | 7.32      | 49.51    | 10.9      | 47.28    | 12.32     |
| .30    | 0.57.18  | 359.2.42  | 0.54.17  | 359.5.43  | 0.51.34  | 359.8.26  | 0.49.7   | 359.10.53 |
| .31    | 0.59.12  | 359.0.46  | 0.56.5   | 359.3.55  | 0.53.17  | 359.6.43  | 0.50.45  | 359.9.15  |
| .32    | 1.1.7    | 358.58.53 | 57.54    | 2.6       | 55.0     | 5.0       | 52.23    | 7.37      |
| .33    | 3.2      | 56.58     | 59.42    | 0.13      | 56.43    | 3.17      | 54.1     | 5.59      |
| .34    | 4.56     | 55.4      | 1.1.31   | 358.58.29 | 58.27    | 1.33      | 55.39    | 4.21      |
| .35    | 6.51     | 53.9      | 3.19     | 56.41     | 1.0.10   | 358.59.50 | 57.18    | 2.42      |
| .36    | 8.45     | 51.15     | 5.8      | 54.52     | 1.53     | 58.7      | 58.56    | 1.4       |
| .37    | 10.40    | 49.20     | 6.56     | 53.4      | 3.36     | 56.24     | 1.0.34   | 358.59.26 |
| .38    | 12.34    | 47.26     | 8.45     | 51.15     | 5.19     | 54.41     | 2.12     | 57.48     |
| .39    | 14.29    | 45.31     | 10.33    | 49.27     | 7.2      | 52.58     | 3.51     | 56.9      |
| .40    | 1.16.24  | 358.43.36 | 1.12.22  | 358.47.35 | 1.8.45   | 358.51.15 | 1.5.29   | 358.54.31 |
| .41    | 1.18.18  | 358.41.42 | 1.14.11  | 358.45.49 | 1.10.28  | 358.49.32 | 1.7.7    | 358.52.53 |
| .42    | 20.13    | 39.47     | 16.0     | 44.0      | 12.12    | 47.48     | 8.45     | 51.15     |
| .43    | 22.7     | 37.53     | 17.48    | 42.12     | 13.55    | 46.5      | 10.24    | 49.36     |
| .44    | 24.2     | 35.58     | 19.37    | 40.23     | 15.36    | 44.22     | 12.2     | 47.58     |
| .45    | 25.57    | 34.3      | 21.25    | 38.35     | 17.21    | 42.39     | 13.40    | 46.20     |
| .46    | 27.51    | 32.9      | 23.14    | 36.46     | 19.4     | 40.56     | 15.18    | 44.42     |
| .47    | 29.46    | 30.14     | 25.2     | 34.58     | 20.47    | 39.13     | 16.56    | 43.4      |
| .48    | 31.40    | 28.20     | 26.51    | 33.9      | 22.30    | 37.30     | 18.35    | 41.25     |
| .49    | 33.35    | 26.25     | 28.39    | 31.21     | 24.13    | 35.47     | 20.13    | 39.47     |
| .50    | 1.35.30  | 358.24.30 | 1.30.28  | 358.29.32 | 1.25.57  | 358.34.3  | 1.21.51  | 358.38.9  |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=180 公尺 |           | R=190 公尺 |           | R=200 公尺 |           | R=210 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .5 1   | 1.37.24  | 358.22.36 | 1.32.16  | 358.27.44 | 1.27.40  | 358.32.20 | 1.23.29  | 358.36.31 |
| .5 2   | 39.19    | 20.41     | 34.5     | 25.95     | 29.23    | 20.37     | 25.8     | 34.52     |
| .5 3   | 41.13    | 18.47     | 35.53    | 24.7      | 31.6     | 28.54     | 26.46    | 33.14     |
| .5 4   | 43.8     | 16.52     | 37.42    | 22.18     | 32.49    | 27.11     | 28.24    | 31.36     |
| .5 5   | 45.3     | 14.57     | 39.30    | 20.30     | 34.32    | 25.28     | 30.2     | 29.58     |
| .5 6   | 46.57    | 13.3      | 41.19    | 18.41     | 35.15    | 23.45     | 31.40    | 28.20     |
| .5 7   | 48.52    | 11.8      | 43.8     | 16.52     | 37.58    | 22.2      | 33.18    | 26.42     |
| .5 8   | 50.46    | 9.14      | 44.56    | 15.4      | 39.42    | 20.18     | 34.57    | 25.3      |
| .5 9   | 52.41    | 7.19      | 46.46    | 13.15     | 41.25    | 18.35     | 35.35    | 23.25     |
| .6 0   | 1.54.35  | 358.5.25  | 1.48.34  | 358.11.26 | 1.43.03  | 358.16.52 | 1.38.13  | 358.21.47 |
| .6 1   | 1.56.30  | 358.3.30  | 1.50.22  | 358.9.39  | 1.44.51  | 358.15.9  | 1.39.51  | 358.20.9  |
| .6 2   | 58.25    | 1.35      | 52.11    | 7.49      | 46.34    | 13.26     | 41.30    | 18.30     |
| .6 3   | 2.0.19   | 357.59.41 | 53.59    | 6.1       | 48.17    | 11.43     | 43.8     | 16.52     |
| .6 4   | 2.14     | 57.46     | 55.48    | 4.12      | 50.1     | 9.59      | 44.46    | 15.14     |
| .6 5   | 4.9      | 55.51     | 57.36    | 2.24      | 51.44    | 8.16      | 46.24    | 13.36     |
| .6 6   | 6.3      | 53.57     | 59.25    | 0.35      | 53.27    | 6.33      | 48.3     | 11.57     |
| .6 7   | 7.58     | 52.2      | 2.1.14   | 357.58.46 | 55.10    | 4.50      | 49.41    | 10.19     |
| .6 8   | 9.52     | 50.8      | 3.2      | 56.56     | 56.53    | 3.7       | 51.19    | 8.41      |
| .6 9   | 11.47    | 48.13     | 4.51     | 55.9      | 58.35    | 1.24      | 52.57    | 7.3       |
| .7 0   | 2.13.42  | 357.46.18 | 2.6.39   | 357.53.21 | 2.0.19   | 357.59.41 | 1.54.35  | 358.5.25  |
| .7 1   | 2.15.36  | 357.44.24 | 2.8.28   | 357.51.32 | 2.2.2    | 357.57.58 | 1.56.13  | 358.3.47  |
| .7 2   | 17.31    | 42.29     | 10.16    | 49.44     | 3.45     | 56.15     | 57.52    | 2.8       |
| .7 3   | 19.25    | 40.36     | 12.5     | 47.55     | 5.29     | 54.31     | 59.30    | 0.30      |
| .7 4   | 21.20    | 38.40     | 13.53    | 46.7      | 7.12     | 52.48     | 2.1.8    | 357.58.52 |
| .7 5   | 23.14    | 35.46     | 15.42    | 44.18     | 8.55     | 51.5      | 2.47     | 57.13     |
| .7 6   | 25.9     | 34.51     | 17.30    | 42.30     | 10.38    | 49.22     | 4.25     | 55.35     |
| .7 7   | 27.4     | 32.56     | 19.19    | 40.41     | 12.21    | 47.39     | 6.3      | 53.57     |
| .7 8   | 28.58    | 31.2      | 21.7     | 38.53     | 14.4     | 45.56     | 7.41     | 52.19     |
| .7 9   | 30.53    | 29.7      | 22.56    | 37.4      | 15.43    | 44.12     | 9.20     | 50.40     |
| .8 0   | 2.32.47  | 357.27.13 | 2.24.45  | 357.35.15 | 2.17.31  | 357.42.29 | 2.10.58  | 357.49.2  |
| .8 1   | 2.34.42  | 357.25.18 | 2.26.33  | 357.33.27 | 2.19.14  | 357.40.46 | 2.12.36  | 357.47.24 |
| .8 2   | 36.37    | 23.23     | 28.22    | 31.38     | 20.57    | 39.3      | 14.14    | 45.46     |
| .8 3   | 38.31    | 21.29     | 30.11    | 29.49     | 22.40    | 37.20     | 15.52    | 44.8      |
| .8 4   | 40.25    | 19.34     | 31.59    | 28.1      | 24.23    | 35.37     | 17.35    | 42.30     |
| .8 5   | 42.20    | 17.40     | 33.48    | 26.12     | 26.6     | 33.54     | 19.9     | 40.51     |
| .8 6   | 44.15    | 15.45     | 35.35    | 24.24     | 27.49    | 32.11     | 20.47    | 39.13     |
| .8 7   | 46.10    | 13.50     | 37.25    | 22.35     | 29.33    | 30.27     | 22.25    | 37.35     |
| .8 8   | 48.3     | 11.56     | 39.13    | 20.47     | 31.16    | 28.44     | 24.6     | 35.54     |
| .8 9   | 49.59    | 10.1      | 41.2     | 18.58     | 32.59    | 27.1      | 25.44    | 34.16     |
| .9 0   | 2.51.53  | 357.8.7   | 2.42.50  | 357.17.10 | 2.34.42  | 357.25.18 | 2.27.20  | 357.32.40 |
| .9 1   | 2.53.48  | 357.6.12  | 2.44.39  | 357.15.21 | 2.36.25  | 357.23.35 | 2.28.58  | 357.31.2  |
| .9 2   | 55.43    | 4.17      | 46.27    | 13.33     | 39.8     | 21.52     | 30.36    | 29.24     |
| .9 3   | 57.37    | 2.23      | 48.16    | 11.44     | 39.51    | 20.9      | 32.15    | 27.45     |
| .9 4   | 59.32    | 0.28      | 50.5     | 9.55      | 41.35    | 18.25     | 33.53    | 26.7      |
| .9 5   | 3.1.25   | 356.58.34 | 51.53    | 8.7       | 43.18    | 16.42     | 35.31    | 24.29     |
| .9 6   | 3.21     | 56.39     | 53.42    | 6.18      | 45.1     | 14.59     | 37.9     | 22.51     |
| .9 7   | 5.15     | 54.45     | 55.30    | 4.30      | 46.44    | 13.16     | 39.47    | 21.13     |
| .9 8   | 7.10     | 52.50     | 57.19    | 2.41      | 48.27    | 11.53     | 40.26    | 19.34     |
| .9 9   | 9.5      | 50.55     | 59.7     | .53       | 50.10    | 9.50      | 42.46    | 17.54     |
| 1.0 0  | 3.10.59  | 356.49.1  | 3.0.56   | 356.59.4  | 2.51.53  | 357.8.7   | 2.43.42  | 357.16.18 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=220 公尺       |                  | R=230 公尺       |                  | R=240 公尺       |                  | R=250 公尺       |                  |
|--------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|
|        | 右              | 左                | 右              | 左                | 右              | 左                | 右              | 左                |
| .01    | 0.1.34         | 359.58.26        | 0.1.30         | 359.58.30        | 0.1.26         | 359.58.34        | 0.1.23         | 359.58.37        |
| .02    | 3.8            | 56.52            | 2.59           | 57.1             | 2.52           | 57.8             | 2.45           | 57.15            |
| .03    | 4.41           | 55.19            | 4.29           | 55.31            | 4.18           | 55.42            | 4.8            | 55.52            |
| .04    | 6.15           | 53.45            | 5.59           | 54.1             | 5.44           | 54.16            | 5.30           | 54.30            |
| .05    | 7.49           | 52.11            | 7.28           | 52.32            | 7.10           | 52.50            | 6.53           | 53.7             |
| .06    | 9.22           | 50.38            | 8.58           | 51.2             | 8.36           | 51.24            | 8.15           | 51.45            |
| .07    | 10.56          | 49.4             | 10.28          | 49.32            | 10.2           | 49.58            | 9.38           | 50.22            |
| .08    | 12.30          | 47.30            | 11.57          | 48.3             | 11.28          | 48.32            | 11.0           | 49.0             |
| .09    | 14.4           | 45.56            | 13.27          | 44.33            | 12.53          | 47.7             | 12.23          | 47.37            |
| .10    | <b>0.15.38</b> | <b>359.44.22</b> | <b>0.14.57</b> | <b>359.45.3</b>  | <b>0.14.19</b> | <b>359.45.41</b> | <b>0.13.45</b> | <b>359.46.15</b> |
| .11    | 0.17.11        | 359.42.49        | 0.16.26        | 359.43.34        | 0.15.45        | 359.44.15        | 0.15.8         | 359.44.52        |
| .12    | 18.45          | 41.15            | 17.56          | 42.4             | 17.11          | 42.49            | 16.30          | 43.30            |
| .13    | 20.19          | 39.41            | 19.26          | 40.34            | 18.37          | 41.23            | 17.53          | 42.7             |
| .14    | 21.53          | 38.7             | 20.55          | 39.5             | 20.3           | 39.57            | 19.15          | 40.45            |
| .15    | 23.26          | 36.34            | 22.25          | 37.35            | 21.29          | 38.31            | 20.38          | 39.22            |
| .16    | 25.0           | 35.0             | 23.55          | 36.5             | 22.55          | 37.5             | 22.0           | 38.0             |
| .17    | 26.34          | 33.26            | 25.25          | 34.35            | 24.21          | 35.99            | 23.23          | 36.37            |
| .18    | 28.8           | 31.52            | 26.54          | 33.6             | 25.47          | 34.13            | 24.45          | 35.15            |
| .19    | 29.41          | 30.19            | 28.24          | 31.36            | 27.13          | 32.47            | 26.8           | 33.52            |
| .20    | <b>0.31.15</b> | <b>359.28.45</b> | <b>0.29.53</b> | <b>359.30.7</b>  | <b>0.28.39</b> | <b>359.31.21</b> | <b>0.27.30</b> | <b>359.32.30</b> |
| .21    | 0.32.49        | 359.27.11        | 0.31.23        | 359.28.37        | 0.30.5         | 359.29.55        | 0.28.52        | 359.31.8         |
| .22    | 34.23          | 25.37            | 32.53          | 27.7             | 31.31          | 28.29            | 30.15          | 29.45            |
| .23    | 35.56          | 24.4             | 34.23          | 25.37            | 32.57          | 27.3             | 31.38          | 28.22            |
| .24    | 37.30          | 22.30            | 35.53          | 24.7             | 34.22          | 25.56            | 33.0           | 27.0             |
| .25    | 39.4           | 20.56            | 37.22          | 22.38            | 35.48          | 24.12            | 34.23          | 25.37            |
| .26    | 40.38          | 19.22            | 38.52          | 21.8             | 37.14          | 22.46            | 35.45          | 24.15            |
| .27    | 42.11          | 17.49            | 40.22          | 19.38            | 38.40          | 21.20            | 37.8           | 22.52            |
| .28    | 43.45          | 16.15            | 41.51          | 18.9             | 40.6           | 19.54            | 38.30          | 21.50            |
| .29    | 45.19          | 14.41            | 43.21          | 16.39            | 41.82          | 18.28            | 39.52          | 20.8             |
| .30    | <b>0.46.53</b> | <b>359.13.7</b>  | <b>0.44.50</b> | <b>359.15.10</b> | <b>0.42.58</b> | <b>359.17.2</b>  | <b>0.41.15</b> | <b>359.18.45</b> |
| .31    | 0.48.26        | 359.11.34        | 0.46.20        | 359.13.40        | 0.44.24        | 359.15.36        | 0.42.38        | 359.17.22        |
| .32    | 50.0           | 10.0             | 47.50          | 12.10            | 45.50          | 14.10            | 44.0           | 16.0             |
| .33    | 51.34          | 8.26             | 49.20          | 10.40            | 47.16          | 12.44            | 45.23          | 14.37            |
| .34    | 53.8           | 6.52             | 50.50          | 9.10             | 48.42          | 11.18            | 46.45          | 13.15            |
| .35    | 54.41          | 5.19             | 52.19          | 7.41             | 50.8           | 9.52             | 48.8           | 11.52            |
| .36    | 56.15          | 3.45             | 53.49          | 6.11             | 51.34          | 8.26             | 49.30          | 10.30            |
| .37    | 57.49          | 2.11             | 55.18          | 4.42             | 53.0           | 7.0              | 50.53          | 9.7              |
| .38    | 59.23          | 0.37             | 56.48          | 3.12             | 54.26          | 5.34             | 52.15          | 7.45             |
| .39    | 1.0.57         | 358.59.3         | 58.18          | 1.42             | 55.52          | 4.8              | 53.38          | 6.22             |
| .40    | <b>1.2.30</b>  | <b>358.57.30</b> | <b>0.59.47</b> | <b>359.0.13</b>  | <b>0.57.18</b> | <b>359.2.42</b>  | <b>0.55.0</b>  | <b>359.5.0</b>   |
| .41    | 1.4.4          | 358.55.56        | 1.1.17         | 358.58.43        | 0.58.44        | 359.1.16         | 0.56.23        | 359.3.37         |
| .42    | 5.38           | 54.22            | 2.47           | 57.13            | 1.0.9          | 358.59.51        | 57.45          | 2.15             |
| .43    | 7.12           | 52.48            | 4.16           | 55.44            | 1.35           | 58.25            | 59.8           | 0.52             |
| .44    | 8.45           | 51.15            | 5.46           | 54.14            | 3.1            | 56.59            | 1.0.30         | 358.59.30        |
| .45    | 10.19          | 49.41            | 7.16           | 52.44            | 4.27           | 55.38            | 1.53           | 58.7             |
| .46    | 11.53          | 48.7             | 8.45           | 51.15            | 5.53           | 54.7             | 3.15           | 56.45            |
| .47    | 13.27          | 46.33            | 10.15          | 49.45            | 7.19           | 52.41            | 4.38           | 55.22            |
| .48    | 15.0           | 45.0             | 11.45          | 48.15            | 8.45           | 51.15            | 6.0            | 54.0             |
| .49    | 16.34          | 43.26            | 13.14          | 46.46            | 10.11          | 49.59            | 7.23           | 52.37            |
| .50    | <b>1.18.8</b>  | <b>358.41.52</b> | <b>1.14.44</b> | <b>358.45.16</b> | <b>1.11.37</b> | <b>358.48.23</b> | <b>1.8.45</b>  | <b>358.51.15</b> |

曲線偏角累計表(弧長百分之一)

| 弧長百分之一 | R=220 公尺 |           | R=230 公尺 |           | R=240 公尺 |           | R=250 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .51    | 1.19.42  | 358.40.18 | 1.16.14  | 358.43.46 | 1.13.3   | 358.46.57 | 1.10.8   | 358.49.52 |
| .52    | 21.15    | 38.45     | 17.44    | 42.16     | 14.29    | 45.31     | 11.30    | 48.39     |
| .53    | 22.49    | 37.11     | 19.13    | 40.47     | 15.55    | 44.5      | 12.53    | 47.7      |
| .54    | 24.23    | 35.37     | 20.43    | 39.17     | 17.21    | 42.39     | 14.15    | 45.45     |
| .55    | 25.57    | 34.3      | 22.13    | 37.47     | 18.47    | 41.13     | 15.38    | 44.22     |
| .56    | 27.30    | 32.30     | 23.42    | 36.18     | 20.13    | 39.47     | 17.0     | 43.0      |
| .57    | 29.4     | 30.56     | 25.12    | 34.48     | 21.39    | 38.21     | 18.23    | 41.37     |
| .58    | 30.38    | 29.22     | 26.42    | 33.18     | 23.5     | 36.55     | 19.45    | 40.15     |
| .59    | 32.12    | 27.48     | 28.11    | 31.49     | 24.31    | 35.29     | 21.8     | 33.52     |
| .60    | 1.33.45  | 358.26.15 | 1.29.0   | 358.31.0  | 1.25.56  | 358.34.4  | 1.22.30  | 358.37.30 |
| .61    | 1.35.19  | 358.24.41 | 1.31.11  | 358.28.49 | 1.27.22  | 358.32.38 | 1.23.53  | 358.36.7  |
| .62    | 36.53    | 23.7      | 32.40    | 27.20     | 28.48    | 31.12     | 25.15    | 34.45     |
| .63    | 38.27    | 21.33     | 34.10    | 25.50     | 30.14    | 29.46     | 26.38    | 33.22     |
| .64    | 40.0     | 20.0      | 35.40    | 24.20     | 31.40    | 28.20     | 28.0     | 32.0      |
| .65    | 41.34    | 18.26     | 37.9     | 22.51     | 33.6     | 26.54     | 29.23    | 30.37     |
| .66    | 43.8     | 16.52     | 38.39    | 21.21     | 34.32    | 25.28     | 30.45    | 29.15     |
| .67    | 44.42    | 15.18     | 40.9     | 19.51     | 35.58    | 24.2      | 32.8     | 27.52     |
| .68    | 46.15    | 13.45     | 41.39    | 18.21     | 37.24    | 22.36     | 33.30    | 26.39     |
| .69    | 47.49    | 12.11     | 43.8     | 16.52     | 38.50    | 21.10     | 34.53    | 25.7      |
| .70    | 1.49.23  | 358.10.37 | 1.44.37  | 358.15.23 | 1.40.16  | 358.19.44 | 1.36.15  | 358.23.45 |
| .71    | 1.50.57  | 358.9.03  | 1.46.7   | 358.13.53 | 1.41.42  | 358.18.18 | 1.37.38  | 358.22.22 |
| .72    | 52.30    | 7.30      | 47.37    | 12.23     | 43.8     | 16.52     | 39.0     | 21.0      |
| .73    | 54.4     | 5.56      | 49.7     | 10.53     | 44.34    | 15.26     | 40.23    | 19.37     |
| .74    | 55.38    | 4.22      | 50.36    | 9.24      | 46.0     | 14.0      | 41.45    | 18.15     |
| .75    | 57.12    | 2.48      | 52.6     | 7.54      | 47.26    | 12.34     | 43.8     | 16.52     |
| .76    | 58.46    | 1.14      | 53.36    | 6.24      | 48.52    | 11.8      | 44.30    | 15.30     |
| .77    | 2.0.19   | 357.59.41 | 55.6     | 4.54      | 50.18    | 9.42      | 45.53    | 15.7      |
| .78    | 1.53     | 58.7      | 56.36    | 3.25      | 51.44    | 8.16      | 47.15    | 13.45     |
| .79    | 3.27     | 56.33     | 58.5     | 1.55      | 53.10    | 6.50      | 48.38    | 11.22     |
| .80    | 2.6.1    | 357.54.59 | 1.59.35  | 358.0.25  | 1.54.38  | 358.5.24  | 1.50.0   | 358.10.0  |
| .81    | 2.6.34   | 357.53.26 | 2.1.4    | 357.58.56 | 1.56.2   | 358.3.58  | 1.51.23  | 358.8.37  |
| .82    | 8.8      | 51.52     | 2.34     | 57.26     | 57.27    | 2.33      | 52.45    | 7.15      |
| .83    | 9.42     | 50.18     | 4.4      | 55.56     | 58.53    | 1.7       | 54.8     | 5.52      |
| .84    | 11.16    | 48.44     | 5.33     | 54.27     | 2.0.19   | 357.59.41 | 55.30    | 4.30      |
| .85    | 12.49    | 47.11     | 7.3      | 52.57     | 1.45     | 58.15     | 56.53    | 3.7       |
| .86    | 14.23    | 45.37     | 8.32     | 51.28     | 3.11     | 56.49     | 58.15    | 1.45      |
| .87    | 15.57    | 44.3      | 10.2     | 49.58     | 4.37     | 55.23     | 59.38    | 0.22      |
| .88    | 17.31    | 42.29     | 11.32    | 48.28     | 6.3      | 53.57     | 2.1.0    | 357.59.0  |
| .89    | 19.4     | 40.56     | 13.2     | 46.58     | 7.28     | 52.31     | 2.23     | 57.37     |
| .90    | 2.20.38  | 357.39.22 | 2.14.31  | 357.46.29 | 2.8.55   | 357.51.5  | 2.3.48   | 357.56.14 |
| .91    | 2.22.12  | 357.37.48 | 2.16.5   | 357.43.55 | 2.10.21  | 357.49.39 | 2.5.8    | 357.54.52 |
| .92    | 23.46    | 36.14     | 17.31    | 42.29     | 11.47    | 48.13     | 6.30     | 53.30     |
| .93    | 25.19    | 34.41     | 19.0     | 41.0      | 13.13    | 46.47     | 7.53     | 52.7      |
| .94    | 26.53    | 33.7      | 20.30    | 39.30     | 14.39    | 45.21     | 9.16     | 50.44     |
| .95    | 28.27    | 31.33     | 22.0     | 38.0      | 16.5     | 43.55     | 10.38    | 49.22     |
| .96    | 30.1     | 29.59     | 23.30    | 36.30     | 17.31    | 42.29     | 12.0     | 48.0      |
| .97    | 31.34    | 28.26     | 25.0     | 35.0      | 18.57    | 41.3      | 13.23    | 46.37     |
| .98    | 33.8     | 26.52     | 26.29    | 33.31     | 20.22    | 39.38     | 14.46    | 45.14     |
| .99    | 34.42    | 25.18     | 27.58    | 32.2      | 21.48    | 38.12     | 16.8     | 43.52     |
| 1.00   | 2.36.16  | 357.23.44 | 2.29.28  | 357.30.32 | 2.23.14  | 357.36.46 | 2.17.31  | 357.42.29 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=260 公尺 |           | R=270 公尺 |           | R=280 公尺 |           | R=290 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0. 1.19  | 359.58.41 | 0. 1.16  | 359.58.44 | 0. 1.14  | 359.58.46 | 0. 1.11  | 359.58.49 |
| .02    | 2.39     | 57.21     | 2.45     | 57.15     | 2.27     | 57.33     | 2.22     | 57.38     |
| .03    | 3.58     | 56. 2     | 3.49     | 56.11     | 3.41     | 56.19     | 3.33     | 56.27     |
| .04    | 5.17     | 54.43     | 5. 6     | 54.54     | 4.55     | 55. 5     | 4.45     | 55.15     |
| .05    | 6.37     | 53.23     | 6.22     | 53.38     | 6. 8     | 53.52     | 5.56     | 54. 4     |
| .06    | 7.56     | 52. 4     | 7.38     | 52.22     | 7.22     | 52.38     | 7. 7     | 52.53     |
| .07    | 9.15     | 50.45     | 8.55     | 51. 5     | 8.36     | 51.24     | 8.18     | 51.42     |
| .08    | 10.35    | 49.25     | 10.11    | 49.49     | 9.49     | 50.11     | 9.29     | 50.31     |
| .09    | 11.54    | 48. 6     | 11.28    | 48.32     | 11. 3    | 48.57     | 10.40    | 49.20     |
| .10    | 0.13.13  | 359.46.47 | 0.12.44  | 359.47.16 | 0.12.17  | 359.47.43 | 0.11.51  | 359.48. 9 |
| .11    | 0.14.33  | 359.45.27 | 0.14. 0  | 359.46. 0 | 0.13.30  | 359.46.30 | 0.13. 2  | 359.46.58 |
| .12    | 15.52    | 44. 8     | 15.16    | 44.44     | 14.44    | 45.16     | 14.13    | 45.47     |
| .13    | 17.11    | 42.49     | 16.33    | 43.27     | 15.58    | 44. 2     | 15.24    | 44.36     |
| .14    | 18.31    | 41.29     | 17.50    | 42.10     | 17.11    | 42.49     | 16.35    | 43.25     |
| .15    | 19.50    | 40.10     | 19. 6    | 40.54     | 18.25    | 41.35     | 17.47    | 42.13     |
| .16    | 21. 9    | 38.51     | 20.22    | 39.38     | 19.39    | 40.21     | 18.58    | 41. 2     |
| .17    | 22.29    | 37.31     | 21.39    | 38.21     | 20.52    | 39. 8     | 20. 9    | 39.51     |
| .18    | 23.48    | 36.12     | 22.55    | 37. 5     | 22. 6    | 37.54     | 21.20    | 38.40     |
| .19    | 25. 7    | 34.53     | 24.11    | 35.49     | 23.20    | 36.40     | 22.31    | 37.29     |
| .20    | 0.26.27  | 359.33.33 | 0.25.28  | 359.34.32 | 0.24.33  | 359.35.27 | 0.23.42  | 359.36.18 |
| .21    | 0.27.46  | 359.32.14 | 0.26.44  | 359.33.16 | 0.25.47  | 359.34.13 | 0.24.54  | 359.35. 6 |
| .22    | 29. 5    | 30.55     | 28. 1    | 31.59     | 27. 1    | 32.59     | 26. 5    | 33.55     |
| .23    | 30.25    | 29.35     | 29.17    | 30.43     | 28.14    | 31.46     | 27.16    | 33.44     |
| .24    | 31.44    | 28.16     | 30.33    | 29.27     | 29.28    | 30.32     | 28.27    | 31.33     |
| .25    | 33. 3    | 26.57     | 31.50    | 28.10     | 30.42    | 29.18     | 29.38    | 30.22     |
| .26    | 34.23    | 25.37     | 33. 6    | 26.54     | 31.55    | 28. 5     | 30.49    | 29.11     |
| .27    | 35.42    | 24.18     | 34.23    | 25.37     | 33. 9    | 26.51     | 32. 0    | 28. 0     |
| .28    | 37. 1    | 22.59     | 35.39    | 24.21     | 34.23    | 25.37     | 33.11    | 26.49     |
| .29    | 38.21    | 21.39     | 36.56    | 23. 5     | 35.36    | 24.24     | 34.23    | 25.37     |
| .30    | 0.39.40  | 359.20.20 | 0.38.12  | 359.21.48 | 0.36.50  | 359.23.10 | 0.35.34  | 359.24.26 |
| .31    | 0.40.59  | 359.19. 1 | 0.39.28  | 359.20.32 | 0.38. 4  | 359.21.56 | 0.36.45  | 359.23.15 |
| .32    | 42.19    | 17.41     | 40.45    | 19.15     | 39.17    | 20.43     | 37.56    | 22. 4     |
| .33    | 43.38    | 16.22     | 42. 1    | 17.59     | 40.31    | 19.29     | 39. 7    | 20.53     |
| .34    | 44.57    | 15. 3     | 43.17    | 16.43     | 41.45    | 18.15     | 40.18    | 19.42     |
| .35    | 46.17    | 13.43     | 44.34    | 15.26     | 42.58    | 17. 2     | 41.29    | 18.31     |
| .36    | 47.36    | 12.24     | 45.50    | 14.10     | 44.12    | 15.48     | 42.40    | 17.20     |
| .37    | 48.55    | 11. 5     | 47. 6    | 12.54     | 45.26    | 14.34     | 43.51    | 16. 9     |
| .38    | 50.15    | 9.45      | 48.23    | 11.37     | 46.39    | 13.21     | 45. 3    | 14.57     |
| .39    | 51.34    | 8.26      | 49.39    | 10.21     | 47.53    | 12. 7     | 46.14    | 13.46     |
| .40    | 0.52.53  | 359. 7. 7 | 0.50.56  | 359. 9. 4 | 0.49. 7  | 359.10.53 | 0.47.26  | 359.12.35 |
| .41    | 0.54.13  | 359. 5.47 | 0.52.12  | 359. 7.48 | 0.50.20  | 359. 9.40 | 0.48.36  | 359.11.24 |
| .42    | 56.32    | 4.28      | 53.29    | 6.31      | 51.34    | 8.26      | 49.47    | 10.13     |
| .43    | 56.51    | 3. 9      | 54.45    | 5.15      | 52.48    | 7.12      | 50.58    | 9. 2      |
| .44    | 56.11    | 1.49      | 56. 2    | 3.58      | 54. 1    | 5.59      | 52. 9    | 7.51      |
| .45    | 59.30    | 0.30      | 57.18    | 2.42      | 55.15    | 4.45      | 53.20    | 6.40      |
| .46    | 1. 0.49  | 358.59.11 | 58.34    | 1.26      | 56.29    | 3.31      | 54.32    | 5.28      |
| .47    | 2. 9     | 57.51     | 59.51    | 0. 9      | 57.42    | 2.18      | 55.43    | 4.17      |
| .48    | 3.28     | 56.32     | 1. 1. 7  | 358.58.53 | 58.56    | 1. 4      | 56.54    | 3. 6      |
| .49    | 4.47     | 55.13     | 2.24     | 57.36     | 1. 0.10  | 358.59.50 | 58. 5    | 1.56      |
| .50    | 1. 6. 7  | 358.53.53 | 1. 3.40  | 358.56.20 | 1. 1.25  | 358.58.37 | 0.59.16  | 359. 0.44 |



曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=260 公尺 |           | R=270 公尺 |           | R=280 公尺 |           | R=290 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .51    | 1. 7.26  | 358.52.34 | 1. 4.56  | 358.55. 4 | 1. 2.37  | 358.57.23 | 1. 0.27  | 358.59.33 |
| .52    | 8.45     | 51.15     | 6.12     | 53.48     | 3.51     | 56.09     | 1.38     | 58.22     |
| .53    | 10. 5    | 49.55     | 7.29     | 52.31     | 5. 4     | 54.56     | 2.50     | 57.10     |
| .54    | 11.24    | 48.36     | 8.45     | 51.15     | 6.18     | 53.42     | 4. 1     | 55.59     |
| .55    | 12.43    | 47.17     | 10. 2    | 49.58     | 7.32     | 52.28     | 5.12     | 54.48     |
| .56    | 14. 3    | 45.57     | 11.18    | 48.42     | 8.45     | 51.15     | 6.23     | 53.37     |
| .57    | 15.22    | 44.38     | 12.34    | 47.26     | 9.59     | 50.01     | 7.34     | 52.26     |
| .58    | 16.41    | 43.19     | 13.51    | 46. 9     | 11.13    | 48.47     | 8.45     | 51.15     |
| .59    | 18. 1    | 41.59     | 15. 7    | 44.53     | 12.26    | 47.34     | 9.56     | 50. 4     |
| .60    | 1.19.20  | 358.40.40 | 1.16.23  | 358.43.37 | 1.13.40  | 358.46.20 | 1.11. 8  | 358.48.52 |
| .61    | 1.20.39  | 358.39.21 | 1.17.40  | 358.42.20 | 1.14.54  | 358.45. 6 | 1.12.19  | 358.47.41 |
| .62    | 21.59    | 38. 1     | 18.56    | 41. 4     | 16. 7    | 43.53     | 13.30    | 46.30     |
| .63    | 23.18    | 36.42     | 20.13    | 39.47     | 17.21    | 42.39     | 14.41    | 45.19     |
| .64    | 24.37    | 35.23     | 21.29    | 38.31     | 18.35    | 41.25     | 15.52    | 44. 8     |
| .65    | 25.57    | 34. 3     | 22.45    | 37.15     | 19.48    | 40.12     | 17. 3    | 42.57     |
| .66    | 27.16    | 32.44     | 24. 2    | 35.58     | 21. 2    | 38.58     | 18.14    | 41.46     |
| .67    | 28.35    | 31.25     | 25.18    | 34.42     | 22.16    | 37.44     | 19.25    | 40.35     |
| .68    | 29.55    | 30. 5     | 26.35    | 33.25     | 23.29    | 36.31     | 20.36    | 39.24     |
| .69    | 31.14    | 28.46     | 27.51    | 32. 9     | 24.43    | 35.17     | 21.47    | 38.13     |
| .70    | 1.32.33  | 358.27.27 | 1.29. 8  | 358.30.52 | 1.25.57  | 358.34. 3 | 1.22.59  | 358.37. 1 |
| .71    | 1.33.53  | 358.26. 7 | 1.30.24  | 358.29.36 | 1.27.10  | 358.32.50 | 1.24.10  | 358.35.50 |
| .72    | 35.12    | 24.48     | 31.40    | 28.20     | 28.24    | 31.36     | 25.21    | 34.39     |
| .73    | 36.31    | 23.29     | 32.57    | 27. 3     | 29.38    | 30.22     | 26.32    | 33.28     |
| .74    | 37.51    | 22. 9     | 34.13    | 25.47     | 30.51    | 29. 9     | 27.43    | 32.17     |
| .75    | 39.10    | 20.50     | 35.29    | 24.31     | 32. 5    | 27.55     | 28.54    | 31. 6     |
| .76    | 40.29    | 19.31     | 36.46    | 23.14     | 33.19    | 26.41     | 30. 5    | 29.55     |
| .77    | 41.49    | 18.11     | 38. 2    | 21.58     | 34.32    | 25.28     | 31.16    | 28.44     |
| .78    | 43. 8    | 16.52     | 39.19    | 20.41     | 35.46    | 24.14     | 32.27    | 27.33     |
| .79    | 44.27    | 15.33     | 40.35    | 19.25     | 37. 0    | 23. 0     | 33.39    | 26.21     |
| .80    | 1.45.47  | 358.14.13 | 1.41.51  | 358.18. 9 | 1.38.13  | 358.21.47 | 1.34.50  | 358.25.10 |
| .81    | 1.47. 6  | 358.12.54 | 1.43. 8  | 358.16.52 | 1.39.27  | 358.20.33 | 1.36. 1  | 358.23.59 |
| .82    | 48.25    | 11.35     | 44.24    | 15.36     | 40.41    | 19.19     | 37.12    | 22.48     |
| .83    | 49.45    | 10.15     | 45.41    | 14.19     | 41.54    | 18. 6     | 38.23    | 21.37     |
| .84    | 51. 4    | 8.56      | 46.57    | 13. 3     | 43. 8    | 16.52     | 39.34    | 20.26     |
| .85    | 52.23    | 7.37      | 48.14    | 11.46     | 44.22    | 15.38     | 40.45    | 19.15     |
| .86    | 53.43    | 6.17      | 49.30    | 10.30     | 45.35    | 14.25     | 41.57    | 18. 3     |
| .87    | 55. 2    | 4.58      | 50.46    | 9.14      | 46.49    | 13.11     | 43. 8    | 16.52     |
| .88    | 56.21    | 3.39      | 52. 3    | 7.57      | 48. 3    | 11.57     | 44.19    | 15.41     |
| .89    | 57.41    | 2.19      | 53.19    | 6.41      | 49.16    | 10.44     | 45.27    | 14.33     |
| .90    | 1.59. 0  | 358. 1. 0 | 1.54.35  | 358. 5.25 | 1.50.30  | 358. 9.30 | 1.46.41  | 358.13.19 |
| .91    | 2. 0.19  | 357.59.41 | 1.55.52  | 358. 4. 8 | 1.51.44  | 358. 8.16 | 1.47.52  | 358.12. 8 |
| .92    | 1.39     | 58.21     | 57. 8    | 2.52      | 52.57    | 7. 3      | 49. 3    | 10.57     |
| .93    | 2.58     | 57. 2     | 58.24    | 1.36      | 54.11    | 5.49      | 50.14    | 9.46      |
| .94    | 4.17     | 55.43     | 59.41    | 0.19      | 55.25    | 4.35      | 51.26    | 8.34      |
| .95    | 5.37     | 54.23     | 2. 0.57  | 357.59. 3 | 56.38    | 3.22      | 52.37    | 7.23      |
| .96    | 6.56     | 53. 4     | 2.14     | 57.46     | 57.52    | 2. 8      | 53.48    | 6.12      |
| .97    | 8.15     | 51.45     | 3.30     | 56.30     | 59. 6    | 0.54      | 54.59    | 5. 1      |
| .98    | 9.35     | 50.25     | 4.46     | 55.14     | 2. 0.19  | 357.59.41 | 56.10    | 3.50      |
| .99    | 10.54    | 49. 6     | 6. 3     | 53.57     | 1.33     | 58.27     | 57.21    | 2.39      |
| 1.00   | 2.12.13  | 357.47.47 | 2. 7.19  | 357.52.41 | 2. 2.47  | 357.57.13 | 1.58.32  | 358. 1.28 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=300 公尺 |           | R=310 公尺 |           | R=320 公尺 |           | R=330 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0. 1. 9  | 359.58.51 | 0. 1. 6  | 359.58.54 | 0. 1. 4  | 359.58.56 | 0. 1. 3  | 359.58.57 |
| .02    | 2.17     | 57.43     | 2.13     | 57.47     | 2. 9     | 57.51     | 2. 5     | 57.55     |
| .03    | 3.26     | 56.34     | 3.20     | 56.40     | 3.13     | 56.47     | 3. 8     | 56.52     |
| .04    | 4.35     | 55.25     | 4.26     | 55.34     | 4.18     | 55.42     | 4.10     | 55.50     |
| .05    | 5.44     | 54.16     | 5.33     | 54.27     | 5.22     | 54.38     | 5.13     | 54.47     |
| .06    | 6.52     | 53. 8     | 6.99     | 53.21     | 6.27     | 53.33     | 6.15     | 53.45     |
| .07    | 8. 1     | 51.59     | 7.40     | 52.14     | 7.31     | 52.29     | 7.18     | 52.42     |
| .08    | 9.10     | 50.50     | 8.52     | 51. 8     | 8.36     | 51.24     | 8.20     | 51.40     |
| .09    | 10.19    | 49.41     | 9.59     | 50. 1     | 9.40     | 50.20     | 9.23     | 50.37     |
| .10    | 0.11.28  | 359.48.32 | 0.11. 0  | 359.49. 0 | 0.10.45  | 359.49.15 | 0.10.25  | 359.49.35 |
| .11    | 0.12.36  | 359.47.24 | 0.12.12  | 359.47.48 | 0.11.49  | 359.48.11 | 0.11.27  | 359.48.33 |
| .12    | 13.45    | 46.15     | 13.18    | 46.42     | 12.53    | 47. 7     | 12.30    | 47.30     |
| .13    | 14.54    | 45. 6     | 14.25    | 45.35     | 13.58    | 46. 2     | 13.33    | 46.27     |
| .14    | 16. 3    | 43.57     | 15.32    | 44.28     | 15. 2    | 44.58     | 14.35    | 45.25     |
| .15    | 17.11    | 42.49     | 16.38    | 43.22     | 16. 7    | 43.53     | 15.38    | 44.22     |
| .16    | 18.20    | 41.40     | 17.45    | 42.15     | 17.11    | 42.49     | 16.40    | 43.20     |
| .17    | 19.29    | 40.31     | 18.51    | 41. 9     | 18.16    | 41.44     | 17.43    | 42.17     |
| .18    | 20.37    | 39.23     | 19.58    | 40. 2     | 19.20    | 40.40     | 18.45    | 41.15     |
| .19    | 21.46    | 38.14     | 21. 4    | 38.56     | 20.25    | 39.35     | 19.48    | 40.12     |
| .20    | 0.22.55  | 359.37. 5 | 0.22.11  | 359.37.49 | 0.21.29  | 359.38.31 | 0.20.50  | 359.39.10 |
| .21    | 0.24. 4  | 359.35.56 | 0.23.17  | 359.36.43 | 0.22.34  | 359.37.26 | 0.21.53  | 359.38. 7 |
| .22    | 25.13    | 34.47     | 24.24    | 35.36     | 23.38    | 36.22     | 22.55    | 37. 5     |
| .23    | 26.21    | 33.39     | 25.30    | 34.30     | 24.43    | 35.17     | 23.58    | 36. 2     |
| .24    | 27.30    | 32.30     | 26.37    | 33.23     | 25.47    | 34.13     | 25. 0    | 35. 0     |
| .25    | 28.39    | 31.21     | 27.44    | 32.16     | 26.51    | 33. 9     | 26. 3    | 33.57     |
| .26    | 29.48    | 30.12     | 28.50    | 31.10     | 27.56    | 32. 4     | 27. 5    | 32.55     |
| .27    | 30.56    | 29.14     | 29.56    | 30. 4     | 29. 0    | 31. 0     | 28. 8    | 31.52     |
| .28    | 32. 5    | 27.55     | 31. 3    | 28.57     | 30. 5    | 29.55     | 29.10    | 30.50     |
| .29    | 33.14    | 26.46     | 32.10    | 27.50     | 31. 9    | 28.51     | 30.13    | 29.47     |
| .30    | 0.34.23  | 359.25.37 | 0.33.16  | 359.26.44 | 0.32.14  | 359.27.45 | 0.31.15  | 359.28.45 |
| .31    | 0.35.31  | 359.24.29 | 0.34.23  | 359.25.37 | 0.33.18  | 359.26.42 | 0.32.18  | 359.27.42 |
| .32    | 36.40    | 23.20     | 35.29    | 24.31     | 34.23    | 25.37     | 33.20    | 26.40     |
| .33    | 37.49    | 22.11     | 36.36    | 23.24     | 35.27    | 24.33     | 34.23    | 25.37     |
| .34    | 38.58    | 21. 2     | 37.42    | 22.18     | 36.32    | 23.28     | 35.25    | 24.35     |
| .35    | 40. 6    | 19.54     | 38.49    | 21.11     | 37.36    | 22.24     | 36.28    | 23.32     |
| .36    | 41.15    | 18.45     | 39.56    | 20. 4     | 38.40    | 21.20     | 37.30    | 22.30     |
| .37    | 42.28    | 17.37     | 41. 2    | 18.58     | 39.45    | 20.15     | 38.33    | 21.27     |
| .38    | 43.33    | 16.27     | 42. 9    | 17.51     | 40.49    | 19.11     | 39.35    | 20.25     |
| .39    | 44.41    | 15.19     | 43.15    | 16.45     | 41.54    | 18. 6     | 40.38    | 19.22     |
| .40    | 0.45.50  | 359.14.10 | 0.44.21  | 359.15.39 | 0.42.58  | 359.17. 2 | 0.41.40  | 359.18.20 |
| .41    | 0.46.59  | 359.13. 1 | 0.45.28  | 359.14.32 | 0.44. 3  | 359.15.57 | 0.42.43  | 359.17.17 |
| .42    | 48. 8    | 11.52     | 46.35    | 13.25     | 45. 7    | 14.53     | 43.45    | 16.15     |
| .43    | 49.16    | 10.44     | 47.41    | 12.19     | 46.12    | 13.48     | 44.48    | 15.12     |
| .44    | 50.25    | 9.35      | 48.46    | 11.12     | 47.16    | 12.44     | 45.50    | 14.10     |
| .45    | 51.34    | 8.26      | 49.54    | 10. 6     | 48.21    | 11.39     | 46.53    | 13. 7     |
| .46    | 52.43    | 7.17      | 51. 1    | 8.59      | 49.25    | 10.35     | 47.56    | 12. 4     |
| .47    | 53.51    | 6. 9      | 52. 7    | 7.53      | 50.30    | 9.30      | 48.58    | 11. 2     |
| .48    | 55. 0    | 5. 0      | 53.14    | 6.46      | 51.34    | 8.26      | 50. 0    | 10. 0     |
| .49    | 56. 9    | 3.51      | 54.20    | 5.40      | 52.33    | 7.22      | 51. 3    | 8.57      |
| .50    | 0.57.18  | 359. 2.42 | 0.55.27  | 359. 4.33 | 0.53.43  | 359. 6.17 | 0.52. 5  | 359. 7.55 |

曲線偏角累計表(弧長百分之一)

| 弧長百分之一 | R=300 公尺 |           | R=310 公尺 |           | R=320 公尺 |           | R=330 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .5 1   | 0.58.26  | 359. 1.34 | 0.56.33  | 359. 3.27 | 0.54.47  | 359. 5.13 | 0.53. 8  | 359. 6.52 |
| .5 2   | 59.35    | 0.25      | 57.40    | 2.20      | 55.52    | 4. 8      | 54.10    | 5.50      |
| .5 3   | 1. 0.44  | 358.59.16 | 58.47    | 1.13      | 56.56    | 3. 4      | 55.12    | 4.48      |
| .5 4   | 1.53     | 58.07     | 59.53    | 7         | 58. 1    | 1.59      | 56.15    | 3.45      |
| .5 5   | 3. 1     | 56.59     | 1. 0.59  | 358.59. 1 | 59. 5    | 0.55      | 57.18    | 2.42      |
| .5 6   | 4.10     | 55.50     | 2. 6     | 57.54     | 1. 0.10  | 358.59.50 | 58.20    | 1.40      |
| .5 7   | 5.19     | 54.41     | 3.13     | 56.47     | 1.14     | 58.46     | 59.28    | 0.37      |
| .5 8   | 6.28     | 53.32     | 4.19     | 55.41     | 2.19     | 57.41     | 1. 0.25  | 358.59.35 |
| .5 9   | 7.36     | 52.24     | 5.26     | 54.34     | 3.23     | 56.37     | 1.28     | 58.32     |
| .6 0   | 1. 8.45  | 358.51.15 | 1. 6.32  | 358.53.28 | 1. 4.27  | 358.55.33 | 1. 2.30  | 358.57.30 |
| .6 1   | 1. 9.54  | 358.50. 6 | 1. 7.39  | 358.52.21 | 1. 5.32  | 358.54.28 | 1. 3.33  | 358.56.23 |
| .6 2   | 11. 3    | 48.57     | 8.45     | 51.15     | 6.36     | 53.24     | 4.35     | 55.25     |
| .6 3   | 12.11    | 47.49     | 9.52     | 50. 8     | 7.41     | 52.19     | 5.38     | 54.22     |
| .6 4   | 13.20    | 46.40     | 10.58    | 49. 2     | 8.45     | 51.15     | 6.40     | 53.20     |
| .6 5   | 14.29    | 45.31     | 12. 5    | 47.55     | 9.50     | 50.10     | 7.43     | 52.17     |
| .6 6   | 15.38    | 44.22     | 13.11    | 46.49     | 10.54    | 49. 6     | 8.45     | 51.15     |
| .6 7   | 16.46    | 43.14     | 14.18    | 45.42     | 11.59    | 48. 1     | 9.48     | 50.12     |
| .6 8   | 17.55    | 42. 6     | 15.25    | 44.35     | 13. 3    | 46.57     | 10.50    | 49.10     |
| .6 9   | 19. 4    | 40.56     | 16.31    | 43.29     | 14. 8    | 45.52     | 11.53    | 48. 7     |
| .7 0   | 1.20.13  | 358.39.47 | 1.17.38  | 358.42.22 | 1.15.12  | 358.44.48 | 1.12.55  | 358.47. 5 |
| .7 1   | 1.21.21  | 358.38.39 | 1.18.44  | 358.41.16 | 1.16.17  | 358.43.43 | 1.13.58  | 358.46. 2 |
| .7 2   | 22.30    | 37.30     | 19.51    | 40. 9     | 17.21    | 42.39     | 15. 0    | 45. 0     |
| .7 3   | 23.39    | 36.21     | 20.57    | 39. 3     | 18.25    | 41.35     | 16. 3    | 43.57     |
| .7 4   | 24.48    | 35.12     | 22. 4    | 37.56     | 19.30    | 40.30     | 17. 5    | 42.55     |
| .7 5   | 25.56    | 34. 4     | 23.10    | 36.50     | 20.34    | 39.26     | 18. 8    | 41.52     |
| .7 6   | 27. 5    | 32.55     | 24.17    | 35.43     | 21.39    | 38.21     | 19.10    | 40.50     |
| .7 7   | 28.14    | 31.46     | 25.23    | 34.37     | 22.43    | 37.17     | 20.13    | 39.47     |
| .7 8   | 29.23    | 30.37     | 26.30    | 33.30     | 23.48    | 36.12     | 21.15    | 38.45     |
| .7 9   | 30.31    | 29.29     | 27.36    | 32.24     | 24.52    | 35. 8     | 22.18    | 37.42     |
| .8 0   | 1.31.40  | 358.28.20 | 1.28.43  | 358.31.17 | 1.25.57  | 358.34. 3 | 1.23.20  | 358.36.40 |
| .8 1   | 1.32.49  | 358.27.11 | 1.29.50  | 358.30.10 | 1.27. 1  | 358.32.59 | 1.24.23  | 358.35.37 |
| .8 2   | 33.58    | 26. 2     | 30.56    | 29. 4     | 28. 6    | 31.54     | 25.25    | 34.35     |
| .8 3   | 35. 7    | 24.53     | 32. 3    | 27.57     | 29.10    | 30.50     | 26.28    | 33.32     |
| .8 4   | 36.15    | 23.45     | 33. 9    | 26.51     | 30.14    | 29.46     | 27.30    | 32.30     |
| .8 5   | 37.24    | 22.36     | 34.16    | 25.44     | 31.19    | 28.41     | 28.33    | 31.27     |
| .8 6   | 38.33    | 21.27     | 35.22    | 24.38     | 32.23    | 27.37     | 29.35    | 30.25     |
| .8 7   | 39.42    | 20.18     | 36.29    | 23.31     | 33.28    | 26.32     | 30.38    | 29.22     |
| .8 8   | 40.50    | 19.10     | 37.35    | 22.25     | 34.32    | 25.28     | 31.40    | 28.20     |
| .8 9   | 41.59    | 18. 1     | 38.42    | 21.18     | 35.37    | 24.23     | 32.43    | 27.17     |
| .9 0   | 1.43. 8  | 358.16.52 | 1.39.48  | 358.20.12 | 1.36.41  | 358.23.19 | 1.33.45  | 358.26.15 |
| .9 1   | 1.44.17  | 358.15.43 | 1.40.55  | 358.19. 5 | 1.37.46  | 358.22.14 | 1.34.48  | 358.25.12 |
| .9 2   | 45.25    | 14.35     | 42. 1    | 17.59     | 38.50    | 21.10     | 35.50    | 24.10     |
| .9 3   | 46.34    | 13.26     | 43. 8    | 16.52     | 39.55    | 20. 5     | 36.53    | 23. 7     |
| .9 4   | 47.43    | 12.17     | 44.15    | 15.45     | 40.59    | 19. 1     | 37.55    | 22. 5     |
| .9 5   | 48.51    | 11. 9     | 45.21    | 14.39     | 42. 4    | 17.56     | 38.68    | 21. 2     |
| .9 6   | 50. 0    | 10. 0     | 46.28    | 13.32     | 43. 8    | 16.52     | 40 0     | 20. 0     |
| .9 7   | 51. 9    | 8.51      | 47.34    | 12.26     | 44.12    | 15.48     | 41. 3    | 18.57     |
| .9 8   | 52.18    | 7.42      | 48.41    | 11.19     | 45.17    | 14.43     | 42. 5    | 17.55     |
| .9 9   | 53.27    | 6.33      | 49.47    | 10.13     | 46.21    | 13.39     | 43. 8    | 16.62     |
| 1.0 0  | 1.54.35  | 358. 5.25 | 1.50.54  | 358. 9. 6 | 1.47.28  | 358.12.34 | 1.44.10  | 358.15.50 |

曲線偏角累計表(弧長百分之一)

| 弧長百分之一 | R=340 公尺 |           | R=350 公尺 |           | R=360 公尺 |           | R=370 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0.1      | 359.58.59 | 0.059    | 359.59.1  | 0.057    | 359.59.3  | 0.056    | 359.59.4  |
| .02    | 2.1      | 57.59     | 1.58     | 58.2      | 1.55     | 58.5      | 1.51     | 58.9      |
| .03    | 3.2      | 56.58     | 2.57     | 57.3      | 2.52     | 57.8      | 2.47     | 57.13     |
| .04    | 4.3      | 55.57     | 3.56     | 56.4      | 3.49     | 56.11     | 3.43     | 56.17     |
| .05    | 5.3      | 54.57     | 4.55     | 55.5      | 4.46     | 55.14     | 4.39     | 55.21     |
| .06    | 6.4      | 53.56     | 5.54     | 54.6      | 5.44     | 54.16     | 5.34     | 54.26     |
| .07    | 7.5      | 52.56     | 6.53     | 53.7      | 6.41     | 53.19     | 6.30     | 53.30     |
| .08    | 8.5      | 51.55     | 7.51     | 52.9      | 7.38     | 52.22     | 7.26     | 52.34     |
| .09    | 9.6      | 50.54     | 8.50     | 51.10     | 8.35     | 51.25     | 8.22     | 51.38     |
| .10    | 0.10.7   | 359.49.53 | 0.9.49   | 359.50.11 | 0.9.33   | 359.50.27 | 0.9.17   | 359.50.43 |
| .11    | 0.11.7   | 359.48.53 | 0.10.48  | 359.49.12 | 0.10.30  | 359.49.30 | 0.10.13  | 359.49.47 |
| .12    | 12.8     | 47.52     | 11.47    | 48.13     | 11.27    | 48.33     | 11.9     | 48.51     |
| .13    | 13.9     | 46.51     | 12.46    | 47.14     | 12.25    | 47.35     | 12.5     | 47.55     |
| .14    | 14.9     | 45.51     | 13.45    | 46.15     | 13.22    | 46.38     | 13.0     | 47.0      |
| .15    | 15.10    | 44.50     | 14.44    | 45.16     | 14.19    | 45.41     | 13.56    | 46.4      |
| .16    | 16.11    | 43.49     | 15.43    | 44.17     | 15.17    | 44.43     | 14.52    | 45.8      |
| .17    | 17.11    | 42.49     | 16.42    | 43.18     | 16.14    | 43.46     | 15.48    | 44.12     |
| .18    | 18.12    | 41.48     | 17.41    | 42.19     | 17.11    | 42.49     | 16.43    | 43.17     |
| .19    | 19.13    | 40.47     | 18.40    | 41.20     | 18.9     | 41.51     | 17.39    | 42.21     |
| .20    | 0.20.13  | 359.39.47 | 0.19.39  | 359.40.21 | 0.19.6   | 359.40.54 | 0.18.35  | 359.41.25 |
| .21    | 0.21.14  | 359.38.46 | 0.20.38  | 359.39.22 | 0.20.3   | 359.39.57 | 0.19.31  | 359.40.29 |
| .22    | 22.15    | 37.45     | 21.37    | 38.23     | 21.0     | 39.0      | 20.27    | 39.33     |
| .23    | 23.15    | 36.45     | 22.35    | 37.25     | 21.58    | 38.2      | 21.22    | 38.33     |
| .24    | 24.16    | 35.44     | 23.34    | 36.26     | 22.55    | 37.5      | 22.18    | 37.42     |
| .25    | 25.17    | 34.43     | 24.33    | 35.27     | 23.52    | 36.8      | 23.14    | 36.46     |
| .26    | 26.17    | 33.43     | 25.32    | 34.28     | 24.50    | 35.10     | 24.9     | 35.51     |
| .27    | 27.18    | 32.42     | 26.31    | 33.29     | 25.47    | 34.13     | 25.5     | 34.55     |
| .28    | 28.19    | 31.41     | 27.30    | 32.30     | 26.44    | 33.16     | 26.1     | 33.59     |
| .29    | 29.19    | 30.41     | 28.29    | 31.31     | 27.41    | 32.19     | 26.57    | 33.3      |
| .30    | 0.30.20  | 359.29.40 | 0.29.28  | 359.30.32 | 0.28.39  | 359.31.21 | 0.27.52  | 359.32.8  |
| .31    | 0.31.21  | 359.28.39 | 0.30.27  | 359.29.33 | 0.29.36  | 359.30.24 | 0.28.48  | 359.31.12 |
| .32    | 32.21    | 27.39     | 31.26    | 28.34     | 30.33    | 29.27     | 29.44    | 30.16     |
| .33    | 33.22    | 26.38     | 32.25    | 27.35     | 31.31    | 28.29     | 30.40    | 29.20     |
| .34    | 34.23    | 25.37     | 33.24    | 26.36     | 32.28    | 27.32     | 31.35    | 28.25     |
| .35    | 35.23    | 24.37     | 34.23    | 25.37     | 33.25    | 26.35     | 32.31    | 27.29     |
| .36    | 36.24    | 23.36     | 35.22    | 24.38     | 34.22    | 25.38     | 33.27    | 26.33     |
| .37    | 37.25    | 22.35     | 36.21    | 23.39     | 35.20    | 24.40     | 34.23    | 25.37     |
| .38    | 38.25    | 21.35     | 37.19    | 22.41     | 36.17    | 23.43     | 35.18    | 24.42     |
| .39    | 39.26    | 20.34     | 38.18    | 21.42     | 37.14    | 22.46     | 36.14    | 23.46     |
| .40    | 0.40.27  | 359.19.33 | 0.39.17  | 359.20.43 | 0.38.12  | 359.21.48 | 0.37.10  | 359.22.50 |
| .41    | 0.41.27  | 359.18.33 | 0.40.16  | 359.19.44 | 0.39.9   | 359.20.51 | 0.38.6   | 359.21.54 |
| .42    | 42.28    | 17.32     | 41.15    | 18.45     | 40.6     | 19.54     | 39.1     | 20.59     |
| .43    | 43.29    | 16.31     | 42.14    | 17.46     | 41.4     | 18.56     | 39.57    | 20.3      |
| .44    | 44.29    | 15.31     | 43.13    | 16.47     | 42.1     | 17.59     | 40.53    | 19.7      |
| .45    | 45.30    | 14.30     | 44.12    | 15.48     | 42.58    | 17.2      | 41.46    | 18.12     |
| .46    | 46.31    | 13.29     | 45.11    | 14.49     | 43.55    | 16.5      | 42.44    | 17.16     |
| .47    | 47.31    | 12.29     | 46.10    | 13.50     | 44.53    | 15.7      | 43.40    | 16.20     |
| .48    | 48.32    | 11.28     | 47.9     | 12.51     | 45.50    | 14.10     | 44.36    | 15.24     |
| .49    | 49.33    | 10.27     | 48.8     | 11.52     | 46.48    | 13.12     | 45.31    | 14.29     |
| .50    | 0.50.33  | 359.9.27  | 0.49.7   | 359.10.53 | 0.47.45  | 359.12.15 | 0.46.27  | 359.13.33 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=340 公尺 |           | R=350 公尺 |           | R=360 公尺 |           | R=370 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .5 1   | 0.51.34  | 359. 8.26 | 0.50. 6  | 359. 9.54 | 0.48.42  | 359.11.18 | 0.47.23  | 359.12.37 |
| .5 2   | 52.35    | 7.25      | 51. 4    | 8.56      | 49.39    | 10.21     | 48.19    | 11.41     |
| .5 3   | 53.35    | 6.25      | 52. 3    | 7.57      | 50.37    | 9.23      | 49.15    | 10.45     |
| .5 4   | 54.36    | 5.24      | 53. 2    | 6.58      | 51.34    | 8.26      | 50.10    | 9.50      |
| .5 5   | 55.37    | 4.23      | 54. 1    | 5.59      | 52.31    | 7.29      | 51. 6    | 8.54      |
| .5 6   | 56.37    | 3.23      | 55. 0    | 5. 0      | 53.28    | 6.32      | 52. 2    | 7.58      |
| .5 7   | 57.38    | 2.22      | 55.59    | 4. 1      | 54.26    | 5.34      | 52.57    | 7. 3      |
| .5 8   | 58.39    | 1.21      | 56.58    | 3. 2      | 55.23    | 4.37      | 53.53    | 6. 7      |
| .5 9   | 59.39    | 0.21      | 57.57    | 2. 3      | 56.23    | 3.40      | 54.49    | 5.11      |
| .6 0   | 1. 0.40  | 358.59.20 | 0.58.56  | 359. 1. 4 | 0.57.18  | 359. 2.42 | 0.55.45  | 359. 4.15 |
| .6 1   | 1. 1.41  | 358.58.19 | 0.59.55  | 359. 0. 5 | 0.58.15  | 359. 1.45 | 0.56.41  | 359. 3.19 |
| .6 2   | 2. 41    | 57.19     | 1. 0.54  | 358.59. 6 | 59.12    | 0.48      | 57.36    | 2.24      |
| .6 3   | 3.42     | 56.18     | 1.53     | 59. 7     | 1. 0. 9  | 358.59.51 | 58.32    | 1.28      |
| .6 4   | 4.43     | 55.17     | 2.52     | 57. 8     | 1. 7     | 58.53     | 59.28    | 1.32      |
| .6 5   | 5.43     | 54.17     | 3.51     | 56. 9     | 2. 4     | 57.56     | 1. 0.23  | 358.59.37 |
| .6 6   | 6.44     | 53.16     | 4.50     | 55.10     | 3. 1     | 56.59     | 1.19     | 58.41     |
| .6 7   | 7.44     | 52.16     | 5.49     | 54.11     | 3.59     | 56. 1     | 2.15     | 57.45     |
| .6 8   | 8.45     | 51.15     | 6.47     | 53.13     | 4.56     | 55. 4     | 3.11     | 56.49     |
| .6 9   | 9.46     | 50.14     | 7.46     | 52.14     | 5.53     | 54. 7     | 4. 6     | 55.54     |
| .7 0   | 1.10.46  | 358.49.14 | 1. 8.45  | 358.51.15 | 1. 6.51  | 358.53. 9 | 1. 5. 2  | 358.54.58 |
| .7 1   | 1.11.47  | 358.48.13 | 1. 9.44  | 358.50.16 | 1. 7.48  | 358.52.12 | 1. 5.58  | 358.54. 2 |
| .7 2   | 12.48    | 47.12     | 10.43    | 49.17     | 8.45     | 51.15     | 6.54     | 53. 6     |
| .7 3   | 13.49    | 46.11     | 11.42    | 48.18     | 9.42     | 50.18     | 7.49     | 52.11     |
| .7 4   | 14.49    | 45.11     | 12.41    | 47.19     | 10.40    | 49.20     | 8.45     | 51.15     |
| .7 5   | 15.50    | 44.10     | 13.40    | 46.20     | 11.37    | 48.23     | 9.41     | 50.19     |
| .7 6   | 16.51    | 43. 9     | 14.39    | 45.21     | 12.34    | 47.26     | 10.37    | 49.23     |
| .7 7   | 17.51    | 42. 9     | 15.38    | 44.22     | 13.32    | 46.28     | 11.32    | 48.28     |
| .7 8   | 18.52    | 41. 8     | 16.37    | 43.23     | 14.29    | 45.31     | 12.28    | 47.32     |
| .7 9   | 19.53    | 40. 7     | 17.36    | 42.24     | 15.26    | 44.34     | 13.24    | 46.36     |
| .8 0   | 1.20.53  | 358.39. 7 | 1.18.35  | 358.41.25 | 1.16.23  | 358.43.37 | 1.14.20  | 358.45.40 |
| .8 1   | 1.21.54  | 358.38. 6 | 1.19.34  | 358.40.26 | 1.17.21  | 358.42.39 | 1.15.15  | 358.44.45 |
| .8 2   | 22.55    | 37. 5     | 20.33    | 39.27     | 18.18    | 41.42     | 16.11    | 43.49     |
| .8 3   | 23.55    | 36. 5     | 21.31    | 38.29     | 19.15    | 40.45     | 17. 7    | 42.53     |
| .8 4   | 24.56    | 35. 4     | 22.30    | 37.30     | 20.13    | 39.47     | 18. 3    | 41.57     |
| .8 5   | 25.57    | 34. 3     | 23.29    | 36.31     | 21.10    | 38.50     | 18.58    | 41. 2     |
| .8 6   | 26.57    | 33. 3     | 24.28    | 35.32     | 22. 7    | 37.53     | 19.54    | 40. 6     |
| .8 7   | 27.58    | 32. 2     | 25.27    | 34.33     | 23. 4    | 36.56     | 20.50    | 39.10     |
| .8 8   | 28.59    | 31. 1     | 26.26    | 33.34     | 24. 2    | 35.58     | 21.46    | 38.14     |
| .8 9   | 29.59    | 30. 1     | 27.25    | 32.35     | 24.59    | 35. 1     | 22.41    | 37.19     |
| .9 0   | 1.31. 0  | 358.29. 0 | 1.28.24  | 358.31.36 | 1.25.58  | 358.34. 4 | 1.23.37  | 358.36.23 |
| .9 1   | 1.32. 1  | 58.27.59  | 1.29.22  | 358.30.38 | 1.26.54  | 358.33. 6 | 1.24.33  | 358.35.27 |
| .9 2   | 33. 1    | 26.59     | 30.21    | 29.39     | 27.51    | 32. 9     | 25.29    | 34.31     |
| .9 3   | 34. 2    | 25.58     | 31.20    | 28.40     | 28.48    | 31.12     | 26.24    | 33.36     |
| .9 4   | 35. 3    | 24.57     | 32.19    | 27.41     | 29.46    | 30.14     | 27.20    | 32.40     |
| .9 5   | 36. 3    | 23.57     | 33.18    | 26.42     | 30.43    | 29.17     | 28.16    | 31.44     |
| .9 6   | 37. 4    | 22.56     | 34.17    | 25.43     | 31.40    | 28.20     | 29.12    | 30.48     |
| .9 7   | 38. 5    | 21.55     | 35.15    | 24.45     | 32.37    | 27.23     | 30. 7    | 29.53     |
| .9 8   | 39. 5    | 20.55     | 36.15    | 23.45     | 33.35    | 26.25     | 31. 3    | 28.57     |
| .9 9   | 40. 6    | 19.54     | 37.14    | 22.46     | 34.32    | 25.28     | 31.99    | 28. 1     |
| 1.0 0  | 1.41. 7  | 358.18.53 | 1.33.13  | 358.21.47 | 1.35.29  | 358.34.31 | 1.32.55  | 358.27. 5 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=380 公尺 |           | R=390 公尺 |           | R=400 公尺 |           | R=410 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| 0.0    | 0.54     | 359.59.6  | 0.53     | 359.59.7  | 0.51     | 359.59.9  | 0.50     | 359.59.10 |
| 0.02   | 1.49     | 58.11     | 1.46     | 58.14     | 1.43     | 58.17     | 1.40     | 58.20     |
| 0.03   | 2.43     | 57.17     | 2.39     | 57.21     | 2.35     | 57.25     | 2.31     | 57.29     |
| 0.04   | 3.37     | 56.23     | 3.16     | 56.44     | 3.26     | 56.34     | 3.32     | 56.28     |
| 0.05   | 4.31     | 55.28     | 4.24     | 55.35     | 4.18     | 55.42     | 4.12     | 55.48     |
| 0.06   | 5.26     | 54.34     | 5.17     | 54.43     | 5.9      | 54.51     | 5.2      | 54.58     |
| 0.07   | 6.20     | 53.40     | 6.10     | 53.50     | 6.1      | 53.59     | 5.52     | 54.8      |
| 0.08   | 7.14     | 52.46     | 7.3      | 52.57     | 6.52     | 53.8      | 6.42     | 53.18     |
| 0.09   | 8.9      | 51.51     | 7.56     | 52.4      | 7.44     | 52.16     | 7.33     | 52.27     |
| 0.1    | 0.8.3    | 359.50.57 | 0.8.49   | 359.51.11 | 0.8.35   | 359.51.24 | 0.8.23   | 359.51.37 |
| 0.11   | 9.57     | 359.50.3  | 9.42     | 359.50.18 | 9.27     | 359.50.33 | 9.13     | 359.50.47 |
| 0.12   | 10.51    | 49.9      | 10.35    | 49.25     | 10.19    | 49.41     | 10.4     | 49.56     |
| 0.13   | 11.46    | 48.14     | 11.28    | 48.32     | 11.10    | 48.50     | 10.54    | 49.6      |
| 0.14   | 12.40    | 47.20     | 12.20    | 47.40     | 12.2     | 47.58     | 11.44    | 48.16     |
| 0.15   | 13.34    | 46.25     | 13.13    | 46.47     | 12.53    | 47.7      | 12.35    | 47.25     |
| 0.16   | 14.28    | 45.32     | 14.6     | 45.54     | 13.45    | 46.15     | 13.25    | 46.35     |
| 0.17   | 15.23    | 44.37     | 14.59    | 45.1      | 14.37    | 45.23     | 14.15    | 45.45     |
| 0.18   | 16.17    | 43.43     | 15.52    | 44.8      | 15.28    | 44.32     | 15.6     | 44.54     |
| 0.19   | 17.11    | 42.49     | 16.45    | 43.15     | 16.20    | 43.40     | 15.56    | 44.4      |
| 0.2    | 0.18.6   | 359.41.54 | 0.17.38  | 359.42.22 | 0.17.11  | 359.42.49 | 0.16.47  | 359.43.13 |
| 0.21   | 19.0     | 359.41.0  | 18.31    | 359.41.29 | 18.3     | 359.41.57 | 17.37    | 359.42.23 |
| 0.22   | 19.54    | 40.6      | 19.23    | 40.37     | 18.54    | 41.6      | 18.27    | 41.33     |
| 0.23   | 20.48    | 39.12     | 20.16    | 39.44     | 19.46    | 40.14     | 19.17    | 40.43     |
| 0.24   | 21.43    | 38.17     | 21.9     | 38.51     | 20.37    | 39.23     | 20.8     | 39.52     |
| 0.25   | 22.37    | 37.23     | 22.2     | 37.58     | 21.29    | 38.31     | 20.58    | 39.2      |
| 0.26   | 23.31    | 36.29     | 22.55    | 37.5      | 22.21    | 37.39     | 21.48    | 38.12     |
| 0.27   | 24.26    | 35.34     | 23.48    | 36.12     | 23.12    | 36.48     | 22.38    | 37.22     |
| 0.28   | 25.20    | 34.40     | 24.41    | 35.19     | 24.4     | 35.56     | 23.29    | 36.31     |
| 0.29   | 26.14    | 33.45     | 25.34    | 34.26     | 24.55    | 35.5      | 24.19    | 35.41     |
| 0.3    | 0.27.8   | 359.32.52 | 0.26.27  | 359.33.33 | 0.25.47  | 359.34.13 | 0.25.9   | 359.34.51 |
| 0.31   | 28.3     | 359.31.57 | 27.20    | 359.32.40 | 26.38    | 359.33.22 | 26.0     | 359.34.0  |
| 0.32   | 28.57    | 31.9      | 28.12    | 31.48     | 27.30    | 32.30     | 26.50    | 33.10     |
| 0.33   | 29.51    | 30.9      | 29.5     | 30.55     | 28.21    | 31.39     | 27.40    | 32.20     |
| 0.34   | 30.45    | 29.14     | 29.58    | 30.2      | 29.13    | 30.47     | 28.30    | 31.30     |
| 0.35   | 31.40    | 28.20     | 30.51    | 29.9      | 30.5     | 29.55     | 29.21    | 30.39     |
| 0.36   | 32.34    | 27.26     | 31.44    | 28.16     | 30.56    | 29.4      | 30.11    | 29.49     |
| 0.37   | 33.28    | 26.32     | 32.37    | 27.23     | 31.48    | 28.12     | 31.2     | 28.59     |
| 0.38   | 34.23    | 25.37     | 33.30    | 26.30     | 32.39    | 27.21     | 31.52    | 28.8      |
| 0.39   | 35.17    | 24.43     | 34.23    | 25.37     | 33.31    | 26.29     | 32.42    | 27.18     |
| 0.4    | 0.36.11  | 359.23.49 | 0.35.15  | 359.24.45 | 0.34.22  | 359.25.38 | 0.33.32  | 359.26.28 |
| 0.41   | 37.5     | 359.22.55 | 36.8     | 359.23.52 | 35.14    | 359.24.46 | 34.23    | 359.25.37 |
| 0.42   | 38.0     | 22.0      | 37.1     | 22.59     | 36.5     | 23.55     | 35.13    | 24.47     |
| 0.43   | 38.54    | 21.6      | 37.54    | 22.6      | 36.57    | 23.3      | 36.3     | 23.57     |
| 0.44   | 39.48    | 20.12     | 38.47    | 21.13     | 37.49    | 22.11     | 36.54    | 23.6      |
| 0.45   | 40.43    | 19.17     | 39.40    | 20.20     | 38.40    | 21.20     | 37.44    | 22.16     |
| 0.46   | 41.37    | 18.23     | 40.33    | 19.27     | 39.32    | 20.28     | 38.34    | 21.29     |
| 0.47   | 42.31    | 17.29     | 41.26    | 18.34     | 40.23    | 19.37     | 39.25    | 20.35     |
| 0.48   | 43.25    | 16.35     | 42.19    | 17.41     | 41.15    | 18.45     | 40.15    | 19.45     |
| 0.49   | 44.20    | 15.40     | 43.12    | 16.48     | 42.7     | 17.53     | 41.5     | 18.55     |
| 0.5    | 0.45.14  | 359.14.46 | 0.44.4   | 359.15.56 | 0.42.58  | 359.17.2  | 0.41.56  | 359.18.4  |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=380 公尺 |           | R=300 公尺 |           | R=400 公尺 |           | R=410 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| 5.1    | 0.46.9   | 359.13.52 | 0.44.57  | 359.15.3  | 0.43.50  | 359.16.10 | 0.42.46  | 359.17.14 |
| 5.2    | 47.3     | 12.57     | 45.50    | 14.10     | 44.41    | 15.19     | 43.36    | 16.44     |
| 5.3    | 47.67    | 12.3      | 46.43    | 13.17     | 45.33    | 14.27     | 44.27    | 15.33     |
| 5.4    | 48.51    | 11.9      | 47.36    | 12.24     | 46.24    | 13.36     | 45.17    | 14.43     |
| 5.5    | 49.45    | 10.15     | 48.29    | 11.31     | 47.16    | 12.44     | 46.7     | 13.53     |
| 5.6    | 50.40    | 9.20      | 49.22    | 10.38     | 48.8     | 11.52     | 46.57    | 13.3      |
| 5.7    | 51.34    | 8.26      | 50.14    | 9.46      | 48.59    | 11.1      | 47.48    | 12.12     |
| 5.8    | 52.28    | 7.32      | 51.8     | 8.52      | 49.51    | 10.9      | 48.38    | 11.22     |
| 5.9    | 53.23    | 6.37      | 52.0     | 8.0       | 50.42    | 9.18      | 49.28    | 10.32     |
| 6.0    | 0.54.17  | 359.8.43  | 0.52.53  | 359.7.7   | 0.51.34  | 359.8.26  | 0.50.19  | 359.9.41  |
| 6.1    | 0.55.11  | 359.4.49  | 0.53.46  | 359.6.14  | 0.52.25  | 359.7.35  | 0.51.9   | 359.8.51  |
| 6.2    | 56.5     | 3.56      | 54.39    | 5.21      | 53.17    | 6.43      | 51.59    | 8.1       |
| 6.3    | 57.0     | 3.0       | 55.32    | 4.28      | 54.10    | 5.51      | 52.50    | 7.10      |
| 6.4    | 57.54    | 2.6       | 56.25    | 3.35      | 55.0     | 5.0       | 53.40    | 6.20      |
| 6.5    | 59.48    | 1.12      | 57.18    | 2.42      | 55.52    | 4.8       | 54.30    | 5.30      |
| 6.6    | 59.42    | 0.18      | 58.11    | 1.49      | 56.43    | 3.17      | 55.21    | 4.39      |
| 6.7    | 1.0.37   | 358.59.23 | 59.3     | 0.57      | 57.35    | 2.25      | 56.11    | 3.49      |
| 6.8    | 1.31     | 58.29     | 59.56    | 0.4       | 58.26    | 1.34      | 57.1     | 2.59      |
| 6.9    | 2.25     | 57.35     | 1.0.49   | 358.59.11 | 0.59.18  | 0.42      | 57.51    | 2.9       |
| 7.0    | 1.3.20   | 358.56.40 | 1.1.42   | 358.58.18 | 1.0.9    | 358.59.51 | 0.58.42  | 359.1.18  |
| 7.1    | 1.4.14   | 358.55.46 | 1.2.35   | 358.57.25 | 1.1.1    | 358.58.59 | 0.59.32  | 359.0.28  |
| 7.2    | 5.8      | 54.52     | 3.28     | 56.32     | 1.53     | 58.7      | 1.0.22   | 358.59.38 |
| 7.3    | 6.2      | 53.58     | 4.21     | 55.39     | 2.45     | 57.15     | 1.13     | 58.47     |
| 7.4    | 6.57     | 53.3      | 5.13     | 54.47     | 3.36     | 56.24     | 2.3      | 57.57     |
| 7.5    | 7.51     | 52.9      | 6.7      | 53.53     | 4.27     | 55.33     | 2.53     | 57.7      |
| 7.6    | 8.45     | 51.15     | 7.0      | 53.0      | 5.19     | 54.41     | 3.44     | 56.16     |
| 7.7    | 9.40     | 50.20     | 7.52     | 52.8      | 6.11     | 53.49     | 4.34     | 55.26     |
| 7.8    | 10.34    | 49.26     | 8.45     | 51.15     | 7.2      | 52.58     | 5.24     | 54.36     |
| 7.9    | 11.28    | 48.32     | 9.38     | 50.22     | 7.54     | 52.6      | 6.15     | 53.45     |
| 8.0    | 1.12.22  | 358.47.38 | 1.10.31  | 358.49.29 | 1.8.45   | 358.51.15 | 1.7.5    | 358.52.56 |
| 8.1    | 1.13.17  | 358.46.43 | 1.11.24  | 358.48.36 | 1.9.37   | 358.50.23 | 1.7.55   | 358.52.6  |
| 8.2    | 14.11    | 45.49     | 12.17    | 47.43     | 10.29    | 49.32     | 8.45     | 51.15     |
| 8.3    | 15.6     | 44.55     | 13.10    | 46.50     | 11.14    | 48.46     | 9.36     | 50.24     |
| 8.4    | 16.0     | 44.0      | 14.3     | 45.57     | 12.12    | 47.48     | 10.26    | 49.34     |
| 8.5    | 16.54    | 43.6      | 14.55    | 45.5      | 13.3     | 46.57     | 11.17    | 48.43     |
| 8.6    | 17.48    | 42.12     | 15.48    | 44.12     | 13.55    | 46.5      | 12.7     | 47.63     |
| 8.7    | 18.42    | 41.18     | 16.41    | 43.19     | 14.46    | 45.14     | 12.57    | 47.3      |
| 8.8    | 19.37    | 40.23     | 17.34    | 42.26     | 15.38    | 44.22     | 13.47    | 46.13     |
| 8.9    | 20.31    | 39.29     | 18.27    | 41.33     | 16.29    | 43.31     | 14.38    | 45.22     |
| 9.0    | 1.21.25  | 358.38.36 | 1.19.20  | 358.40.40 | 1.17.21  | 358.42.39 | 1.15.28  | 358.44.32 |
| 9.1    | 1.22.19  | 358.37.41 | 1.20.13  | 358.39.47 | 1.18.12  | 358.41.48 | 1.16.18  | 358.43.42 |
| 9.2    | 23.14    | 36.46     | 21.6     | 38.54     | 19.4     | 40.56     | 17.9     | 42.51     |
| 9.3    | 24.8     | 35.52     | 21.59    | 38.1      | 19.56    | 40.4      | 17.59    | 42.1      |
| 9.4    | 25.2     | 34.58     | 22.51    | 37.9      | 20.47    | 39.13     | 18.49    | 41.11     |
| 9.5    | 25.57    | 34.3      | 23.44    | 36.16     | 21.39    | 38.21     | 19.40    | 40.20     |
| 9.6    | 26.51    | 33.9      | 24.37    | 35.23     | 22.30    | 37.30     | 20.30    | 39.30     |
| 9.7    | 27.45    | 32.15     | 25.30    | 34.30     | 23.22    | 36.38     | 21.20    | 38.40     |
| 9.8    | 28.39    | 31.21     | 26.23    | 33.37     | 24.13    | 35.47     | 22.11    | 37.49     |
| 9.9    | 29.34    | 30.26     | 27.16    | 32.44     | 25.5     | 34.55     | 23.1     | 36.59     |
| 10.0   | 1.30.28  | 358.29.32 | 1.28.9   | 358.31.51 | 1.25.57  | 358.34.3  | 1.23.51  | 358.36.9  |

曲線偏角累計表(弧長百分之一)

| 弧長百分之一 | R=420 公尺 |           | R=430 公尺 |           | R=440 公尺 |           | R=450 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0.049    | 359.59.11 | 0.048    | 359.59.12 | 0.047    | 359.59.13 | 0.046    | 359.59.14 |
| .02    | 1.38     | 58.22     | 1.36     | 58.24     | 1.34     | 58.26     | 1.32     | 58.28     |
| .03    | 2.27     | 57.33     | 2.24     | 57.36     | 2.21     | 57.39     | 2.18     | 57.42     |
| .04    | 3.16     | 56.44     | 3.12     | 56.48     | 3.08     | 56.52     | 3.03     | 56.57     |
| .05    | 4.6      | 55.54     | 4.0      | 56.0      | 3.54     | 56.6      | 3.49     | 56.11     |
| .06    | 4.55     | 55.5      | 4.48     | 55.12     | 4.41     | 55.19     | 4.35     | 55.25     |
| .07    | 5.44     | 54.16     | 5.36     | 54.24     | 5.28     | 54.32     | 5.21     | 54.39     |
| .08    | 6.33     | 53.27     | 6.23     | 53.37     | 6.15     | 53.45     | 6.07     | 53.53     |
| .09    | 7.22     | 52.38     | 7.12     | 52.48     | 7.02     | 52.58     | 6.92     | 53.08     |
| .10    | 0.8.11   | 359.51.49 | 0.8.0    | 359.52.0  | 0.7.49   | 359.52.11 | 0.7.39   | 359.52.21 |
| .11    | 0.9.0    | 359.51.0  | 0.8.48   | 359.51.12 | 0.8.36   | 359.51.24 | 0.8.24   | 359.51.36 |
| .12    | 9.49     | 50.11     | 9.36     | 50.24     | 9.22     | 50.38     | 9.10     | 50.50     |
| .13    | 10.38    | 49.22     | 10.24    | 49.36     | 10.9     | 49.51     | 9.56     | 50.4      |
| .14    | 11.27    | 48.33     | 11.12    | 48.58     | 10.56    | 49.4      | 10.42    | 49.18     |
| .15    | 12.17    | 47.43     | 12.0     | 48.0      | 11.43    | 48.17     | 11.28    | 48.32     |
| .16    | 13.6     | 46.54     | 12.48    | 47.12     | 12.30    | 47.30     | 12.18    | 47.47     |
| .17    | 13.55    | 46.5      | 13.36    | 46.24     | 13.17    | 46.43     | 12.59    | 47.1      |
| .18    | 14.44    | 45.16     | 14.24    | 45.36     | 14.4     | 45.56     | 13.45    | 46.15     |
| .19    | 15.33    | 44.27     | 15.11    | 44.49     | 14.51    | 45.9      | 14.31    | 45.29     |
| .20    | 0.16.22  | 359.43.38 | 0.15.59  | 359.44.1  | 0.15.37  | 359.44.23 | 0.15.17  | 359.44.43 |
| .21    | 0.17.11  | 359.42.49 | 0.16.47  | 359.43.13 | 0.16.24  | 359.43.36 | 0.16.2   | 359.43.58 |
| .22    | 18.0     | 42.0      | 17.35    | 42.25     | 17.11    | 42.49     | 16.48    | 42.12     |
| .23    | 18.50    | 41.10     | 18.23    | 41.37     | 17.58    | 42.2      | 17.34    | 42.26     |
| .24    | 19.39    | 40.21     | 19.11    | 40.49     | 18.45    | 41.15     | 18.20    | 41.40     |
| .25    | 20.28    | 39.32     | 19.59    | 40.1      | 19.32    | 40.28     | 19.6     | 40.54     |
| .26    | 21.17    | 38.43     | 20.47    | 39.13     | 20.19    | 39.41     | 19.52    | 40.8      |
| .27    | 22.6     | 37.54     | 21.35    | 38.25     | 21.6     | 38.54     | 20.38    | 39.22     |
| .28    | 22.55    | 37.5      | 22.23    | 37.37     | 21.53    | 38.7      | 21.24    | 38.36     |
| .29    | 23.44    | 36.16     | 23.11    | 36.49     | 22.39    | 37.21     | 22.9     | 37.51     |
| .30    | 0.24.33  | 359.35.27 | 0.23.59  | 359.36.1  | 0.23.26  | 359.36.34 | 0.22.55  | 359.37.5  |
| .31    | 0.25.22  | 359.34.38 | 0.24.47  | 359.35.13 | 0.24.13  | 359.35.47 | 0.23.41  | 359.36.19 |
| .32    | 26.12    | 33.48     | 25.35    | 34.25     | 25.0     | 35.0      | 24.27    | 35.33     |
| .33    | 27.1     | 32.59     | 26.23    | 33.37     | 25.47    | 34.13     | 25.13    | 34.47     |
| .34    | 27.50    | 32.10     | 27.11    | 32.49     | 26.34    | 33.26     | 25.59    | 34.1      |
| .35    | 28.39    | 31.21     | 27.59    | 32.1      | 27.21    | 32.39     | 26.44    | 33.16     |
| .36    | 29.28    | 30.32     | 28.47    | 31.13     | 28.8     | 31.52     | 27.30    | 32.30     |
| .37    | 30.17    | 29.43     | 29.35    | 30.25     | 28.54    | 31.6      | 28.16    | 31.44     |
| .38    | 31.6     | 28.54     | 30.23    | 29.37     | 29.41    | 30.19     | 29.2     | 30.58     |
| .39    | 31.55    | 28.5      | 31.11    | 28.49     | 30.28    | 29.32     | 29.48    | 30.12     |
| .40    | 0.32.44  | 359.27.16 | 0.31.59  | 359.28.1  | 0.31.15  | 359.28.45 | 0.30.33  | 359.29.27 |
| .41    | 0.33.34  | 359.26.26 | 0.32.47  | 359.27.13 | 0.32.2   | 359.27.58 | 0.31.19  | 359.28.41 |
| .42    | 34.23    | 25.37     | 33.36    | 26.25     | 32.49    | 27.11     | 32.5     | 27.55     |
| .43    | 35.12    | 24.48     | 34.23    | 25.37     | 33.36    | 26.24     | 32.51    | 27.9      |
| .44    | 36.1     | 23.59     | 35.11    | 25.49     | 34.23    | 25.37     | 33.37    | 28.23     |
| .45    | 36.50    | 23.10     | 35.59    | 24.1      | 35.9     | 24.51     | 34.23    | 25.37     |
| .46    | 37.39    | 22.21     | 36.47    | 23.13     | 36.56    | 24.4      | 35.9     | 24.51     |
| .47    | 38.28    | 21.32     | 37.35    | 22.25     | 36.43    | 23.17     | 35.54    | 24.6      |
| .48    | 39.17    | 20.43     | 38.23    | 21.37     | 37.30    | 22.30     | 36.40    | 23.20     |
| .49    | 40.6     | 19.54     | 39.11    | 20.49     | 38.17    | 21.43     | 37.25    | 22.34     |
| .50    | 0.40.55  | 359.19.5  | 0.39.59  | 359.20.1  | 0.39.4   | 359.20.56 | 0.38.12  | 359.21.48 |



曲線偏角累計表 (弧長百分之一)

| 弧長百分之一      | R=420 公尺       |                  | R=430 公尺       |                 | R=440 公尺       |                  | R=450 公尺       |                  |
|-------------|----------------|------------------|----------------|-----------------|----------------|------------------|----------------|------------------|
|             | 右              | 左                | 右              | 左               | 右              | 左                | 右              | 左                |
| .51         | 0.41.45        | 359.18.15        | 0.40.47        | 359.19.13       | 0.9.51         | 359.20.9         | 0.38.58        | 359.21.2         |
| .52         | 42.34          | 17.26            | 41.24          | 18.26           | 40.38          | 19.22            | 39.44          | 20.16            |
| .53         | 43.23          | 16.37            | 42.22          | 17.38           | 41.24          | 18.36            | 40.29          | 19.31            |
| .54         | 44.12          | 15.48            | 43.10          | 16.50           | 42.11          | 17.49            | 41.16          | 18.44            |
| .55         | 45.1           | 14.59            | 43.58          | 16.2            | 42.58          | 17.2             | 42.2           | 17.58            |
| .56         | 45.50          | 14.10            | 44.46          | 15.14           | 43.45          | 16.15            | 42.47          | 17.13            |
| .57         | 46.39          | 13.21            | 45.34          | 14.26           | 44.32          | 15.28            | 43.33          | 16.23            |
| .58         | 47.26          | 12.34            | 46.22          | 13.38           | 45.19          | 14.41            | 44.19          | 15.41            |
| .59         | 48.18          | 11.42            | 47.10          | 12.50           | 46.6           | 13.54            | 45.5           | 14.55            |
| .60         | <b>0.49.7</b>  | <b>359.10.53</b> | <b>0.47.58</b> | <b>359.12.2</b> | <b>0.46.53</b> | <b>359.13.7</b>  | <b>0.46.50</b> | <b>359.14.10</b> |
| .61         | 0.49.56        | 359.10.4         | 0.48.47        | 359.11.13       | 0.47.39        | 359.12.21        | 0.46.36        | 359.13.24        |
| .62         | 50.45          | 9.15             | 49.34          | 10.26           | 48.26          | 11.34            | 47.22          | 12.38            |
| .63         | 51.34          | 8.26             | 50.22          | 9.38            | 49.13          | 10.47            | 48.8           | 11.52            |
| .64         | 52.23          | 7.37             | 51.10          | 8.50            | 50.0           | 10.0             | 48.54          | 11.6             |
| .65         | 53.12          | 6.48             | 51.58          | 8.2             | 50.47          | 9.13             | 49.39          | 10.21            |
| .66         | 54.1           | 5.59             | 52.46          | 7.14            | 51.34          | 8.26             | 50.25          | 9.35             |
| .67         | 54.50          | 5.10             | 53.34          | 6.26            | 52.21          | 7.39             | 51.11          | 8.49             |
| .68         | 55.39          | 4.21             | 54.22          | 5.38            | 53.8           | 6.52             | 51.57          | 8.3              |
| .69         | 56.29          | 3.31             | 55.10          | 4.50            | 53.55          | 6.5              | 52.43          | 7.17             |
| .70         | <b>0.57.18</b> | <b>359.2.42</b>  | <b>0.55.58</b> | <b>359.4.2</b>  | <b>0.51.41</b> | <b>359.5.19</b>  | <b>0.53.29</b> | <b>359.6.31</b>  |
| .71         | 0.58.7         | 359.1.53         | 0.56.46        | 359.3.14        | 0.55.28        | 359.4.32         | 0.54.15        | 359.5.45         |
| .72         | 58.56          | 1.4              | 57.34          | 2.26            | 56.15          | 3.45             | 55.0           | 5.0              |
| .73         | 59.45          | 0.15             | 58.22          | 1.38            | 57.2           | 2.58             | 55.46          | 4.14             |
| .74         | 1.0.34         | 358.59.26        | 59.10          | 0.50            | 57.49          | 2.11             | 56.32          | 3.28             |
| .75         | 1.23           | 58.37            | 59.58          | 0.2             | 58.38          | 1.22             | 57.18          | 2.42             |
| .76         | 2.13           | 57.47            | 1.0.46         | 358.59.14       | 59.23          | 0.37             | 58.4           | 1.56             |
| .77         | 3.2            | 56.58            | 1.34           | 58.26           | 1.0.10         | 358.59.50        | 58.50          | 1.10             |
| .78         | 3.51           | 56.9             | 2.22           | 57.38           | 0.56           | 59.4             | 59.35          | 0.25             |
| .79         | 4.40           | 55.20            | 3.10           | 56.50           | 1.43           | 58.17            | 1.0.21         | 358.59.39        |
| .80         | <b>1.5.29</b>  | <b>358.54.31</b> | <b>1.3.58</b>  | <b>358.56.2</b> | <b>1.2.30</b>  | <b>358.57.30</b> | <b>1.1.7</b>   | <b>358.58.53</b> |
| .81         | 1.6.18         | 358.53.42        | 1.4.46         | 358.55.14       | 1.3.17         | 358.56.43        | 1.1.53         | 358.58.7         |
| .82         | 7.7            | 52.53            | 5.33           | 54.27           | 4.4            | 55.56            | 2.39           | 57.21            |
| .83         | 7.56           | 52.4             | 6.21           | 53.39           | 4.51           | 55.9             | 3.25           | 56.35            |
| .84         | 8.45           | 51.15            | 7.9            | 52.51           | 5.38           | 54.22            | 4.10           | 55.50            |
| .85         | 9.35           | 50.25            | 7.57           | 52.3            | 6.25           | 53.35            | 4.56           | 55.4             |
| .86         | 10.23          | 49.37            | 8.45           | 51.15           | 7.11           | 52.49            | 5.42           | 54.18            |
| .87         | 11.13          | 48.47            | 9.33           | 50.27           | 7.56           | 52.4             | 6.28           | 53.32            |
| .88         | 12.2           | 47.58            | 10.21          | 49.39           | 8.45           | 51.15            | 7.14           | 52.46            |
| .89         | 12.51          | 47.9             | 11.9           | 48.51           | 9.32           | 50.28            | 8.0            | 52.0             |
| .90         | <b>1.13.40</b> | <b>358.46.20</b> | <b>1.11.57</b> | <b>358.48.3</b> | <b>1.10.19</b> | <b>358.49.41</b> | <b>1.8.45</b>  | <b>358.51.15</b> |
| .91         | 1.14.29        | 358.45.31        | 1.12.45        | 358.47.15       | 1.11.6         | 358.48.54        | 1.9.31         | 358.50.29        |
| .92         | 15.18          | 44.32            | 13.33          | 46.27           | 11.63          | 48.7             | 10.17          | 49.43            |
| .93         | 16.7           | 43.63            | 14.21          | 45.39           | 12.40          | 47.20            | 11.3           | 48.57            |
| .94         | 16.56          | 43.4             | 15.9           | 44.51           | 13.27          | 46.33            | 11.49          | 48.11            |
| .95         | 17.45          | 42.15            | 15.57          | 44.3            | 14.13          | 45.47            | 12.35          | 47.25            |
| .96         | 18.35          | 41.25            | 16.45          | 43.15           | 15.0           | 45.0             | 13.20          | 46.40            |
| .97         | 19.24          | 40.36            | 17.33          | 42.27           | 15.47          | 44.13            | 14.6           | 45.54            |
| .98         | 20.13          | 39.47            | 18.21          | 41.39           | 16.34          | 43.26            | 14.52          | 45.8             |
| .99         | 21.2           | 38.58            | 19.9           | 40.51           | 17.21          | 42.39            | 15.38          | 44.22            |
| <b>1.00</b> | <b>1.21.51</b> | <b>358.38.9</b>  | <b>1.19.57</b> | <b>358.40.3</b> | <b>1.18.8</b>  | <b>358.41.52</b> | <b>1.18.24</b> | <b>358.43.36</b> |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=460 公尺 |           | R=470 公尺 |           | R=480 公尺 |           | R=490 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0. 0.45  | 359.59.15 | 0. 0.46  | 359.59.14 | 0. 0.43  | 359.59:17 | 0. 0.42  | 359.59.18 |
| .02    | 1.30     | 58.30     | 1.28     | 58.32     | 1.26     | 58.34     | 1.24     | 58.36     |
| .03    | 2.15     | 57.45     | 2.12     | 57.48     | 2. 9     | 57.51     | 2. 6     | 57.54     |
| .04    | 2.59     | 57. 1     | 2.56     | 57. 4     | 2.52     | 57. 8     | 2.48     | 57.12     |
| .05    | 3.44     | 56.16     | 3.39     | 56.21     | 3.35     | 56.25     | 3.18     | 56.42     |
| .06    | 4.29     | 55.31     | 4.23     | 55.37     | 4.16     | 55.42     | 4.13     | 55.47     |
| .07    | 5.14     | 54.46     | 5. 7     | 54.53     | 5. 1     | 54.59     | 4.55     | 55.05     |
| .08    | 5.59     | 54. 1     | 5.57     | 54. 9     | 5.44     | 54.16     | 5.37     | 54.23     |
| .09    | 6.44     | 53.16     | 6.35     | 53.25     | 6.27     | 53.33     | 6.19     | 53.41     |
| .10    | 0. 7.19  | 359.52.32 | 0. 7.19  | 359.52.41 | 0. 7.10  | 359.52.50 | 0. 7.01  | 359.52.59 |
| .11    | 0. 8.13  | 359.51.47 | 0. 8. 3  | 359.51.57 | 0. 7.53  | 359.52. 7 | 0. 7.43  | 359.52.17 |
| .12    | 8.58     | 51. 2     | 8.46     | 51.14     | 8.38     | 51.22     | 8.25     | 51.35     |
| .13    | 9.43     | 50.17     | 9.30     | 50.30     | 9.19     | 50.41     | 9.07     | 50.57     |
| .14    | 10.28    | 49.32     | 10.14    | 49.46     | 10. 2    | 49.58     | 9.49     | 50.11     |
| .15    | 11.13    | 48.47     | 10.58    | 49. 2     | 10.45    | 49.15     | 10.31    | 49.29     |
| .16    | 11.58    | 48. 2     | 11.42    | 48.18     | 11.27    | 48.33     | 11.14    | 48.46     |
| .17    | 12.42    | 47.18     | 12.26    | 47.34     | 12.11    | 47.49     | 11.56    | 48.04     |
| .18    | 13.27    | 46.33     | 13.10    | 46.50     | 12.53    | 47. 7     | 12.38    | 47.22     |
| .19    | 14.12    | 45.48     | 13.54    | 46. 6     | 13.36    | 46.24     | 13.20    | 46.40     |
| .20    | 0.14.57  | 359.45.03 | 0.14.57  | 359.45.23 | 0.14.19  | 359.45.41 | 0.14.02  | 359.45.58 |
| .21    | 0.15.42  | 359.44.18 | 0.15.21  | 359.44.39 | 0.15. 2  | 359.44.58 | 0.14.44  | 359.45.16 |
| .22    | 16.26    | 43.34     | 16. 5    | 43.55     | 15.45    | 44.15     | 15.26    | 44.34     |
| .23    | 17.11    | 42.49     | 16.49    | 43.21     | 16.28    | 43.32     | 16. 8    | 43.52     |
| .24    | 17.56    | 42. 4     | 17.33    | 42.27     | 17.11    | 42.49     | 16.50    | 43.10     |
| .25    | 18.41    | 41.19     | 18.17    | 41.43     | 17.54    | 42. 6     | 17.32    | 42.28     |
| .26    | 19.26    | 40.34     | 19. 1    | 40.59     | 18.37    | 41.23     | 18.15    | 41.45     |
| .27    | 20.11    | 39.49     | 19.45    | 40.15     | 19.20    | 40.40     | 18.57    | 41.03     |
| .28    | 20.56    | 39. 4     | 20.29    | 39.31     | 20. 3    | 39.57     | 19.39    | 40.21     |
| .29    | 21.40    | 38.20     | 21.13    | 38.47     | 20.46    | 39.14     | 20.21    | 39.39     |
| .30    | 0.22.25  | 359.37.35 | 0.21.57  | 359.38. 3 | 0.21.29  | 359.38.31 | 0.21. 3  | 359.38.59 |
| .31    | 0.23.10  | 359.36.50 | 0.22.40  | 359.37.20 | 0.22.12  | 359.37.46 | 0.21.45  | 359.38.15 |
| .32    | 23.55    | 36. 5     | 23.24    | 36.36     | 22.55    | 37. 5     | 22.27    | 37.33     |
| .33    | 24.40    | 35.20     | 24. 8    | 35.52     | 23.38    | 36.22     | 23. 9    | 36.51     |
| .34    | 25.25    | 34.35     | 24.52    | 35. 8     | 24.21    | 35.39     | 23.61    | 36. 9     |
| .35    | 26.10    | 33.50     | 25.36    | 34.24     | 25. 4    | 34.56     | 24.33    | 35.27     |
| .36    | 26.54    | 33. 6     | 26.20    | 33.40     | 25.47    | 34.13     | 25.15    | 34.45     |
| .37    | 27.39    | 32.21     | 27. 4    | 32.56     | 26.30    | 33.30     | 25.57    | 34. 3     |
| .38    | 28.24    | 31.36     | 27.48    | 32.12     | 27.13    | 32.47     | 26.40    | 33.20     |
| .39    | 29. 9    | 30.51     | 28.32    | 31.28     | 27.56    | 32. 4     | 27.22    | 32.38     |
| .40    | 0.29.54  | 359.30. 6 | 0.29.15  | 359.30.45 | 0.28.39  | 359.31.21 | 0.28. 4  | 359.31.56 |
| .41    | 0.30.38  | 359.29.22 | 0.29.59  | 359.30. 1 | 0.29.22  | 359.30.38 | 0.28.46  | 359.31.14 |
| .42    | 31.23    | 28.37     | 30.43    | 29.17     | 30. 5    | 29.55     | 29.28    | 30.32     |
| .43    | 32. 8    | 27.52     | 31.27    | 28.33     | 30.48    | 29.12     | 30.10    | 29.50     |
| .44    | 32.53    | 27. 7     | 32.11    | 27.49     | 31.31    | 28.29     | 30.52    | 29. 8     |
| .45    | 33.38    | 26.22     | 32.55    | 27. 5     | 32.13    | 27.47     | 31.34    | 28.26     |
| .46    | 34.23    | 25.37     | 33.39    | 26.21     | 32.57    | 27. 3     | 32.16    | 27.44     |
| .47    | 35. 7    | 24.53     | 34.23    | 25.37     | 33.40    | 26.20     | 32.59    | 27. 1     |
| .48    | 35.52    | 24. 8     | 35. 6    | 24.54     | 34.23    | 25.37     | 33.41    | 26.19     |
| .49    | 36.37    | 23.23     | 35.50    | 24.10     | 35. 6    | 24.54     | 34.23    | 25.37     |
| .50    | 0.37.22  | 359.22.38 | 0.36.34  | 359.23.26 | 0.35.49  | 359.24.11 | 0.35. 5  | 359.24.55 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=460 公尺 |           | R=470 公尺 |           | R=480 公尺 |           | R=490 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .5 1   | 0.38. 7  | 359.21.53 | 0.37.18  | 359.22.42 | 0.36.31  | 359.23.29 | 0.35.47  | 359.24.13 |
| .5 2   | 38.52    | 21. 8     | 38. 2    | 21.58     | 37.14    | 22.46     | 36.29    | 23.31     |
| .5 3   | 39.36    | 20.24     | 38.46    | 21.14     | 37.57    | 22. 3     | 37.11    | 22.49     |
| .5 4   | 40.21    | 19.39     | 39.30    | 20.30     | 38.41    | 21.19     | 37.53    | 22. 7     |
| .5 5   | 41. 6    | 18.54     | 40.14    | 19.46     | 39.23    | 20.37     | 38.35    | 21.25     |
| .5 6   | 41.51    | 18. 9     | 40.57    | 19. 3     | 40. 6    | 19.54     | 39.17    | 20.43     |
| .5 7   | 42.36    | 17.24     | 41.41    | 18.19     | 40.50    | 19.10     | 39.59    | 20. 1     |
| .5 8   | 43.21    | 16.39     | 42.25    | 17.35     | 41.32    | 18.28     | 40.42    | 19.18     |
| .5 9   | 44. 6    | 15.54     | 43. 9    | 16.51     | 42.15    | 17.45     | 41.24    | 18.35     |
| .6 0   | 0.44.50  | 359.15.10 | 0.43.53  | 359.16. 7 | 0.42.58  | 359.17. 2 | 0.42. 6  | 359.17.54 |
| .6 1   | 0.45.35  | 359.14.25 | 0.44.37  | 359.15.23 | 0.43.41  | 359.16.19 | 0.42.48  | 359.17.12 |
| .6 2   | 46.20    | 13.40     | 45.21    | 14.39     | 44.24    | 15.36     | 43.30    | 16.30     |
| .6 3   | 47. 5    | 12.55     | 46. 5    | 13.55     | 45. 7    | 14.53     | 44.12    | 15.48     |
| .6 4   | 47.50    | 12.10     | 46.49    | 13.11     | 45.50    | 14.10     | 44.54    | 15. 6     |
| .6 5   | 48.34    | 11.26     | 47.32    | 12.28     | 46.33    | 13.27     | 45.36    | 14.24     |
| .6 6   | 49.19    | 10.41     | 48.16    | 11.44     | 47.16    | 12.44     | 46.18    | 13.42     |
| .6 7   | 50. 4    | 9.56      | 49. 0    | 11. 0     | 47.59    | 12. 1     | 47. 0    | 13. 0     |
| .6 8   | 50.49    | 9.11      | 49.44    | 10.16     | 48.42    | 11.18     | 47.42    | 12.18     |
| .6 9   | 51.34    | 8.26      | 50.28    | 9.32      | 49.25    | 10.35     | 48.25    | 11.35     |
| .7 0   | 0.52.19  | 359. 7.41 | 0.51.12  | 359. 8.48 | 0.50. 8  | 359. 9.52 | 0.49. 7  | 359.10.53 |
| .7 1   | 0.53. 4  | 359. 6.56 | 0.51.56  | 359. 8. 4 | 0.50.51  | 359. 9. 9 | 0.49.49  | 359.10.11 |
| .7 2   | 53.48    | 6.12      | 52.40    | 7.20      | 51.34    | 8.26      | 50.31    | 9.29      |
| .7 3   | 54.33    | 5.27      | 53.24    | 6.36      | 52.17    | 7.43      | 51.13    | 8.47      |
| .7 4   | 55.18    | 4.42      | 54. 8    | 5.52      | 53. 0    | 7. 0      | 52.55    | 7. 6      |
| .7 5   | 56. 3    | 3.57      | 54.51    | 5. 9      | 53.43    | 6.17      | 52.37    | 7.23      |
| .7 6   | 56.48    | 3.12      | 55.35    | 4.25      | 54.26    | 5.34      | 53.19    | 6.41      |
| .7 7   | 57.33    | 2.27      | 56.19    | 3.41      | 55. 9    | 4.51      | 54. 1    | 5.69      |
| .7 8   | 58.17    | 1.43      | 57. 3    | 2.67      | 55.52    | 4. 8      | 54.43    | 5.17      |
| .7 9   | 59. 2    | 0.58      | 57.47    | 2.13      | 56.35    | 3.25      | 55.26    | 4.34      |
| .8 0   | 1.59.47  | 358. 0.13 | 0.58.31  | 359. 1.29 | 0.57.18  | 359. 2.42 | 0.56. 8  | 358. 3.52 |
| .8 1   | 1. 0.32  | 358.59.28 | 0.59.15  | 359. 0.45 | 0.58. 1  | 359. 1.59 | 0.56.50  | 359. 3.10 |
| .8 2   | 1.17     | 58.43     | 59.59    | 0. 1      | 58.44    | 1.16      | 57.32    | 2.28      |
| .8 3   | 2. 2     | 57.58     | 1. 0.42  | 358.59.18 | 59.27    | 0.33      | 58.14    | 1.46      |
| .8 4   | 2.46     | 57.14     | 1.26     | 58.34     | 1. 0.10  | 358.59.50 | 58.56    | 1. 4      |
| .8 5   | 3.32     | 56.28     | 2.10     | 57.60     | 0.63     | 59. 7     | 59.39    | 0.22      |
| .8 6   | 4.16     | 55.44     | 2.54     | 57. 6     | 1.36     | 58.24     | 0.20     | 358.59.40 |
| .8 7   | 5.11     | 54.49     | 3.38     | 56.22     | 2.18     | 57.42     | 1. 2     | 58.58     |
| .8 8   | 5.46     | 54.14     | 4.22     | 55.38     | 3. 2     | 56.58     | 1.44     | 58.16     |
| .8 9   | 6.31     | 53.29     | 5. 6     | 54.54     | 3.45     | 56.15     | 2.27     | 57.33     |
| .9 0   | 1. 7.16  | 358.52.45 | 1. 5.50  | 358.54.10 | 1. 4.27  | 358.55.33 | 1. 8. 8  | 358.56.51 |
| .9 1   | 1. 8. 0  | 358.52. 0 | 1. 6.33  | 358.53.27 | 1. 5.10  | 358.54.50 | 1. 3.51  | 358.55. 9 |
| .9 2   | 8.45     | 51.15     | 7.17     | 52.43     | 5.53     | 54. 7     | 4.33     | 55.27     |
| .9 3   | 9.30     | 50.30     | 8. 1     | 51.59     | 6.36     | 53.24     | 5.15     | 54.45     |
| .9 4   | 10.15    | 49.45     | 8.45     | 51.15     | 7.19     | 52.41     | 5.67     | 54. 3     |
| .9 5   | 11. 0    | 49. 0     | 9.29     | 50.31     | 8. 2     | 51.58     | 6.37     | 53.23     |
| .9 6   | 11.45    | 48.15     | 10.13    | 49.47     | 8.45     | 51.15     | 7.21     | 52.39     |
| .9 7   | 12.30    | 47.30     | 10.57    | 49. 3     | 9.28     | 50.32     | 8. 3     | 51.57     |
| .9 8   | 13.14    | 46.45     | 11.41    | 48.11     | 10.11    | 49.49     | 8.45     | 51.15     |
| .9 9   | 13.59    | 46. 1     | 12.24    | 47.36     | 10.64    | 49. 6     | 9.27     | 50.33     |
| 1.0 0  | 1.14.44  | 358.45.16 | 1.13. 9  | 358.46.51 | 1.11.37  | 358.48.23 | 1.10.10  | 358.49.50 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=500 公尺 |           | R=510 公尺 |           | R=520 公尺 |           | R=530 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0. 0.41  | 359.59.19 | 0. 0.40  | 359.59.20 | 0. 0.40  | 359.59.20 | 0. 0.39  | 359.59.21 |
| .02    | 1.22     | 58.33     | 1.21     | 58.39     | 1.19     | 58.41     | 1.18     | 58.42     |
| .03    | 2. 4     | 57.56     | 2. 1     | 57.59     | 1.59     | 58. 1     | 1.57     | 58. 3     |
| .04    | 2.45     | 57.15     | 2.42     | 57.18     | 2.39     | 57.21     | 2.36     | 57.24     |
| .05    | 3.26     | 56.34     | 3.22     | 56.38     | 3.18     | 56.42     | 3.15     | 56.45     |
| .06    | 4. 7     | 55.53     | 4. 3     | 55.57     | 3.58     | 56. 2     | 3.54     | 56. 6     |
| .07    | 4.49     | 55.11     | 4.43     | 55.17     | 4.38     | 55.22     | 4.32     | 55.28     |
| .08    | 5.30     | 54.30     | 5.24     | 54.36     | 5.17     | 54.43     | 5.11     | 54.49     |
| .09    | 6.11     | 53.49     | 6. 4     | 53.56     | 5.57     | 54. 3     | 5.50     | 54.10     |
| .10    | 0. 6.52  | 359.53. 8 | 0. 6.44  | 359.53.16 | 0. 6.37  | 359.53.23 | 0. 6.29  | 359.53.31 |
| .11    | 0. 7.34  | 359.52.26 | 0. 7.25  | 359.52.35 | 0. 7.16  | 359.52.44 | 0. 7. 8  | 359.52.52 |
| .12    | 8.15     | 51.45     | 8. 5     | 51.55     | 7.56     | 52. 4     | 7.47     | 52.13     |
| .13    | 8.56     | 51. 4     | 8.46     | 51.14     | 8.36     | 51.24     | 8.26     | 51.34     |
| .14    | 9.37     | 50.23     | 9.26     | 50.34     | 9.15     | 50.45     | 9. 6     | 50.55     |
| .15    | 10.19    | 49.41     | 10. 7    | 49.53     | 9.55     | 50. 5     | 9.44     | 50.16     |
| .16    | 11. 0    | 49. 0     | 10.47    | 49.13     | 10.35    | 49.25     | 10.23    | 49.37     |
| .17    | 11.41    | 48.19     | 11.28    | 48.32     | 11.14    | 48.46     | 11. 2    | 48.58     |
| .18    | 12.22    | 47.38     | 12. 8    | 47.52     | 11.54    | 48. 6     | 11.41    | 48.19     |
| .19    | 13. 4    | 46.56     | 12.48    | 47.12     | 12.34    | 47.26     | 12.19    | 47.41     |
| .20    | 0.13.45  | 359.46.15 | 0.13.29  | 359.46.31 | 0.13.13  | 359.46.47 | 0.12.58  | 359.47. 2 |
| .21    | 0.14.26  | 359.45.34 | 0.14. 9  | 359.45.51 | 0.13.53  | 359.46. 7 | 0.13.37  | 359.46.23 |
| .22    | 15. 8    | 44.52     | 14.50    | 45.10     | 14.33    | 45.27     | 14.16    | 45.44     |
| .23    | 15.49    | 44.11     | 15.30    | 44.30     | 15.12    | 44.48     | 14.55    | 45. 5     |
| .24    | 16.30    | 43.30     | 16.11    | 43.49     | 15.52    | 44. 8     | 15.34    | 44.26     |
| .25    | 17.11    | 42.49     | 16.51    | 43. 9     | 16.32    | 43.28     | 16.13    | 43.47     |
| .26    | 17.52    | 42. 8     | 17.32    | 42.28     | 17.11    | 42.49     | 16.52    | 43. 8     |
| .27    | 18.34    | 41.26     | 18.12    | 41.48     | 17.51    | 42. 9     | 17.31    | 42.29     |
| .28    | 19.15    | 40.45     | 18.53    | 41. 7     | 18.31    | 41.29     | 18.10    | 41.50     |
| .29    | 19.56    | 40. 4     | 19.33    | 40.27     | 19.10    | 40.50     | 18.48    | 41.12     |
| .30    | 0.20.38  | 359.39.22 | 0.20.13  | 359.39.47 | 0.19.50  | 359.40.10 | 0.19.27  | 359.40.33 |
| .31    | 0.21.19  | 359.38.41 | 0.20.54  | 359.39. 6 | 0.20.30  | 359.39.30 | 0.20. 6  | 359.39.54 |
| .32    | 22. 0    | 38. 0     | 21.34    | 38.26     | 21. 9    | 38.51     | 20.45    | 39.15     |
| .33    | 22.41    | 37.19     | 22.15    | 37.45     | 21.49    | 38.11     | 21.24    | 38.35     |
| .34    | 23.23    | 36.37     | 22.56    | 37. 5     | 22.29    | 37.31     | 22. 3    | 37.57     |
| .35    | 24. 4    | 35.56     | 23.36    | 36.24     | 23. 8    | 36.52     | 22.42    | 37.18     |
| .36    | 24.45    | 35.15     | 24.16    | 35.44     | 23.48    | 36.12     | 23.21    | 36.39     |
| .37    | 25.26    | 34.34     | 24.57    | 35. 3     | 24.28    | 35.32     | 24. 0    | 36. 0     |
| .38    | 26. 8    | 33.52     | 25.37    | 34.23     | 25. 7    | 34.53     | 24.39    | 35.21     |
| .39    | 26.49    | 33.11     | 26.17    | 33.43     | 26.47    | 34.13     | 25.18    | 34.42     |
| .40    | 0.27.30  | 359.32.30 | 0.26.58  | 359.33. 2 | 0.26.27  | 359.33.33 | 0.25.57  | 359.34. 3 |
| .41    | 0.28.11  | 359.31.49 | 0.27.38  | 359.32.22 | 0.27. 6  | 359.32.54 | 0.26.36  | 359.33.24 |
| .42    | 28.53    | 31. 7     | 28.19    | 31.41     | 27.46    | 32.14     | 27.14    | 32.46     |
| .43    | 29.34    | 30.26     | 28.59    | 31. 1     | 28.26    | 31.34     | 27.53    | 32. 7     |
| .44    | 30.15    | 29.45     | 29.40    | 30.20     | 29. 5    | 30.55     | 28.32    | 31.28     |
| .45    | 30.56    | 29. 4     | 30.20    | 29.40     | 29.45    | 30.15     | 29.11    | 30.49     |
| .46    | 31.36    | 28.22     | 31. 1    | 28.59     | 30.25    | 29.35     | 29.50    | 30.10     |
| .47    | 32.19    | 27.41     | 31.41    | 28.19     | 31. 4    | 28.56     | 30.26    | 29.34     |
| .48    | 33. 0    | 27. 0     | 32.21    | 27.39     | 31.44    | 28.16     | 31. 8    | 28.52     |
| .49    | 33.41    | 26.19     | 33. 2    | 26.58     | 32.24    | 27.36     | 31.47    | 28.13     |
| .50    | 0.34.23  | 359.25.37 | 0.33.42  | 359.26.18 | 0.33. 3  | 359.26.57 | 0.32.26  | 359.27.34 |

曲線偏角累計表(弧長百分之一)

| 弧長百分之一 | R=500 公尺 |           | R=510 公尺 |           | R=520 公尺 |           | R=530 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .5 1   | 0.35. 4  | 359.24.56 | 0.34.23  | 359.25.37 | 0.33.43  | 359.26.17 | 0.33. 5  | 359.26.55 |
| .5 2   | 35.45    | 24.15     | 35. 3    | 24.57     | 34.23    | 25.37     | 33.44    | 26.16     |
| .5 3   | 35.26    | 23.34     | 35.44    | 24.16     | 35. 2    | 24.58     | 34.23    | 25.37     |
| .5 4   | 37. 8    | 22.52     | 36.24    | 23.36     | 35.42    | 24.18     | 35. 2    | 24.58     |
| .5 5   | 37.49    | 22.11     | 37. 5    | 22.55     | 36.22    | 23.38     | 35.40    | 24.20     |
| .5 6   | 38.30    | 21.30     | 37.45    | 22.15     | 37. 1    | 22.59     | 35.19    | 23.41     |
| .5 7   | 39.11    | 20.49     | 38.25    | 21.35     | 37.41    | 22.19     | 36.00    | 23. 2     |
| .5 8   | 39.53    | 20. 7     | 39. 6    | 20.54     | 38.21    | 21.39     | 37.37    | 22.23     |
| .5 9   | 40.34    | 19.26     | 39.46    | 20.14     | 39. 0    | 21. 0     | 38.16    | 21.44     |
| .6 0   | 0.41.15  | 359.19.45 | 0.40.27  | 359.19.33 | 0.39.40  | 359.20.20 | 0.38.55  | 359.21. 5 |
| .6 1   | 0.41.56  | 359.18. 4 | 0.41. 7  | 359.18.53 | 0.40.20  | 359.19.40 | 0.39.34  | 359.20.26 |
| .6 2   | 42.39    | 17.22     | 41.48    | 18.13     | 40.59    | 19. 1     | 40.13    | 19.47     |
| .6 3   | 43.19    | 16.41     | 42.28    | 17.32     | 41.39    | 18.21     | 40.52    | 19. 8     |
| .6 4   | 44. 0    | 16. 0     | 43. 9    | 16.51     | 42.19    | 17.41     | 41.31    | 18.29     |
| .6 5   | 44.41    | 15.19     | 43.49    | 16.11     | 42.58    | 17. 2     | 42. 9    | 17.51     |
| .6 6   | 45.23    | 14.37     | 44.29    | 15.31     | 43.38    | 16.22     | 42.48    | 17.12     |
| .6 7   | 46. 4    | 13.56     | 45.10    | 14.50     | 44.18    | 15.42     | 43.27    | 16.33     |
| .6 8   | 46.45    | 13.15     | 45.50    | 14.10     | 44.57    | 15. 3     | 44. 6    | 15.54     |
| .6 9   | 47.26    | 12.34     | 46.31    | 13.29     | 45.37    | 14.23     | 44.45    | 15.15     |
| .7 0   | 0.48. 8  | 359.11.52 | 0.47.11  | 359.12.49 | 0.46.17  | 359.13.43 | 0.45.24  | 359.14.36 |
| .7 1   | 0.48.49  | 359.11.11 | 0.47.52  | 359.12. 8 | 0.46.56  | 359.13. 4 | 0.46.03  | 359.13.57 |
| .7 2   | 49.30    | 10.30     | 48.32    | 11.28     | 47.36    | 12.24     | 46.42    | 13.18     |
| .7 3   | 50.11    | 9.49      | 49.12    | 10.48     | 48.16    | 11.44     | 47.21    | 12.39     |
| .7 4   | 50.53    | 9. 7      | 49.53    | 10. 7     | 48.55    | 11. 5     | 48. 0    | 12. 0     |
| .7 5   | 51.34    | 8.26      | 50.33    | 9.27      | 49.35    | 10.25     | 48.39    | 11.21     |
| .7 6   | 52.15    | 7.45      | 51.14    | 8.46      | 50.15    | 9.45      | 49.18    | 10.42     |
| .7 7   | 52.56    | 7. 4      | 51.54    | 8. 6      | 50.54    | 9. 6      | 49.57    | 10. 3     |
| .7 8   | 53.38    | 6.22      | 52.35    | 7.25      | 51.34    | 8.26      | 50.35    | 9.25      |
| .7 9   | 54.19    | 5.41      | 53.15    | 6.45      | 52.14    | 7.46      | 51.14    | 8.46      |
| .8 0   | 0.55. 0  | 359. 5. 0 | 0.53.56  | 359. 6.04 | 0.52.53  | 359. 7. 7 | 0.51.53  | 359. 8. 7 |
| .8 1   | 0.55.41  | 359. 4.19 | 0.54.36  | 359. 5.24 | 0.53.33  | 359. 6.27 | 0.52.32  | 359. 7.28 |
| .8 2   | 56.23    | 3.37      | 55.17    | 4.43      | 54.13    | 5.47      | 53.11    | 6.49      |
| .8 3   | 57. 4    | 2.56      | 55.57    | 4. 3      | 54.52    | 5. 8      | 53.50    | 6.10      |
| .8 4   | 57.45    | 2.15      | 56.37    | 3.23      | 55.32    | 4.28      | 54.29    | 5.31      |
| .8 5   | 58.27    | 1.33      | 57.18    | 2.42      | 56.12    | 3.48      | 55. 8    | 4.52      |
| .8 6   | 59. 8    | 0.52      | 57.58    | 2.02      | 56.51    | 3. 9      | 55.47    | 4.13      |
| .8 7   | 59.49    | 0.11      | 58.39    | 1.21      | 57.31    | 2.29      | 56.26    | 3.34      |
| .8 8   | 1. 0.30  | 358.59.30 | 59.19    | 0.41      | 58.11    | 1.49      | 57. 5    | 2.55      |
| .8 9   | 1.12     | 58.48     | 1. 0. 0  | 0. 0      | 58.50    | 1.10      | 57.44    | 2.16      |
| .9 0   | 1. 1.53  | 358.58. 7 | 1. 0.40  | 358.59.20 | 0.59.30  | 359. 0.30 | 0.58.22  | 359. 1.38 |
| .9 1   | 1. 2.34  | 358.57.26 | 1. 1.21  | 358.58.39 | 1. 0.10  | 358.59.50 | 0.59. 1  | 359. 0.59 |
| .9 2   | 3.15     | 56.45     | 2. 1     | 57.59     | 0.49     | 59.11     | 59.40    | 0.20      |
| .9 3   | 3.57     | 56. 3     | 2.41     | 57.19     | 1.29     | 58.31     | 1. 0.19  | 358.59.41 |
| .9 4   | 4.38     | 55.22     | 3.22     | 56.38     | 2. 9     | 57.51     | 0.58     | 59. 2     |
| .9 5   | 5.19     | 54.41     | 4. 2     | 55.58     | 2.48     | 57.12     | 1. 1.37  | 58.23     |
| .9 6   | 6. 0     | 54. 0     | 4.43     | 55.17     | 3.28     | 56.32     | 2.16     | 57.44     |
| .9 7   | 6.42     | 53.18     | 5.23     | 54.37     | 4. 8     | 55.52     | 2.55     | 57. 5     |
| .9 8   | 7.23     | 52.37     | 6. 4     | 53.56     | 4.47     | 55.13     | 3.34     | 56.26     |
| .9 9   | 8. 4     | 51.56     | 6.44     | 53.16     | 5.27     | 54.33     | 4.13     | 55.47     |
| 1.0 0  | 1. 8.45  | 358.51.15 | 1. 7.25  | 358.52.35 | 1. 6. 7  | 358.53.53 | 1. 4.52  | 358.55. 8 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=540 公尺 |           | R=550 公尺 |           | R=560 公尺 |           | R=570 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0.038    | 359.59.22 | 0.038    | 359.59.22 | 0.037    | 359.59.23 | 0.036    | 359.59.24 |
| .02    | 1.16     | 58.44     | 1.15     | 58.45     | 1.14     | 58.46     | 1.12     | 58.48     |
| .03    | 1.55     | 58.5      | 1.53     | 58.7      | 1.50     | 58.10     | 1.48     | 58.12     |
| .04    | 2.33     | 57.27     | 2.30     | 57.33     | 2.27     | 57.33     | 2.25     | 57.35     |
| .05    | 3.11     | 56.49     | 3.8      | 56.52     | 3.4      | 56.56     | 3.1      | 56.59     |
| .06    | 3.49     | 56.11     | 3.45     | 56.15     | 3.41     | 56.19     | 3.37     | 56.23     |
| .07    | 4.27     | 55.33     | 4.23     | 55.37     | 4.18     | 55.42     | 4.13     | 55.47     |
| .08    | 5.6      | 54.54     | 5.0      | 55.0      | 4.55     | 55.5      | 4.49     | 55.11     |
| .09    | 5.44     | 54.16     | 5.39     | 54.22     | 5.32     | 54.28     | 5.26     | 54.34     |
| .10    | 0.6.22   | 359.53.38 | 0.6.15   | 359.53.45 | 0.6.8    | 359.53.52 | 0.6.2    | 359.53.58 |
| .11    | 0.7.0    | 359.53.0  | 0.6.52   | 359.53.8  | 0.6.45   | 359.53.15 | 0.6.38   | 359.53.22 |
| .12    | 7.38     | 52.22     | 7.30     | 52.30     | 7.22     | 52.38     | 7.14     | 52.46     |
| .13    | 8.17     | 51.43     | 8.8      | 51.52     | 7.59     | 52.1      | 7.50     | 52.10     |
| .14    | 8.55     | 51.6      | 8.45     | 51.15     | 8.36     | 51.24     | 8.27     | 51.33     |
| .15    | 9.33     | 50.27     | 9.23     | 50.37     | 9.13     | 50.47     | 9.3      | 50.57     |
| .16    | 10.11    | 49.49     | 10.0     | 50.0      | 9.49     | 50.11     | 9.42     | 50.18     |
| .17    | 10.49    | 49.11     | 10.38    | 49.22     | 10.26    | 49.34     | 10.15    | 49.45     |
| .18    | 11.27    | 48.33     | 11.15    | 48.45     | 11.3     | 48.57     | 10.51    | 49.9      |
| .19    | 12.6     | 47.54     | 11.52    | 48.8      | 11.40    | 48.20     | 11.28    | 48.32     |
| .20    | 0.12.44  | 359.47.16 | 0.12.30  | 359.47.30 | 0.12.17  | 359.47.43 | 0.12.4   | 359.47.56 |
| .21    | 0.13.22  | 359.46.38 | 0.13.8   | 359.46.52 | 0.12.53  | 359.47.7  | 0.12.40  | 359.47.20 |
| .22    | 14.0     | 46.0      | 13.45    | 46.15     | 13.30    | 46.30     | 13.16    | 46.44     |
| .23    | 14.39    | 45.21     | 14.23    | 45.37     | 14.7     | 45.53     | 13.52    | 46.8      |
| .24    | 15.17    | 44.43     | 15.0     | 45.0      | 14.44    | 45.16     | 14.29    | 45.31     |
| .25    | 15.55    | 44.5      | 15.38    | 44.22     | 15.21    | 44.39     | 15.5     | 44.55     |
| .26    | 16.33    | 43.27     | 16.15    | 43.45     | 15.58    | 44.2      | 15.41    | 44.19     |
| .27    | 17.11    | 42.49     | 16.52    | 43.8      | 16.35    | 43.25     | 16.17    | 43.43     |
| .28    | 17.50    | 42.10     | 17.30    | 42.30     | 17.11    | 42.49     | 16.53    | 43.7      |
| .29    | 18.28    | 41.32     | 18.8     | 41.52     | 17.48    | 42.12     | 17.29    | 42.31     |
| .30    | 0.18.6   | 359.40.54 | 0.18.45  | 359.41.15 | 0.18.25  | 359.41.35 | 0.18.6   | 359.41.54 |
| .31    | 0.19.44  | 359.40.16 | 0.19.23  | 359.40.37 | 0.19.2   | 359.40.58 | 0.18.42  | 359.41.18 |
| .32    | 20.22    | 39.38     | 20.0     | 40.0      | 19.39    | 40.21     | 19.18    | 40.42     |
| .33    | 21.0     | 39.0      | 20.38    | 39.22     | 20.15    | 39.45     | 19.54    | 40.6      |
| .34    | 21.39    | 38.21     | 21.15    | 38.45     | 20.52    | 39.8      | 20.30    | 39.30     |
| .35    | 22.17    | 37.43     | 21.52    | 38.8      | 21.29    | 38.31     | 21.6     | 38.54     |
| .36    | 22.55    | 37.5      | 22.30    | 37.30     | 22.6     | 37.54     | 21.43    | 38.17     |
| .37    | 23.33    | 36.27     | 23.8     | 36.52     | 22.43    | 37.17     | 22.19    | 37.41     |
| .38    | 24.12    | 35.48     | 23.45    | 36.15     | 23.20    | 36.40     | 22.55    | 37.5      |
| .39    | 24.50    | 35.10     | 24.23    | 35.37     | 23.50    | 35.10     | 23.31    | 36.29     |
| .40    | 0.25.28  | 359.34.32 | 0.25.0   | 359.35.0  | 0.24.33  | 359.35.27 | 0.24.8   | 359.35.52 |
| .41    | 0.26.6   | 359.33.54 | 0.25.38  | 359.34.22 | 0.25.10  | 359.34.50 | 0.24.44  | 359.35.15 |
| .42    | 26.44    | 33.16     | 26.15    | 33.35     | 25.47    | 34.13     | 25.20    | 34.40     |
| .43    | 27.22    | 32.38     | 26.52    | 33.8      | 26.24    | 33.36     | 25.56    | 34.4      |
| .44    | 28.1     | 31.59     | 27.0     | 33.0      | 27.0     | 33.0      | 26.32    | 33.28     |
| .45    | 28.39    | 31.21     | 28.8     | 31.52     | 27.37    | 32.23     | 27.8     | 32.52     |
| .46    | 29.17    | 30.43     | 28.45    | 31.15     | 28.14    | 31.46     | 27.45    | 32.15     |
| .47    | 29.55    | 30.5      | 29.23    | 30.37     | 28.51    | 31.9      | 28.21    | 31.39     |
| .48    | 30.33    | 29.27     | 30.0     | 30.0      | 29.28    | 30.32     | 28.57    | 31.3      |
| .49    | 31.12    | 28.48     | 30.38    | 29.22     | 30.5     | 29.55     | 29.33    | 30.27     |
| .50    | 0.31.50  | 359.28.10 | 0.31.15  | 359.28.45 | 0.30.42  | 359.29.18 | 0.30.9   | 359.29.51 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=540 公尺 |           | R=550 公尺 |           | R=560 公尺 |           | R=570 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .5 1   | 0.32.28  | 359.27.32 | 0.31.52  | 359.28.8  | 0.31.18  | 359.28.42 | 0.30.45  | 359.29.15 |
| .5 2   | 33.6     | 26.54     | 32.30    | 27.30     | 31.55    | 28.5      | 31.22    | 28.38     |
| .5 3   | 33.44    | 26.16     | 33.8     | 26.52     | 32.32    | 27.28     | 31.58    | 28.2      |
| .5 4   | 34.23    | 25.37     | 33.45    | 26.15     | 33.9     | 26.51     | 32.34    | 27.26     |
| .5 5   | 35.1     | 24.59     | 34.23    | 25.37     | 33.46    | 26.14     | 33.10    | 26.50     |
| .5 6   | 35.99    | 24.21     | 35.0     | 25.0      | 34.23    | 25.37     | 33.49    | 26.14     |
| .5 7   | 36.17    | 23.43     | 35.33    | 24.22     | 35.0     | 25.0      | 34.23    | 25.37     |
| .5 8   | 36.55    | 23.5      | 36.15    | 23.45     | 35.36    | 24.24     | 34.59    | 25.1      |
| .5 9   | 37.33    | 22.27     | 36.52    | 23.8      | 36.13    | 23.47     | 35.35    | 24.25     |
| .6 0   | 0.38.12  | 359.21.48 | 0.37.30  | 359.22.30 | 0.36.50  | 359.23.10 | 0.36.11  | 359.23.49 |
| .6 1   | 0.38.50  | 359.21.10 | 0.38.8   | 359.21.52 | 0.37.27  | 359.22.33 | 0.35.47  | 359.23.13 |
| .6 2   | 39.28    | 20.32     | 38.45    | 21.15     | 38.3     | 21.57     | 37.24    | 22.36     |
| .6 3   | 40.6     | 19.54     | 39.23    | 20.37     | 38.40    | 21.20     | 38.36    | 21.24     |
| .6 4   | 40.44    | 19.16     | 40.0     | 20.0      | 39.17    | 20.43     | 38.36    | 21.24     |
| .6 5   | 41.23    | 18.37     | 40.38    | 19.22     | 39.54    | 20.6      | 39.12    | 20.48     |
| .6 6   | 42.1     | 17.59     | 41.15    | 18.45     | 40.31    | 19.29     | 39.48    | 20.12     |
| .6 7   | 42.39    | 17.21     | 41.52    | 18.8      | 41.8     | 18.52     | 40.24    | 19.36     |
| .6 8   | 43.17    | 16.43     | 42.30    | 17.30     | 41.45    | 18.15     | 41.1     | 18.59     |
| .6 9   | 43.56    | 16.4      | 43.8     | 16.52     | 42.21    | 17.39     | 41.37    | 18.23     |
| .7 0   | 0.44.34  | 359.15.26 | 0.43.45  | 359.16.15 | 0.42.58  | 359.17.2  | 0.42.13  | 359.17.47 |
| .7 1   | 0.45.12  | 359.14.48 | 0.44.23  | 359.15.37 | 0.43.35  | 359.16.25 | 0.42.49  | 359.17.11 |
| .7 2   | 45.50    | 14.10     | 45.0     | 15.0      | 44.12    | 15.48     | 43.25    | 16.35     |
| .7 3   | 46.28    | 13.32     | 45.38    | 14.22     | 44.49    | 15.11     | 44.2     | 15.58     |
| .7 4   | 47.6     | 12.54     | 46.15    | 13.45     | 45.26    | 14.34     | 44.38    | 15.22     |
| .7 5   | 47.45    | 12.15     | 46.52    | 13.8      | 46.3     | 13.57     | 45.14    | 14.46     |
| .7 6   | 48.23    | 11.36     | 47.0     | 13.0      | 46.39    | 13.21     | 45.50    | 14.10     |
| .7 7   | 49.1     | 10.59     | 48.8     | 11.52     | 47.16    | 12.44     | 46.26    | 13.34     |
| .7 8   | 49.39    | 10.21     | 43.45    | 11.15     | 47.53    | 12.7      | 47.3     | 12.57     |
| .7 9   | 50.17    | 9.43      | 49.23    | 10.37     | 48.30    | 11.30     | 47.39    | 12.21     |
| .8 0   | 0.50.56  | 359.9.4   | 0.50.0   | 359.10.0  | 0.49.6   | 359.10.54 | 0.48.15  | 359.11.45 |
| .8 1   | 0.51.34  | 359.8.26  | 0.50.38  | 359.9.22  | 0.49.43  | 359.10.17 | 0.48.51  | 359.11.9  |
| .8 2   | 52.12    | 7.48      | 51.15    | 8.45      | 50.20    | 9.40      | 49.27    | 10.33     |
| .8 3   | 52.50    | 7.10      | 51.52    | 8.8       | 50.57    | 9.3       | 50.3     | 9.57      |
| .8 4   | 53.28    | 6.32      | 52.0     | 8.0       | 51.34    | 8.26      | 50.40    | 9.20      |
| .8 5   | 54.7     | 5.53      | 53.8     | 6.52      | 52.11    | 7.49      | 51.16    | 8.44      |
| .8 6   | 54.45    | 5.15      | 53.45    | 6.15      | 52.48    | 7.12      | 52.52    | 7.8       |
| .8 7   | 55.23    | 4.37      | 54.23    | 5.37      | 53.24    | 6.36      | 52.28    | 7.32      |
| .8 8   | 56.1     | 3.59      | 55.0     | 5.0       | 54.1     | 5.59      | 53.4     | 6.56      |
| .8 9   | 56.39    | 3.21      | 55.38    | 4.22      | 54.38    | 5.22      | 53.41    | 6.19      |
| .9 0   | 0.57.18  | 359.2.42  | 0.56.15  | 359.3.45  | 0.55.15  | 359.4.45  | 0.54.17  | 359.5.43  |
| .9 1   | 0.57.56  | 359.2.4   | 0.56.52  | 359.3.8   | 0.55.52  | 359.4.8   | 0.54.53  | 359.5.7   |
| .9 2   | 58.34    | 1.26      | 57.30    | 2.30      | 56.29    | 3.31      | 55.29    | 4.31      |
| .9 3   | 59.12    | 0.48      | 58.8     | 1.52      | 57.5     | 2.55      | 56.5     | 3.55      |
| .9 4   | 59.50    | 0.10      | 58.45    | 1.15      | 57.42    | 2.18      | 56.41    | 3.19      |
| .9 5   | 1.0.29   | 358.59.31 | 59.23    | 0.37      | 58.19    | 1.41      | 57.18    | 2.42      |
| .9 6   | 1.7      | 58.53     | 1.0.0    | 0.0       | 58.56    | 1.4       | 57.54    | 2.6       |
| .9 7   | 1.45     | 58.15     | 0.38     | 358.59.22 | 59.33    | 0.27      | 58.30    | 1.30      |
| .9 8   | 2.23     | 57.37     | 1.15     | 59.45     | 1.0.9    | 358.59.51 | 59.6     | 0.54      |
| .9 9   | 3.1      | 56.59     | 1.52     | 58.8      | .46      | 59.14     | 59.42    | 0.18      |
| 1.0 0  | 1.3.40   | 358.56.20 | 1.2.30   | 358.57.30 | 1.1.23   | 358.58.37 | 1.0.19   | 358.59.41 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=580 公尺 |           | R=590 公尺 |           | R=600 公尺 |           | R=620 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0.036    | 359.59.24 | 0.035    | 359.59.25 | 0.034    | 359.59.26 | 0.033    | 359.59.27 |
| .02    | 1.11     | 58.49     | 1.10     | 58.50     | 1.09     | 58.51     | 1.08     | 58.52     |
| .03    | 1.47     | 58.13     | 1.45     | 58.15     | 1.43     | 58.17     | 1.40     | 58.20     |
| .04    | 2.22     | 57.38     | 2.20     | 57.40     | 2.17     | 57.43     | 2.13     | 57.47     |
| .05    | 2.58     | 57.2      | 2.55     | 57.5      | 2.52     | 57.8      | 2.46     | 57.14     |
| .06    | 3.33     | 56.27     | 3.30     | 56.30     | 3.26     | 56.34     | 3.20     | 56.40     |
| .07    | 4.9      | 55.51     | 4.5      | 55.55     | 4.1      | 55.59     | 3.63     | 55.7      |
| .08    | 4.45     | 55.15     | 4.40     | 55.20     | 4.35     | 55.25     | 4.26     | 55.34     |
| .09    | 5.20     | 54.40     | 5.15     | 54.45     | 5.9      | 54.51     | 4.69     | 55.1      |
| .10    | 0.5.58   | 359.54.4  | 0.5.50   | 359.54.10 | 0.5.44   | 359.54.16 | 0.5.33   | 359.54.27 |
| .11    | 0.6.31   | 359.53.29 | 0.6.24   | 359.53.26 | 0.6.18   | 359.53.42 | 0.6.6    | 359.53.54 |
| .12    | 7.7      | 52.53     | 7.0      | 53.0      | 6.53     | 53.7      | 6.39     | 53.21     |
| .13    | 7.42     | 52.18     | 7.34     | 52.26     | 7.27     | 52.33     | 7.13     | 52.42     |
| .14    | 8.18     | 51.42     | 8.9      | 51.51     | 8.1      | 51.59     | 7.46     | 52.14     |
| .15    | 8.53     | 51.7      | 8.44     | 51.16     | 8.36     | 51.24     | 8.19     | 51.41     |
| .16    | 9.29     | 50.31     | 9.19     | 50.41     | 9.10     | 50.50     | 8.52     | 51.8      |
| .17    | 10.5     | 49.55     | 9.54     | 50.6      | 9.45     | 50.15     | 9.26     | 50.34     |
| .18    | 10.40    | 49.20     | 10.23    | 49.31     | 10.19    | 49.41     | 9.59     | 50.1      |
| .19    | 11.16    | 48.44     | 11.4     | 48.56     | 10.53    | 49.7      | 10.32    | 49.28     |
| .20    | 0.11.51  | 359.48.9  | 0.11.39  | 359.48.21 | 0.11.27  | 359.58.33 | 0.11.5   | 359.48.55 |
| .21    | 0.12.27  | 359.47.33 | 0.12.14  | 359.47.36 | 0.12.2   | 359.47.58 | 0.11.39  | 359.48.21 |
| .22    | 13.2     | 46.58     | 12.49    | 47.11     | 12.36    | 47.24     | 12.12    | 47.48     |
| .23    | 13.38    | 46.22     | 13.24    | 46.36     | 13.11    | 46.49     | 12.45    | 47.15     |
| .24    | 14.13    | 45.47     | 13.59    | 46.1      | 13.45    | 46.15     | 13.18    | 46.42     |
| .25    | 14.49    | 45.11     | 14.34    | 45.26     | 14.19    | 45.41     | 13.52    | 45.8      |
| .26    | 15.25    | 44.35     | 15.9     | 44.51     | 14.54    | 45.6      | 14.25    | 45.35     |
| .27    | 16.0     | 44.0      | 15.44    | 44.16     | 15.28    | 44.32     | 14.58    | 45.2      |
| .28    | 16.36    | 43.24     | 16.19    | 43.41     | 16.3     | 43.57     | 15.31    | 44.29     |
| .29    | 17.11    | 42.49     | 16.54    | 43.6      | 16.37    | 43.23     | 16.5     | 43.45     |
| .30    | 0.17.47  | 359.42.13 | 0.17.29  | 359.42.31 | 0.17.11  | 359.42.49 | 0.16.38  | 359.43.22 |
| .31    | 0.18.22  | 359.41.38 | 0.18.4   | 359.41.56 | 0.17.46  | 359.42.14 | 0.17.11  | 359.42.49 |
| .32    | 18.58    | 41.2      | 18.39    | 41.21     | 18.20    | 41.40     | 17.45    | 42.15     |
| .33    | 19.33    | 40.27     | 19.14    | 40.46     | 18.54    | 41.06     | 18.18    | 41.42     |
| .34    | 20.9     | 39.51     | 19.48    | 40.12     | 19.29    | 40.31     | 18.51    | 41.9      |
| .35    | 20.45    | 39.15     | 20.23    | 39.37     | 20.3     | 39.57     | 19.24    | 40.56     |
| .36    | 21.20    | 38.40     | 20.58    | 39.2      | 20.37    | 39.23     | 19.58    | 40.2      |
| .37    | 21.56    | 38.4      | 21.33    | 38.27     | 21.12    | 38.48     | 20.31    | 39.29     |
| .38    | 22.31    | 37.29     | 22.8     | 37.52     | 21.46    | 38.14     | 21.4     | 38.56     |
| .39    | 23.7     | 36.53     | 22.43    | 37.17     | 22.21    | 37.39     | 21.37    | 38.23     |
| .40    | 0.23.42  | 359.36.18 | 0.23.18  | 359.36.42 | 0.22.55  | 359.37.5  | 0.22.11  | 359.37.49 |
| .41    | 0.24.18  | 359.35.42 | 0.23.53  | 359.36.7  | 0.23.29  | 359.36.31 | 0.22.44  | 359.37.16 |
| .42    | 24.54    | 35.6      | 24.28    | 35.32     | 24.4     | 35.56     | 23.17    | 36.43     |
| .43    | 25.29    | 34.31     | 25.3     | 34.57     | 24.38    | 35.22     | 23.51    | 36.9      |
| .44    | 26.5     | 33.55     | 25.36    | 34.22     | 25.12    | 34.48     | 24.24    | 35.56     |
| .45    | 26.40    | 33.20     | 26.13    | 33.47     | 25.47    | 34.13     | 24.57    | 35.3      |
| .46    | 27.16    | 32.44     | 26.48    | 33.12     | 26.21    | 33.39     | 25.30    | 34.30     |
| .47    | 27.51    | 32.9      | 27.23    | 32.37     | 26.56    | 33.4      | 26.3     | 33.57     |
| .48    | 28.27    | 31.33     | 27.58    | 32.2      | 27.30    | 32.30     | 26.7     | 33.23     |
| .49    | 29.3     | 30.57     | 28.33    | 31.27     | 28.4     | 31.56     | 27.10    | 32.50     |
| .50    | 0.29.39  | 359.30.21 | 0.29.8   | 359.30.52 | 0.28.39  | 359.31.21 | 0.27.43  | 359.32.17 |



曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=580 公尺 |           | R=590 公尺 |           | R=600 公尺 |           | R=620 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| 5 1    | 0.30.14  | 359.29.46 | 0.29.43  | 359.30.17 | 0.29.13  | 359.30.47 | 0.28.17  | 359.31.43 |
| 5 2    | 30.49    | 29.11     | 30.18    | 29.42     | 29.48    | 30.12     | 28.50    | 31.10     |
| 5 3    | 31.25    | 28.35     | 30.53    | 29.7      | 30.22    | 29.33     | 29.23    | 30.37     |
| 5 4    | 32.0     | 28.0      | 31.28    | 28.32     | 30.55    | 29.4      | 29.56    | 30.4      |
| 5 5    | 32.36    | 27.24     | 32.3     | 27.57     | 31.31    | 28.29     | 30.30    | 29.30     |
| 5 6    | 33.11    | 26.49     | 32.38    | 27.22     | 32.5     | 27.55     | 31.33    | 28.27     |
| 5 7    | 33.47    | 26.13     | 33.12    | 26.43     | 32.39    | 27.21     | 31.35    | 28.24     |
| 5 8    | 34.23    | 25.37     | 33.47    | 26.13     | 33.14    | 26.46     | 34.56    | 27.50     |
| 5 9    | 34.58    | 25.2      | 34.22    | 25.38     | 33.51    | 26.9      | 32.43    | 27.17     |
| 6 0    | 0.35.34  | 359.24.26 | 0.34.57  | 359.25.3  | 0.34.23  | 359.25.37 | 0.33.16  | 359.26.44 |
| 6 1    | 0.35.9   | 359.23.51 | 0.35.32  | 359.24.28 | 0.34.57  | 359.25.3  | 0.33.49  | 359.26.11 |
| 6 2    | 36.45    | 23.15     | 36.7     | 23.53     | 35.31    | 24.29     | 34.23    | 25.37     |
| 6 3    | 37.20    | 22.40     | 36.42    | 23.18     | 36.6     | 23.54     | 34.56    | 25.4      |
| 6 4    | 37.56    | 22.4      | 37.17    | 22.43     | 36.40    | 23.20     | 35.29    | 24.31     |
| 6 5    | 38.32    | 21.28     | 37.52    | 22.8      | 37.15    | 22.45     | 36.2     | 23.58     |
| 6 6    | 39.7     | 20.53     | 38.27    | 21.33     | 37.43    | 22.11     | 36.35    | 23.24     |
| 6 7    | 39.43    | 20.17     | 39.2     | 20.58     | 38.23    | 21.37     | 37.9     | 22.51     |
| 6 8    | 40.18    | 19.42     | 39.37    | 20.23     | 38.58    | 21.2      | 37.42    | 22.18     |
| 6 9    | 40.54    | 19.6      | 40.12    | 19.48     | 39.32    | 20.28     | 38.15    | 21.45     |
| 7 0    | 0.41.29  | 359.18.31 | 0.40.47  | 359.19.13 | 0.40.6   | 359.19.54 | 0.38.49  | 359.21.11 |
| 7 1    | 0.42.5   | 359.17.55 | 0.41.22  | 359.18.38 | 0.40.41  | 359.19.19 | 0.39.22  | 359.20.38 |
| 7 2    | 42.40    | 17.20     | 41.57    | 18.3      | 41.15    | 18.45     | 39.55    | 20.5      |
| 7 3    | 43.16    | 16.44     | 42.32    | 17.28     | 41.50    | 18.10     | 40.29    | 19.31     |
| 7 4    | 43.52    | 16.8      | 43.7     | 16.53     | 42.24    | 17.36     | 41.2     | 18.58     |
| 7 5    | 44.27    | 15.33     | 43.42    | 16.18     | 42.58    | 17.2      | 41.35    | 18.28     |
| 7 6    | 45.3     | 14.57     | 44.17    | 15.43     | 43.33    | 16.27     | 42.8     | 17.52     |
| 7 7    | 45.38    | 14.22     | 44.52    | 15.8      | 44.7     | 15.53     | 42.42    | 17.18     |
| 7 8    | 46.14    | 13.46     | 45.27    | 14.33     | 44.41    | 15.19     | 43.15    | 16.45     |
| 7 9    | 46.49    | 13.11     | 45.2     | 13.58     | 45.16    | 14.44     | 43.48    | 16.12     |
| 8 0    | 0.47.25  | 359.12.35 | 0.46.36  | 359.13.24 | 0.45.50  | 359.14.10 | 0.44.22  | 359.15.38 |
| 8 1    | 0.48.0   | 359.12.0  | 0.47.11  | 359.12.49 | 0.46.24  | 359.13.36 | 0.44.55  | 359.15.5  |
| 8 2    | 48.36    | 11.24     | 47.45    | 12.14     | 46.59    | 13.1      | 45.28    | 14.32     |
| 8 3    | 49.12    | 10.48     | 48.21    | 11.39     | 47.33    | 12.27     | 46.1     | 13.59     |
| 8 4    | 49.47    | 10.13     | 48.56    | 11.4      | 48.8     | 11.52     | 46.35    | 13.25     |
| 8 5    | 50.23    | 9.37      | 49.31    | 10.29     | 48.42    | 11.18     | 47.8     | 12.52     |
| 8 6    | 50.58    | 9.2       | 50.6     | 9.54      | 49.16    | 10.44     | 47.41    | 12.19     |
| 8 7    | 51.34    | 8.26      | 50.41    | 9.19      | 49.51    | 10.9      | 48.14    | 11.46     |
| 8 8    | 52.9     | 7.51      | 51.16    | 8.44      | 50.25    | 9.35      | 48.48    | 11.12     |
| 8 9    | 52.45    | 7.15      | 51.51    | 8.9       | 50.59    | 9.1       | 49.21    | 10.39     |
| 9 0    | 0.53.21  | 359.6.39  | 0.52.26  | 359.7.34  | 0.51.34  | 359.8.26  | 0.49.54  | 359.10.6  |
| 9 1    | 0.53.56  | 359.6.4   | 0.53.1   | 359.6.59  | 0.52.8   | 359.7.52  | 0.50.27  | 359.9.33  |
| 9 2    | 54.32    | 5.28      | 53.36    | 6.24      | 52.43    | 7.17      | 51.1     | 8.59      |
| 9 3    | 55.7     | 4.53      | 54.11    | 5.49      | 53.17    | 6.43      | 51.34    | 8.26      |
| 9 4    | 55.43    | 4.17      | 54.46    | 5.14      | 53.52    | 6.8       | 52.7     | 7.53      |
| 9 5    | 56.18    | 3.42      | 55.21    | 4.39      | 54.26    | 5.0       | 52.40    | 7.20      |
| 9 6    | 56.54    | 3.6       | 55.56    | 4.4       | 55.0     | 4.59      | 53.14    | 6.46      |
| 9 7    | 57.30    | 2.30      | 56.31    | 3.29      | 55.35    | 4.25      | 53.47    | 6.13      |
| 9 8    | 58.5     | 1.56      | 57.6     | 2.54      | 56.9     | 3.51      | 54.20    | 5.40      |
| 9 9    | 58.41    | 1.19      | 57.41    | 2.19      | 56.43    | 3.17      | 54.54    | 5.6       |
| 1 0 0  | 0.59.17  | 359.0.43  | 0.58.16  | 359.1.44  | 0.57.18  | 359.2.42  | 0.55.27  | 359.4.33  |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=640 公尺 |           | R=650 公尺 |           | R=660 公尺 |           | R=680 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .01    | 0.032    | 359.59.28 | 0.032    | 359.59.28 | 0.031    | 359.59.29 | 0.030    | 359.59.30 |
| .02    | 1.4      | 58.56     | 1.3      | 58.57     | 1.2      | 58.58     | 1.1      | 58.59     |
| .03    | 1.37     | 58.23     | 1.35     | 58.25     | 1.34     | 58.26     | 1.31     | 58.29     |
| .04    | 2.9      | 57.51     | 2.7      | 57.53     | 2.5      | 57.55     | 2.1      | 57.59     |
| .05    | 2.39     | 57.21     | 2.39     | 57.21     | 2.35     | 57.24     | 2.32     | 57.28     |
| .06    | 3.13     | 56.47     | 3.11     | 56.49     | 3.3      | 56.52     | 3.2      | 56.58     |
| .07    | 3.46     | 56.14     | 3.42     | 56.18     | 3.39     | 56.21     | 3.32     | 56.28     |
| .08    | 4.18     | 55.42     | 4.14     | 55.46     | 4.10     | 55.50     | 4.3      | 55.57     |
| .09    | 4.50     | 55.10     | 4.46     | 55.14     | 4.41     | 55.19     | 4.33     | 55.27     |
| .10    | 0.5.22   | 359.54.38 | 0.5.17   | 359.54.43 | 0.5.13   | 359.54.47 | 0.5.3    | 359.54.57 |
| .11    | 0.5.54   | 359.54.6  | 0.5.49   | 359.54.11 | 0.5.44   | 359.54.16 | 0.5.34   | 359.54.26 |
| .12    | 6.27     | 53.33     | 6.21     | 53.39     | 6.15     | 53.45     | 6.4      | 53.56     |
| .13    | 6.59     | 53.1      | 6.52     | 53.6      | 6.46     | 53.14     | 6.34     | 53.26     |
| .14    | 7.31     | 52.29     | 7.24     | 52.36     | 7.13     | 52.42     | 7.5      | 52.55     |
| .15    | 8.3      | 51.57     | 7.55     | 52.4      | 7.49     | 52.11     | 7.35     | 52.25     |
| .16    | 8.35     | 51.24     | 8.23     | 51.32     | 8.20     | 51.40     | 8.5      | 51.55     |
| .17    | 9.8      | 50.52     | 9.0      | 51.0      | 8.51     | 51.9      | 8.36     | 51.24     |
| .18    | 9.40     | 50.20     | 9.31     | 50.29     | 9.23     | 50.37     | 9.6      | 50.54     |
| .19    | 10.12    | 49.48     | 10.3     | 49.57     | 9.54     | 50.6      | 9.36     | 50.24     |
| .20    | 0.10.45  | 359.49.15 | 0.10.35  | 359.49.25 | 0.10.25  | 359.49.35 | 0.10.7   | 359.49.53 |
| .21    | 0.11.17  | 359.48.43 | 0.11.6   | 359.48.54 | 0.10.56  | 359.49.4  | 0.10.37  | 359.49.23 |
| .22    | 11.49    | 48.11     | 11.38    | 48.22     | 11.27    | 48.33     | 11.7     | 48.53     |
| .23    | 12.21    | 47.39     | 12.10    | 47.50     | 11.59    | 48.1      | 11.38    | 48.22     |
| .24    | 12.53    | 47.7      | 12.42    | 47.18     | 12.30    | 47.30     | 12.8     | 47.52     |
| .25    | 13.26    | 46.34     | 13.13    | 46.47     | 13.1     | 46.59     | 12.38    | 47.22     |
| .26    | 13.56    | 46.4      | 13.45    | 46.15     | 13.32    | 46.28     | 13.9     | 46.51     |
| .27    | 14.30    | 45.30     | 14.17    | 45.43     | 14.4     | 45.56     | 13.39    | 46.21     |
| .28    | 15.2     | 44.58     | 14.49    | 45.11     | 14.35    | 45.25     | 14.9     | 45.51     |
| .29    | 15.35    | 44.25     | 15.20    | 44.40     | 15.6     | 44.54     | 14.40    | 45.20     |
| .30    | 0.16.7   | 359.43.53 | 0.15.52  | 359.44.8  | 0.15.38  | 359.44.22 | 0.15.10  | 359.44.50 |
| .31    | 0.16.39  | 359.43.21 | 0.16.24  | 359.43.36 | 0.16.9   | 359.43.51 | 0.15.40  | 359.44.20 |
| .32    | 17.11    | 42.49     | 16.56    | 43.4      | 16.40    | 43.20     | 16.11    | 43.49     |
| .33    | 17.43    | 42.17     | 17.27    | 42.33     | 17.11    | 42.49     | 16.41    | 43.19     |
| .34    | 18.16    | 41.44     | 17.59    | 42.1      | 17.42    | 42.18     | 17.11    | 42.49     |
| .35    | 18.48    | 41.12     | 18.31    | 41.29     | 18.14    | 41.46     | 17.42    | 42.18     |
| .36    | 19.21    | 40.39     | 19.3     | 40.57     | 18.45    | 41.15     | 18.12    | 41.48     |
| .37    | 19.52    | 40.8      | 19.34    | 40.26     | 19.16    | 40.44     | 18.42    | 41.18     |
| .38    | 20.25    | 39.35     | 20.6     | 39.54     | 19.48    | 40.12     | 19.12    | 40.48     |
| .39    | 20.57    | 39.3      | 20.37    | 39.23     | 20.19    | 39.41     | 19.43    | 40.17     |
| .40    | 0.21.29  | 359.38.31 | 0.21.9   | 359.38.51 | 0.20.50  | 359.39.10 | 0.20.13  | 359.39.47 |
| .41    | 0.22.1   | 359.37.59 | 0.21.41  | 359.38.19 | 0.21.21  | 359.38.39 | 0.20.44  | 359.39.16 |
| .42    | 22.33    | 37.23     | 22.13    | 37.47     | 21.52    | 38.8      | 21.14    | 38.46     |
| .43    | 23.6     | 36.54     | 22.45    | 37.15     | 22.24    | 37.36     | 21.44    | 38.16     |
| .44    | 23.38    | 36.22     | 23.16    | 36.44     | 22.55    | 37.5      | 22.15    | 37.45     |
| .45    | 24.10    | 35.50     | 23.48    | 36.12     | 23.26    | 36.34     | 22.46    | 37.15     |
| .46    | 24.42    | 35.18     | 24.20    | 35.40     | 23.58    | 36.2      | 23.15    | 36.45     |
| .47    | 25.15    | 34.45     | 24.51    | 35.9      | 24.29    | 35.31     | 23.45    | 36.15     |
| .48    | 25.47    | 34.13     | 25.23    | 34.37     | 25.0     | 35.0      | 24.16    | 35.44     |
| .49    | 26.19    | 33.41     | 25.55    | 34.5      | 25.31    | 34.29     | 24.46    | 35.14     |
| .50    | 0.26.51  | 359.33.9  | 0.26.27  | 359.33.33 | 0.26.2   | 359.33.68 | 0.25.17  | 359.34.43 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=640 公尺 |           | R=650 公尺 |           | R=660 公尺 |           | R=680 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .51    | 0.27.24  | 359.32.36 | 0.26.59  | 359.33.1  | 0.26.34  | 359.33.26 | 0.25.47  | 359.34.13 |
| .52    | 27.56    | 32.4      | 27.30    | 32.30     | 27.5     | 32.55     | 26.17    | 33.43     |
| .53    | 28.28    | 31.32     | 28.2     | 31.58     | 27.36    | 32.24     | 26.48    | 33.12     |
| .54    | 29.0     | 31.0      | 28.34    | 31.26     | 28.8     | 31.52     | 27.18    | 32.42     |
| .55    | 29.32    | 30.28     | 29.5     | 30.55     | 28.39    | 31.21     | 27.48    | 32.12     |
| .56    | 30.5     | 29.55     | 29.37    | 30.23     | 29.10    | 30.50     | 28.18    | 31.42     |
| .57    | 30.37    | 29.23     | 30.9     | 29.51     | 29.41    | 30.19     | 28.49    | 31.11     |
| .58    | 31.9     | 28.51     | 30.41    | 29.19     | 30.13    | 29.47     | 29.19    | 30.41     |
| .59    | 31.41    | 28.19     | 31.12    | 28.48     | 30.44    | 29.16     | 29.50    | 30.10     |
| .60    | 0.32.14  | 359.27.46 | 0.31.44  | 359.28.16 | 0.31.15  | 359.28.45 | 0.30.20  | 359.29.40 |
| .61    | 0.32.46  | 359.27.14 | 0.32.16  | 359.27.44 | 0.31.46  | 359.28.14 | 0.30.50  | 359.29.10 |
| .62    | 33.18    | 26.42     | 32.47    | 27.13     | 32.18    | 27.42     | 31.20    | 28.40     |
| .63    | 33.50    | 25.10     | 33.19    | 26.41     | 32.49    | 27.11     | 31.51    | 28.9      |
| .64    | 34.22    | 25.38     | 33.51    | 26.9      | 33.20    | 26.40     | 32.21    | 27.39     |
| .65    | 34.49    | 25.11     | 34.23    | 25.37     | 33.51    | 26.9      | 32.51    | 27.9      |
| .66    | 35.27    | 24.33     | 34.54    | 25.6      | 34.23    | 25.37     | 33.22    | 26.38     |
| .67    | 35.59    | 24.1      | 35.26    | 24.34     | 34.54    | 25.6      | 33.52    | 26.8      |
| .68    | 36.31    | 23.29     | 35.58    | 24.2      | 35.25    | 24.35     | 34.22    | 25.38     |
| .69    | 37.4     | 22.56     | 36.30    | 23.30     | 35.56    | 24.4      | 34.53    | 25.7      |
| .70    | 0.37.36  | 359.22.24 | 0.37.1   | 359.22.59 | 0.36.28  | 359.23.32 | 0.35.23  | 359.24.37 |
| .71    | 0.38.8   | 359.21.52 | 0.37.33  | 359.22.27 | 0.36.59  | 359.23.1  | 0.35.53  | 359.24.7  |
| .72    | 38.40    | 21.20     | 38.5     | 21.55     | 37.30    | 22.30     | 36.24    | 23.36     |
| .73    | 39.12    | 20.48     | 38.37    | 21.23     | 38.1     | 21.59     | 36.54    | 23.6      |
| .74    | 39.45    | 20.15     | 39.8     | 20.52     | 38.33    | 21.27     | 37.24    | 22.36     |
| .75    | 40.17    | 19.43     | 39.40    | 20.20     | 39.4     | 20.56     | 37.55    | 22.5      |
| .76    | 40.49    | 19.11     | 40.12    | 19.48     | 39.35    | 20.25     | 38.25    | 21.35     |
| .77    | 41.21    | 18.39     | 40.44    | 19.16     | 40.6     | 19.54     | 38.56    | 21.4      |
| .78    | 41.54    | 18.6      | 41.15    | 18.45     | 40.38    | 19.22     | 39.26    | 20.34     |
| .79    | 42.26    | 17.34     | 41.47    | 18.13     | 41.9     | 18.51     | 39.56    | 20.4      |
| .80    | 0.42.58  | 359.17.2  | 0.42.19  | 359.17.41 | 0.41.40  | 359.18.20 | 0.40.26  | 359.19.34 |
| .81    | 0.43.30  | 359.16.30 | 0.42.50  | 359.17.10 | 0.42.11  | 359.17.49 | 0.40.57  | 359.19.3  |
| .82    | 44.3     | 15.57     | 43.22    | 16.38     | 42.43    | 17.17     | 41.27    | 18.33     |
| .83    | 44.34    | 15.26     | 43.54    | 16.6      | 43.14    | 16.46     | 41.57    | 18.3      |
| .84    | 45.7     | 14.53     | 44.26    | 15.34     | 43.45    | 16.15     | 42.28    | 17.32     |
| .85    | 45.39    | 14.21     | 44.57    | 15.3      | 44.16    | 15.44     | 42.58    | 17.2      |
| .86    | 46.12    | 13.48     | 45.29    | 14.31     | 44.48    | 15.12     | 43.28    | 16.32     |
| .87    | 46.44    | 13.16     | 46.1     | 13.59     | 45.19    | 14.41     | 43.59    | 16.1      |
| .88    | 47.16    | 12.44     | 46.33    | 13.27     | 45.50    | 14.10     | 44.29    | 15.31     |
| .89    | 47.48    | 12.12     | 47.4     | 12.56     | 46.21    | 13.39     | 44.59    | 15.1      |
| .90    | 0.48.20  | 359.11.40 | 0.47.36  | 359.12.24 | 0.46.53  | 359.13.7  | 0.45.30  | 359.14.30 |
| .91    | 0.48.53  | 359.11.7  | 0.48.8   | 359.11.52 | 0.47.24  | 359.12.36 | 0.46.0   | 359.14.0  |
| .92    | 49.25    | 10.35     | 48.39    | 11.21     | 47.55    | 12.5      | 46.30    | 13.30     |
| .93    | 49.57    | 10.3      | 49.11    | 10.49     | 48.26    | 11.34     | 47.1     | 12.59     |
| .94    | 50.29    | 9.31      | 49.43    | 10.17     | 48.58    | 11.2      | 47.31    | 12.29     |
| .95    | 51.2     | 8.58      | 50.15    | 9.45      | 49.29    | 10.31     | 48.1     | 11.59     |
| .96    | 51.34    | 8.26      | 50.47    | 9.13      | 50.0     | 10.0      | 48.32    | 11.28     |
| .97    | 52.6     | 7.54      | 51.18    | 8.42      | 50.31    | 9.29      | 49.2     | 10.58     |
| .98    | 52.38    | 7.22      | 51.50    | 8.10      | 51.3     | 8.57      | 49.32    | 10.28     |
| .99    | 53.11    | 6.49      | 52.22    | 7.38      | 51.34    | 8.26      | 50.3     | 9.57      |
| 1.00   | 0.53.43  | 359.8.17  | 0.52.53  | 359.7.7   | 0.52.5   | 359.7.55  | 0.50.33  | 359.9.27  |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R-700 公尺 |           | R-750 公尺 |           | R-800 公尺 |           | R-850 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| 0.1    | 0.29     | 359.59.31 | 0.0.27   | 359.59.33 | 0.0.26   | 359.59.34 | 0.0.24   | 359.59.36 |
| 0.2    | 1.59     | 59.1      | 1.55     | 59.5      | 0.51     | 59.9      | 0.48     | 59.12     |
| 0.3    | 1.58     | 58.32     | 1.22     | 58.38     | 1.17     | 58.43     | 1.13     | 58.47     |
| 0.4    | 1.58     | 58.2      | 1.50     | 58.10     | 1.43     | 58.17     | 1.37     | 58.23     |
| 0.5    | 2.27     | 57.33     | 2.17     | 57.43     | 2.9      | 57.51     | 2.1      | 57.59     |
| 0.6    | 2.57     | 57.3      | 2.45     | 57.15     | 2.35     | 57.25     | 2.26     | 57.34     |
| 0.7    | 3.25     | 56.34     | 3.12     | 56.48     | 3.1      | 56.59     | 2.50     | 57.10     |
| 0.8    | 3.56     | 55.4      | 3.40     | 56.20     | 3.26     | 56.34     | 3.14     | 56.46     |
| 0.9    | 4.25     | 55.35     | 4.7      | 55.53     | 3.52     | 56.8      | 3.38     | 56.22     |
| 1.0    | 0.4.55   | 359.55.5  | 0.4.35   | 359.55.25 | 0.4.18   | 359.56.42 | 0.4.3    | 359.55.57 |
| 1.1    | 0.5.24   | 359.54.36 | 0.5.2    | 359.54.58 | 0.4.44   | 359.55.16 | 0.4.27   | 359.55.33 |
| 1.2    | 5.53     | 54.7      | 5.30     | 54.30     | 5.9      | 54.51     | 4.51     | 55.9      |
| 1.3    | 6.23     | 53.37     | 5.57     | 54.3      | 5.36     | 54.29     | 5.15     | 54.45     |
| 1.4    | 6.52     | 53.8      | 6.25     | 53.35     | 6.9      | 53.51     | 5.40     | 54.20     |
| 1.5    | 7.22     | 52.38     | 6.52     | 53.8      | 6.27     | 53.33     | 6.4      | 53.56     |
| 1.6    | 7.51     | 52.9      | 7.20     | 52.40     | 6.52     | 53.8      | 6.28     | 53.32     |
| 1.7    | 8.21     | 51.39     | 7.47     | 52.13     | 7.18     | 52.42     | 6.53     | 53.7      |
| 1.8    | 8.50     | 51.10     | 8.15     | 51.45     | 7.44     | 52.16     | 7.17     | 52.43     |
| 1.9    | 9.20     | 50.40     | 8.42     | 51.18     | 8.10     | 51.50     | 7.41     | 52.19     |
| 2.0    | 0.9.49   | 359.50.11 | 0.9.10   | 359.50.50 | 0.8.36   | 359.51.24 | 0.8.5    | 359.51.55 |
| 2.1    | 0.10.19  | 359.49.41 | 0.9.37   | 359.50.23 | 0.9.1    | 359.50.59 | 0.8.30   | 359.51.30 |
| 2.2    | 10.48    | 49.12     | 10.5     | 49.55     | 9.27     | 50.33     | 8.54     | 51.6      |
| 2.3    | 11.18    | 48.42     | 10.32    | 49.28     | 9.53     | 50.7      | 9.18     | 50.42     |
| 2.4    | 11.47    | 48.13     | 11.0     | 49.0      | 10.19    | 49.41     | 9.42     | 50.18     |
| 2.5    | 12.17    | 47.43     | 11.27    | 48.33     | 10.45    | 49.15     | 10.7     | 49.53     |
| 2.6    | 12.46    | 47.14     | 11.55    | 48.5      | 11.10    | 48.50     | 10.31    | 49.29     |
| 2.7    | 13.16    | 46.44     | 12.22    | 47.38     | 11.36    | 48.24     | 10.55    | 49.5      |
| 2.8    | 13.45    | 46.15     | 12.50    | 47.10     | 12.2     | 47.58     | 11.19    | 48.41     |
| 2.9    | 14.14    | 45.46     | 13.17    | 46.43     | 12.28    | 47.32     | 11.44    | 48.16     |
| 3.0    | 0.14.44  | 359.45.16 | 0.13.45  | 359.46.15 | 0.12.53  | 359.47.7  | 0.12.8   | 359.47.52 |
| 3.1    | 0.15.13  | 359.44.47 | 0.14.12  | 359.45.48 | 0.13.19  | 359.46.41 | 0.12.32  | 359.47.28 |
| 3.2    | 15.43    | 44.17     | 14.40    | 45.20     | 13.45    | 46.15     | 12.57    | 47.3      |
| 3.3    | 16.12    | 43.48     | 15.7     | 44.53     | 14.11    | 45.49     | 13.21    | 46.39     |
| 3.4    | 16.42    | 43.18     | 15.35    | 44.25     | 14.37    | 45.23     | 13.45    | 46.15     |
| 3.5    | 17.11    | 42.49     | 16.2     | 43.58     | 15.2     | 44.58     | 14.9     | 45.51     |
| 3.6    | 17.41    | 42.19     | 16.30    | 43.30     | 15.28    | 44.32     | 14.33    | 45.27     |
| 3.7    | 18.10    | 41.50     | 16.57    | 43.3      | 15.54    | 44.6      | 14.58    | 45.2      |
| 3.8    | 18.40    | 41.20     | 17.25    | 42.35     | 16.20    | 43.40     | 15.22    | 44.38     |
| 3.9    | 19.9     | 40.51     | 17.52    | 42.8      | 16.45    | 43.15     | 15.46    | 44.14     |
| 4.0    | 0.19.39  | 359.40.21 | 0.18.50  | 359.41.10 | 0.17.11  | 359.42.49 | 0.16.11  | 359.43.49 |
| 4.1    | 0.20.8   | 359.39.52 | 0.18.48  | 359.41.12 | 0.17.37  | 359.42.23 | 0.16.35  | 359.43.25 |
| 4.2    | 20.38    | 39.22     | 19.15    | 40.45     | 18.3     | 41.57     | 16.59    | 43.1      |
| 4.3    | 21.7     | 38.53     | 19.42    | 40.18     | 18.29    | 41.31     | 17.23    | 42.37     |
| 4.4    | 21.36    | 38.24     | 20.10    | 39.50     | 18.54    | 41.6      | 17.48    | 42.12     |
| 4.5    | 22.6     | 37.54     | 20.37    | 39.23     | 19.20    | 40.40     | 18.12    | 41.48     |
| 4.6    | 22.35    | 37.25     | 21.5     | 38.55     | 19.46    | 40.14     | 18.36    | 41.24     |
| 4.7    | 23.5     | 36.55     | 21.32    | 38.28     | 20.12    | 39.48     | 19.0     | 41.0      |
| 4.8    | 23.34    | 36.26     | 22.0     | 38.0      | 20.38    | 39.22     | 19.25    | 40.35     |
| 4.9    | 24.1     | 35.56     | 22.27    | 37.33     | 21.3     | 38.57     | 19.49    | 40.11     |
| 5.0    | 0.24.33  | 359.35.27 | 0.22.55  | 359.37.5  | 0.21.29  | 359.38.31 | 0.20.13  | 359.39.47 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=700 公尺 |           | R=750 公尺 |           | R=800 公尺 |           | R=850 公尺 |           |
|--------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
|        | 右        | 左         | 右        | 左         | 右        | 左         | 右        | 左         |
| .51    | 0.25.3   | 359.34.57 | 0.23.22  | 359.36.38 | 0.21.55  | 359.38.5  | 0.20.38  | 359.39.22 |
| .52    | 25.32    | 34.28     | 23.50    | 36.10     | 22.21    | 37.39     | 21.2     | 36.58     |
| .53    | 26.2     | 33.58     | 24.17    | 35.43     | 22.46    | 37.14     | 21.26    | 36.34     |
| .54    | 26.31    | 33.29     | 24.45    | 35.15     | 23.12    | 36.48     | 21.50    | 36.10     |
| .55    | 27.1     | 32.59     | 25.12    | 34.48     | 23.38    | 36.22     | 22.15    | 37.45     |
| .56    | 27.30    | 32.30     | 25.40    | 34.20     | 24.4     | 35.56     | 22.39    | 37.21     |
| .57    | 27.59    | 32.1      | 26.7     | 33.53     | 24.29    | 35.31     | 23.3     | 36.57     |
| .58    | 28.29    | 31.31     | 26.35    | 33.25     | 24.55    | 34.5      | 23.27    | 36.33     |
| .59    | 28.59    | 31.1      | 27.2     | 32.53     | 25.21    | 34.13     | 23.51    | 35.9      |
| .60    | 0.29.28  | 359.30.32 | 0.27.30  | 359.32.30 | 0.25.47  | 359.34.93 | 0.24.16  | 359.35.44 |
| .61    | 0.29.57  | 359.30.3  | 0.27.57  | 359.32.3  | 0.26.13  | 359.33.47 | 0.24.40  | 359.35.20 |
| .62    | 30.27    | 29.32     | 28.25    | 31.35     | 26.39    | 33.21     | 25.5     | 34.55     |
| .63    | 30.56    | 29.4      | 28.53    | 31.7      | 27.4     | 32.56     | 25.29    | 34.31     |
| .64    | 31.26    | 28.34     | 29.20    | 30.40     | 27.30    | 32.30     | 25.53    | 34.7      |
| .65    | 31.55    | 28.5      | 29.47    | 30.13     | 27.56    | 32.4      | 26.17    | 33.43     |
| .66    | 32.25    | 27.35     | 30.15    | 29.45     | 28.22    | 31.38     | 26.41    | 33.19     |
| .67    | 32.54    | 27.6      | 30.42    | 29.18     | 28.47    | 31.13     | 27.6     | 32.54     |
| .68    | 33.24    | 26.36     | 31.10    | 28.50     | 29.13    | 30.47     | 27.30    | 32.30     |
| .69    | 33.53    | 26.7      | 31.37    | 28.23     | 29.39    | 30.21     | 27.54    | 32.6      |
| .70    | 0.34.23  | 359.25.37 | 0.32.5   | 359.27.55 | 0.30.5   | 359.29.55 | 0.28.18  | 359.31.42 |
| .71    | 0.34.52  | 359.25.8  | 0.32.32  | 359.27.28 | 0.30.31  | 359.29.29 | 0.28.43  | 359.31.17 |
| .72    | 35.21    | 24.39     | 33.0     | 27.0      | 30.56    | 29.4      | 29.7     | 30.53     |
| .73    | 35.51    | 24.9      | 33.27    | 26.33     | 31.22    | 28.38     | 29.31    | 30.29     |
| .74    | 36.20    | 23.40     | 33.55    | 26.5      | 31.48    | 28.12     | 29.56    | 30.4      |
| .75    | 36.50    | 23.10     | 34.23    | 25.37     | 32.14    | 27.46     | 30.20    | 29.40     |
| .76    | 37.19    | 22.41     | 34.50    | 25.10     | 32.40    | 27.20     | 30.44    | 29.16     |
| .77    | 37.49    | 22.11     | 35.17    | 24.43     | 33.5     | 26.55     | 31.8     | 28.52     |
| .78    | 38.18    | 21.42     | 35.45    | 24.15     | 33.31    | 26.29     | 31.33    | 28.27     |
| .79    | 38.48    | 21.12     | 36.12    | 23.48     | 33.57    | 26.3      | 31.57    | 28.3      |
| .80    | 0.39.17  | 359.20.43 | 0.36.40  | 359.23.20 | 0.34.23  | 359.25.37 | 0.32.21  | 359.27.39 |
| .81    | 0.39.47  | 359.20.13 | 0.37.8   | 359.22.52 | 0.34.48  | 359.25.12 | 0.32.45  | 359.27.15 |
| .82    | 40.16    | 19.44     | 37.35    | 22.25     | 35.14    | 24.46     | 33.10    | 26.50     |
| .83    | 40.46    | 19.14     | 38.2     | 21.58     | 35.40    | 24.20     | 33.34    | 26.26     |
| .84    | 41.15    | 18.45     | 38.30    | 21.30     | 36.6     | 23.54     | 33.58    | 26.2      |
| .85    | 41.45    | 18.15     | 38.57    | 21.3      | 36.31    | 23.29     | 34.23    | 25.37     |
| .86    | 42.14    | 17.46     | 39.25    | 20.35     | 36.57    | 23.3      | 34.47    | 25.13     |
| .87    | 42.44    | 17.16     | 39.52    | 20.8      | 37.23    | 22.37     | 35.11    | 24.49     |
| .88    | 43.13    | 16.47     | 40.20    | 19.40     | 37.49    | 22.11     | 35.35    | 24.25     |
| .89    | 43.42    | 16.18     | 40.47    | 19.13     | 38.15    | 21.45     | 36.0     | 24.0      |
| .90    | 1.44.12  | 359.15.48 | 0.41.15  | 359.18.45 | 0.38.40  | 359.21.20 | 0.36.24  | 359.23.36 |
| .91    | 0.44.41  | 359.15.19 | 0.41.42  | 359.18.13 | 0.39.6   | 359.20.54 | 0.36.48  | 359.23.12 |
| .92    | 45.11    | 14.49     | 42.10    | 17.50     | 39.32    | 20.28     | 37.12    | 22.48     |
| .93    | 45.40    | 14.20     | 42.37    | 17.23     | 39.58    | 20.2      | 37.36    | 22.24     |
| .94    | 46.10    | 13.50     | 43.5     | 16.55     | 40.24    | 19.36     | 38.1     | 21.59     |
| .95    | 46.39    | 13.21     | 43.22    | 16.28     | 40.49    | 19.11     | 38.25    | 21.35     |
| .96    | 47.9     | 12.51     | 44.00    | 16.0      | 41.15    | 18.45     | 38.50    | 21.10     |
| .97    | 47.38    | 12.22     | 44.27    | 15.33     | 41.41    | 18.19     | 39.14    | 20.46     |
| .98    | 48.8     | 11.52     | 44.55    | 15.5      | 42.7     | 17.53     | 39.38    | 20.22     |
| .99    | 48.37    | 11.23     | 45.22    | 14.38     | 42.33    | 17.27     | 40.2     | 19.58     |
| 1.00   | 0.49.7   | 359.10.53 | 0.45.50  | 359.14.10 | 0.42.58  | 359.17.2  | 0.40.27  | 359.19.33 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=900 公尺 |           | R=950 公尺 |           | R=1,000 公尺 |           | R=1,100 公尺 |           |
|--------|----------|-----------|----------|-----------|------------|-----------|------------|-----------|
|        | 右        | 左         | 右        | 左         | 右          | 左         | 右          | 左         |
| .01    | 0. 0.23  | 359.59.37 | 0. 0.22  | 359.59.38 | 0. 0.21    | 359.59.39 | 0. 0.19    | 359.59.41 |
| .02    | .46      | 59.14     | .44      | 59.16     | 0.41       | 59.19     | .38        | 59.22     |
| .03    | 1. 9     | 58.51     | 1. 5     | 58.55     | 1. 2       | 58.58     | .56        | 59. 4     |
| .04    | 1.32     | 58.28     | 1.27     | 58.33     | 1.22       | 58.38     | 1.15       | 58.45     |
| .05    | 1.55     | 58. 5     | 1.49     | 58.11     | 1.43       | 58.17     | 1.34       | 58.26     |
| .06    | 2.17     | 57.43     | 2.10     | 57.50     | 2. 4       | 57.56     | 1.52       | 58. 8     |
| .07    | 2.40     | 57.20     | 2.32     | 57.28     | 2.24       | 57.36     | 2.11       | 57.49     |
| .08    | 3. 3     | 56.57     | 2.54     | 57. 6     | 2.45       | 57.15     | 2.30       | 57.30     |
| .09    | 3.26     | 56.34     | 3.15     | 56.45     | 3. 5       | 56.55     | 2.49       | 57.11     |
| .10    | 0. 3.49  | 359.56.11 | 0. 3.37  | 359.56.23 | 0. 3.26    | 359.56.34 | 0. 3. 8    | 359.56.52 |
| .11    | 0. 4.12  | 359.55.48 | 0. 3.59  | 359.56. 1 | 0. 3.47    | 359.56.13 | 0. 3.26    | 359.56.34 |
| .12    | 4.36     | 55.25     | 4.21     | 55.29     | 4. 7       | 55.53     | 3.45       | 56.15     |
| .13    | 4.58     | 55. 2     | 4.42     | 55.18     | 4.28       | 55.32     | 4. 4       | 55.56     |
| .14    | 5.21     | 54.39     | 5. 4     | 54.56     | 4.49       | 55.11     | 4.22       | 55.38     |
| .15    | 5.44     | 54.16     | 5.26     | 54.34     | 5. 9       | 54.51     | 4.41       | 55.19     |
| .16    | 6. 7     | 53.53     | 5.48     | 54.12     | 5.30       | 54.30     | 5. 0       | 56. 0     |
| .17    | 6.30     | 53.30     | 6. 9     | 53.51     | 5.51       | 54. 9     | 5.19       | 54.41     |
| .18    | 6.52     | 53. 8     | 6.31     | 53.29     | 6.11       | 53.49     | 5.38       | 54.22     |
| .19    | 7.15     | 52.45     | 6.53     | 53. 7     | 6.32       | 53.28     | 5.56       | 54. 4     |
| .20    | 0. 7.38  | 359.52.22 | 0. 7.14  | 359.52.46 | 0. 6.52    | 358.53. 8 | 0. 6.15    | 359.53.45 |
| .21    | 0. 8. 1  | 359.51.59 | 0. 7.36  | 359.52.24 | 0. 7.13    | 359.52.47 | 0. 6.34    | 359.53.26 |
| .22    | 8.24     | 51.36     | 7.58     | 52. 2     | 7.34       | 52.26     | 6.53       | 53. 7     |
| .23    | 8.47     | 51.13     | 8.19     | 51.41     | 7.54       | 52. 6     | 7.11       | 52.49     |
| .24    | 9.10     | 50.50     | 8.41     | 51.19     | 8.15       | 51.45     | 7.30       | 52.30     |
| .25    | 9.33     | 50.27     | 9. 3     | 50.57     | 8.35       | 51.25     | 7.49       | 52.11     |
| .26    | 9.56     | 50. 4     | 9.24     | 50.36     | 8.56       | 51. 4     | 8. 8       | 51.52     |
| .27    | 10.19    | 49.41     | 9.46     | 50.14     | 9.17       | 50.43     | 8.26       | 51.34     |
| .28    | 10.42    | 49.18     | 10. 8    | 49.52     | 9.37       | 50.23     | 8.45       | 51.15     |
| .29    | 11. 5    | 48.55     | 10.35    | 49.25     | 9.58       | 50. 2     | 9. 4       | 50.56     |
| .30    | 0.11.27  | 359.48.33 | 0.10.51  | 359.49. 9 | 0.10.19    | 359.49.41 | 0. 9.23    | 359.50.37 |
| .31    | 0.11.50  | 359.48.10 | 0.11.13  | 359.48.47 | 0.10.39    | 359.49.21 | 0. 9.41    | 359.50.19 |
| .32    | 12.13    | 47.47     | 11.35    | 48.25     | 11. 0      | 49. 0     | 10. 0      | 50. 0     |
| .33    | 12.36    | 47.24     | 11.57    | 48. 3     | 11.21      | 48.39     | 10.19      | 49.41     |
| .34    | 12.59    | 47. 1     | 12.18    | 47.42     | 11.41      | 48.19     | 10.38      | 49.22     |
| .35    | 13.22    | 46.38     | 12.40    | 47.20     | 12. 2      | 47.58     | 10.56      | 49. 4     |
| .36    | 13.45    | 46.15     | 13. 2    | 46.58     | 12.23      | 47.37     | 11.15      | 48.45     |
| .37    | 14. 8    | 45.52     | 13.24    | 46.36     | 12.43      | 47.17     | 11.34      | 48.26     |
| .38    | 14.31    | 45.29     | 13.45    | 46.15     | 13. 4      | 46.56     | 11.53      | 48. 7     |
| .39    | 14.54    | 45. 6     | 14. 7    | 45.53     | 13.24      | 46.36     | 12.11      | 47.49     |
| .40    | 0.15.17  | 359.44.43 | 0.14.29  | 359.45.31 | 0.13.45    | 359.46.15 | 0.12.30    | 359.47.30 |
| .41    | 0.15.40  | 359.44.20 | 0.14.50  | 359.45.10 | 0.14. 6    | 359.45.54 | 0.12.49    | 359.47.11 |
| .42    | 16. 3    | 43.57     | 15.12    | 44.48     | 14.26      | 45.34     | 13. 8      | 46.52     |
| .43    | 16.26    | 43.35     | 15.34    | 44.26     | 14.47      | 45.13     | 13.26      | 46.34     |
| .44    | 16.48    | 43.12     | 15.56    | 44. 4     | 15. 7      | 44.53     | 13.45      | 46.15     |
| .45    | 17.11    | 42.49     | 16.17    | 43.43     | 15.28      | 44.32     | 14. 4      | 45.56     |
| .46    | 17.34    | 42.26     | 16.39    | 43.21     | 15.49      | 44.11     | 14.23      | 45.37     |
| .47    | 17.57    | 42. 3     | 17. 1    | 42.59     | 16. 9      | 43.51     | 14.41      | 45.19     |
| .48    | 18.20    | 41.40     | 17.22    | 42.38     | 16.30      | 43.30     | 15. 0      | 45. 0     |
| .49    | 18.43    | 41.17     | 17.44    | 42.16     | 16.51      | 43. 9     | 15.19      | 44.41     |
| .50    | 0.19. 6  | 359.40.54 | 0.18. 6  | 359.41.54 | 0.17.11    | 359.42.49 | 0.15.38    | 359.44.22 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=900 公尺 |           | R=950 公尺 |           | R=1,000 公尺 |           | R=1,100 公尺 |           |
|--------|----------|-----------|----------|-----------|------------|-----------|------------|-----------|
|        | 右        | 左         | 右        | 左         | 右          | 左         | 右          | 左         |
| .51    | 0.19.29  | 359.40.31 | 0.18.27  | 359.41.33 | 0.17.32    | 359.42.28 | 0.15.56    | 359.41.4  |
| .52    | 19.52    | 40.8      | 18.49    | 41.11     | 17.53      | 42.7      | 18.15      | 43.45     |
| .53    | 20.15    | 39.45     | 19.11    | 40.49     | 18.13      | 41.47     | 18.34      | 43.26     |
| .54    | 20.38    | 39.22     | 19.33    | 40.27     | 18.34      | 41.26     | 18.53      | 43.7      |
| .55    | 21.1     | 38.59     | 19.54    | 40.6      | 18.54      | 41.6      | 17.11      | 42.49     |
| .56    | 21.23    | 38.37     | 20.16    | 39.44     | 19.15      | 40.45     | 17.30      | 42.30     |
| .57    | 21.46    | 38.14     | 20.28    | 39.32     | 19.28      | 40.24     | 17.49      | 42.11     |
| .58    | 22.9     | 37.51     | 20.59    | 39.1      | 19.56      | 40.4      | 18.8       | 41.52     |
| .59    | 22.32    | 37.28     | 21.21    | 38.39     | 20.17      | 39.43     | 18.26      | 41.34     |
| .60    | 0.22.55  | 359.37.5  | 0.21.43  | 359.38.17 | 0.20.33    | 359.38.22 | 0.18.45    | 359.41.15 |
| .61    | 0.23.18  | 359.36.42 | 0.22.42  | 359.37.18 | 0.20.58    | 359.39.2  | 0.19.4     | 359.40.56 |
| .62    | 23.41    | 36.19     | 22.26    | 37.34     | 21.19      | 38.41     | 19.23      | 40.37     |
| .63    | 24.4     | 35.56     | 22.48    | 37.12     | 21.39      | 38.21     | 19.41      | 40.19     |
| .64    | 24.27    | 35.33     | 23.10    | 36.50     | 22.0       | 38.0      | 20.0       | 40.0      |
| .65    | 24.50    | 35.10     | 23.31    | 36.28     | 22.21      | 37.39     | 20.19      | 39.41     |
| .66    | 25.13    | 34.47     | 23.53    | 36.7      | 22.41      | 37.19     | 20.38      | 39.22     |
| .67    | 25.35    | 34.25     | 24.15    | 35.45     | 23.2       | 36.58     | 20.56      | 39.4      |
| .68    | 25.58    | 34.2      | 24.38    | 35.24     | 23.23      | 36.37     | 21.15      | 38.45     |
| .69    | 26.21    | 33.39     | 24.58    | 35.2      | 23.43      | 36.17     | 21.34      | 38.26     |
| .70    | 0.26.44  | 359.33.16 | 0.25.20  | 359.34.40 | 0.24.4     | 359.35.58 | 0.21.53    | 359.38.7  |
| .71    | 0.27.7   | 359.32.53 | 0.25.42  | 359.34.19 | 0.24.24    | 359.35.36 | 0.22.11    | 359.37.49 |
| .72    | 27.30    | 32.30     | 26.3     | 33.57     | 24.45      | 35.15     | 22.30      | 37.30     |
| .73    | 27.53    | 32.7      | 26.25    | 33.35     | 25.6       | 34.54     | 22.49      | 37.11     |
| .74    | 28.18    | 31.44     | 26.47    | 33.13     | 25.26      | 34.34     | 23.8       | 36.52     |
| .75    | 28.39    | 31.21     | 27.9     | 32.51     | 25.47      | 34.13     | 23.26      | 36.34     |
| .76    | 29.2     | 30.58     | 27.30    | 32.30     | 26.8       | 33.52     | 23.45      | 36.15     |
| .77    | 29.25    | 30.35     | 27.52    | 32.8      | 26.28      | 33.32     | 24.4       | 35.56     |
| .78    | 29.48    | 30.12     | 28.14    | 31.45     | 26.49      | 33.11     | 24.23      | 35.37     |
| .79    | 30.10    | 29.50     | 28.35    | 31.25     | 27.9       | 32.51     | 24.41      | 35.19     |
| .80    | 0.30.33  | 359.29.27 | 0.28.57  | 359.31.3  | 0.27.30    | 359.32.30 | 0.25.0     | 359.35.0  |
| .81    | 0.30.56  | 259.29.4  | 0.29.19  | 359.30.41 | 0.27.51    | 359.32.9  | 0.25.19    | 359.34.41 |
| .82    | 31.19    | 28.41     | 29.41    | 30.19     | 28.11      | 31.49     | 25.38      | 34.22     |
| .83    | 31.42    | 28.18     | 30.2     | 30.58     | 28.32      | 31.28     | 25.56      | 34.4      |
| .84    | 32.5     | 27.55     | 30.24    | 29.36     | 28.53      | 31.7      | 26.15      | 33.45     |
| .85    | 32.28    | 27.32     | 30.46    | 29.14     | 29.13      | 30.47     | 26.34      | 33.26     |
| .86    | 32.51    | 27.9      | 31.8     | 28.52     | 29.34      | 30.26     | 26.53      | 33.7      |
| .87    | 33.14    | 26.46     | 31.29    | 28.31     | 29.54      | 30.6      | 27.11      | 32.49     |
| .88    | 33.37    | 26.23     | 31.51    | 28.9      | 30.15      | 29.45     | 27.30      | 32.30     |
| .89    | 33.59    | 26.1      | 32.12    | 27.48     | 30.36      | 29.24     | 27.49      | 32.11     |
| .90    | 0.34.23  | 359.25.37 | 0.32.34  | 359.27.26 | 0.30.56    | 359.29.4  | 0.28.8     | 359.31.52 |
| .91    | 0.34.45  | 359.25.15 | 0.32.56  | 359.27.4  | 0.31.17    | 359.28.43 | 0.28.26    | 359.31.34 |
| .92    | 35.9     | 24.51     | 33.18    | 26.42     | 31.38      | 28.22     | 28.45      | 31.15     |
| .93    | 35.31    | 24.29     | 33.39    | 26.21     | 31.58      | 28.2      | 29.4       | 30.56     |
| .94    | 35.54    | 24.6      | 34.1     | 25.59     | 32.19      | 27.41     | 29.23      | 30.37     |
| .95    | 36.17    | 23.43     | 34.23    | 25.37     | 32.39      | 27.21     | 29.41      | 30.19     |
| .96    | 36.40    | 23.20     | 34.45    | 25.15     | 33.0       | 27.0      | 30.0       | 30.0      |
| .97    | 37.3     | 22.57     | 35.6     | 24.54     | 33.21      | 26.39     | 30.19      | 29.41     |
| .98    | 37.26    | 22.34     | 35.28    | 24.32     | 33.41      | 26.19     | 30.38      | 29.22     |
| .99    | 37.49    | 22.11     | 35.50    | 24.10     | 34.2       | 25.58     | 30.56      | 29.4      |
| 1.00   | 0.38.12  | 359.21.48 | 0.36.12  | 359.23.48 | 0.34.23    | 359.25.37 | 0.31.15    | 359.28.45 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=1.200 公尺 |           | R=1.300 公尺 |           | R=1.400 公尺 |           | R=1.500 公尺 |           |
|--------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|
|        | 右          | 左         | 右          | 左         | 右          | 左         | 右          | 左         |
| .01    | 0.017      | 359.59.43 | 0.016      | 359.59.44 | 0.015      | 359.59.45 | 0.014      | 359.59.46 |
| .02    | .34        | 59.26     | .32        | 59.28     | .29        | 59.31     | .28        | 59.32     |
| .03    | .51        | 59.9      | .49        | 59.12     | .44        | 59.16     | .41        | 59.19     |
| .04    | 1.9        | 58.51     | 1.3        | 58.57     | .59        | 59.1      | .55        | 59.5      |
| .05    | 1.26       | 58.34     | 1.19       | 58.41     | 1.14       | 58.46     | 1.9        | 58.51     |
| .06    | 1.43       | 58.17     | 1.35       | 58.25     | 1.28       | 58.32     | 1.23       | 58.37     |
| .07    | 2.0        | 58.0      | 1.51       | 58.9      | 1.43       | 58.17     | 1.36       | 58.24     |
| .08    | 2.17       | 57.43     | 2.7        | 57.53     | 1.58       | 58.2      | 1.50       | 58.10     |
| .09    | 2.35       | 57.25     | 2.23       | 57.37     | 2.12       | 57.48     | 2.4        | 57.56     |
| .10    | 0.2.52     | 359.57.2  | 0.2.39     | 359.57.21 | 0.2.27     | 359.57.33 | 0.2.18     | 359.57.42 |
| .11    | 0.3.9      | 359.56.51 | 0.2.54     | 359.57.6  | 0.2.42     | 359.57.18 | 0.2.31     | 359.57.29 |
| .12    | 3.26       | 56.34     | 3.10       | 56.50     | 2.57       | 57.3      | 2.45       | 57.15     |
| .13    | 3.43       | 56.17     | 3.26       | 56.34     | 3.11       | 56.49     | 2.58       | 57.2      |
| .14    | 4.1        | 55.59     | 3.42       | 56.18     | 3.25       | 56.34     | 3.12       | 56.48     |
| .15    | 4.18       | 55.42     | 3.58       | 56.2      | 3.41       | 56.19     | 3.26       | 56.34     |
| .16    | 4.35       | 55.25     | 4.14       | 55.46     | 3.56       | 56.4      | 3.40       | 56.20     |
| .17    | 4.52       | 55.8      | 4.30       | 55.30     | 4.10       | 55.50     | 3.53       | 56.7      |
| .18    | 5.9        | 54.51     | 4.46       | 55.14     | 4.25       | 55.35     | 4.7        | 55.53     |
| .19    | 5.27       | 54.33     | 5.1        | 54.59     | 4.40       | 55.20     | 4.21       | 55.39     |
| .20    | 0.5.44     | 359.54.16 | 0.5.17     | 359.54.43 | 0.4.55     | 359.55.5  | 0.4.36     | 359.55.24 |
| .21    | 0.6.1      | 359.53.59 | 0.5.33     | 359.54.27 | 0.5.9      | 359.54.51 | 0.4.49     | 359.55.11 |
| .22    | 6.18       | 53.42     | 5.49       | 54.11     | 5.24       | 54.36     | 5.2        | 54.58     |
| .23    | 6.35       | 53.25     | 6.5        | 53.55     | 5.39       | 54.21     | 5.16       | 54.44     |
| .24    | 6.52       | 53.8      | 6.21       | 53.39     | 5.54       | 54.6      | 5.30       | 54.30     |
| .25    | 7.10       | 52.50     | 6.37       | 53.23     | 6.8        | 53.52     | 5.44       | 54.15     |
| .26    | 7.27       | 52.33     | 6.53       | 53.7      | 6.23       | 53.37     | 5.58       | 54.2      |
| .27    | 7.44       | 52.16     | 7.8        | 52.52     | 6.38       | 53.22     | 6.11       | 53.49     |
| .28    | 8.1        | 51.59     | 7.24       | 52.36     | 6.53       | 53.7      | 6.25       | 53.35     |
| .29    | 8.18       | 51.42     | 7.40       | 52.20     | 7.7        | 52.53     | 6.39       | 53.21     |
| .30    | 0.8.36     | 359.51.24 | 0.7.56     | 359.52.4  | 0.7.22     | 359.52.38 | 0.6.53     | 359.53.7  |
| .31    | 0.8.53     | 359.51.7  | 0.8.12     | 359.51.48 | 0.7.37     | 359.52.25 | 0.7.6      | 359.52.54 |
| .32    | 9.10       | 50.50     | 8.28       | 51.32     | 7.51       | 52.9      | 7.20       | 52.40     |
| .33    | 9.27       | 50.33     | 8.44       | 51.16     | 8.6        | 51.54     | 7.34       | 52.26     |
| .34    | 9.44       | 50.16     | 9.0        | 51.0      | 8.21       | 51.39     | 7.48       | 52.12     |
| .35    | 10.2       | 49.58     | 9.15       | 50.45     | 8.36       | 51.24     | 8.2        | 51.58     |
| .36    | 10.19      | 49.41     | 9.31       | 50.29     | 8.50       | 51.10     | 8.15       | 51.45     |
| .37    | 10.36      | 49.24     | 9.47       | 50.13     | 9.5        | 50.55     | 8.29       | 51.31     |
| .38    | 10.53      | 49.7      | 10.3       | 49.57     | 9.20       | 50.40     | 8.43       | 51.17     |
| .39    | 11.10      | 48.50     | 10.19      | 48.41     | 9.35       | 50.25     | 8.57       | 51.3      |
| .40    | 0.11.27    | 359.48.33 | 0.10.34    | 359.48.26 | 0.9.49     | 359.50.11 | 0.9.11     | 359.50.49 |
| .41    | 0.11.45    | 359.48.15 | 0.10.51    | 359.49.9  | 0.10.4     | 359.49.56 | 0.9.24     | 359.50.36 |
| .42    | 12.2       | 47.58     | 11.6       | 48.54     | 10.19      | 49.41     | 9.38       | 50.22     |
| .43    | 12.19      | 47.41     | 11.22      | 48.38     | 10.33      | 49.27     | 9.52       | 50.8      |
| .44    | 12.36      | 47.24     | 11.33      | 48.22     | 10.48      | 49.12     | 10.6       | 49.54     |
| .45    | 12.53      | 47.7      | 11.54      | 48.6      | 11.3       | 49.57     | 10.21      | 49.39     |
| .46    | 13.11      | 46.49     | 12.10      | 47.50     | 11.18      | 48.42     | 10.33      | 49.27     |
| .47    | 13.28      | 46.32     | 12.26      | 47.34     | 11.32      | 48.28     | 10.47      | 49.13     |
| .48    | 13.45      | 46.15     | 12.42      | 47.19     | 11.47      | 48.13     | 11.1       | 48.59     |
| .49    | 14.2       | 45.56     | 12.57      | 47.3      | 12.2       | 47.58     | 11.14      | 48.46     |
| .50    | 0.14.19    | 359.45.41 | 0.13.13    | 353.46.47 | 0.12.17    | 359.47.43 | 0.11.28    | 359.48.32 |



曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=1.200 公尺 |           | R=1.300 公尺 |           | R=1.400 公尺 |           | R=1.500 公尺 |           |
|--------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|
|        | 右          | 左         | 右          | 左         | 右          | 左         | 右          | 左         |
| .5 1   | 0.14.37    | 359.45.23 | 0.13.29    | 359.46.31 | 0.12.31    | 359.47.29 | 0.11.42    | 359.48.18 |
| .5 2   | 14.54      | 45.6      | 13.45      | 45.15     | 12.46      | 47.14     | 11.56      | 48.4      |
| .5 3   | 15.11      | 44.49     | 14.1       | 45.59     | 13.1       | 46.59     | 12.11      | 47.49     |
| .5 4   | 15.28      | 44.32     | 14.17      | 45.43     | 13.16      | 46.44     | 12.23      | 47.37     |
| .5 5   | 15.45      | 44.15     | 14.33      | 45.27     | 13.30      | 46:30     | 12.37      | 47.23     |
| .5 6   | 16.3       | 43.57     | 14.48      | 45.12     | 13.45      | 46.15     | 12.51      | 47.9      |
| .5 7   | 16.20      | 43.40     | 15.4       | 44.56     | 13.59      | 46.1      | 13.4       | 46.56     |
| .5 8   | 16.37      | 43.23     | 15.20      | 44.40     | 14.14      | 45.46     | 13.18      | 46.42     |
| .5 9   | 16.54      | 43.6      | 15.36      | 44.24     | 14.29      | 45.31     | 13.32      | 46.28     |
| .6 0   | 0.17.11    | 359.42.49 | 0.16.52    | 359.44.8  | 0.14.41    | 359.45.16 | 0.13.46    | 359.46.14 |
| .6 1   | 0.17.28    | 359.42.32 | 0.16.8     | 359.43.52 | 0.14.59    | 359.45.1  | 0.13.59    | 359.46.1  |
| .6 2   | 17.46      | 42.14     | 16.24      | 43.36     | 15.13      | 44.47     | 14.13      | 45.47     |
| .6 3   | 18.3       | 41.57     | 16.40      | 43.20     | 15.28      | 44.32     | 14.27      | 45.33     |
| .6 4   | 18.20      | 41.40     | 16.56      | 43.5      | 15.43      | 44.17     | 14.41      | 45.19     |
| .6 5   | 18.37      | 41.23     | 17.11      | 42.49     | 15.58      | 44.2      | 14.54      | 45.6      |
| .6 6   | 18.54      | 41.6      | 17.27      | 42.33     | 16.12      | 43.48     | 15.8       | 44.52     |
| .6 7   | 19.12      | 40.48     | 17.43      | 42.17     | 16.27      | 43.33     | 15.22      | 44.38     |
| .6 8   | 19.29      | 40.31     | 17.59      | 42.1      | 16.42      | 43.18     | 15.36      | 44.24     |
| .6 9   | 19.46      | 40.14     | 18.15      | 41.45     | 16.57      | 43.3      | 15.49      | 44.11     |
| .7 0   | 0.20.3     | 359.39.57 | 0.18.31    | 359.41.29 | 0.17.11    | 359.42.49 | 0.16.3     | 359.43.57 |
| .7 1   | 0.20.20    | 359.39.40 | 0.18.47    | 359.41.13 | 0.17.26    | 359.42.34 | 0.16.17    | 359.43.43 |
| .7 2   | 20.37      | 39.23     | 19.2       | 40.58     | 17.41      | 42.19     | 16.32      | 43.28     |
| .7 3   | 20.55      | 39.5      | 19.18      | 40.42     | 17.55      | 42.5      | 16.44      | 43.16     |
| .7 4   | 21.12      | 38.48     | 19.34      | 40.26     | 18.10      | 41.50     | 16.58      | 43.2      |
| .7 5   | 21.29      | 38.31     | 19.50      | 40.10     | 18.25      | 41.35     | 17.12      | 42.48     |
| .7 6   | 21.46      | 38.14     | 20.6       | 39.54     | 18.40      | 41.20     | 17.26      | 42.34     |
| .7 7   | 22.4       | 37.56     | 20.22      | 39.38     | 18.54      | 41.6      | 17.39      | 42.21     |
| .7 8   | 22.21      | 37.39     | 20.38      | 39.22     | 19.9       | 40.51     | 17.53      | 42.7      |
| .7 9   | 22.38      | 37.22     | 20.53      | 39.7      | 19.24      | 40.36     | 18.7       | 41.53     |
| .8 0   | 0.22.55    | 359.37.5  | 0.21.9     | 359.38.51 | 0.19.39    | 359.40.21 | 0.18.21    | 359.41.39 |
| .8 1   | 0.23.12    | 359.36.48 | 0.21.25    | 359.38.35 | 0.19.53    | 359.40.7  | 0.18.34    | 359.41.26 |
| .8 2   | 23.29      | 36.31     | 21.41      | 38.19     | 20.8       | 39.52     | 18.48      | 41.12     |
| .8 3   | 23.47      | 36.13     | 21.57      | 38.3      | 20.23      | 39.37     | 19.2       | 40.58     |
| .8 4   | 24.4       | 35.56     | 22.13      | 37.47     | 20.38      | 39.22     | 19.16      | 40.44     |
| .8 5   | 24.21      | 35.39     | 22.28      | 37.32     | 20.52      | 39.8      | 19.29      | 40.31     |
| .8 6   | 24.38      | 35.22     | 22.44      | 37.16     | 21.7       | 38.53     | 19.43      | 40.17     |
| .8 7   | 24.55      | 35.5      | 23.0       | 37.0      | 21.22      | 38.38     | 19.57      | 40.3      |
| .8 8   | 25.13      | 34.47     | 23.16      | 36.44     | 21.37      | 38.23     | 20.11      | 39.49     |
| .8 9   | 25.30      | 34.30     | 23.32      | 36.28     | 21.51      | 38.9      | 20.24      | 39.36     |
| .9 0   | 0.25.47    | 359.34.13 | 0.23.48    | 359.36.12 | 0.22.6     | 359.37.54 | 0.20.38    | 359.38.21 |
| .9 1   | 0.26.4     | 359.33.56 | 0.24.4     | 359.35.56 | 0.22.21    | 359.37.39 | 0.20.53    | 359.39.7  |
| .9 2   | 26.21      | 33.39     | 24.19      | 35.41     | 22.35      | 37.25     | 21.6       | 38.54     |
| .9 3   | 26.39      | 33.21     | 24.35      | 35.25     | 22.50      | 37.10     | 21.19      | 38.41     |
| .9 4   | 26.56      | 33.4      | 24.51      | 35.9      | 23.5       | 36.55     | 21.33      | 38.27     |
| .9 5   | 27.13      | 32.47     | 25.7       | 34.53     | 23.20      | 36.40     | 21.47      | 38.13     |
| .9 6   | 27.30      | 32.30     | 25.23      | 34.37     | 23.34      | 36.26     | 22.1       | 37.59     |
| .9 7   | 27.47      | 32.13     | 25.39      | 34.21     | 23.49      | 36.11     | 22.14      | 37.46     |
| .9 8   | 28.4       | 31.56     | 25.55      | 34.5      | 24.4       | 35.56     | 22.28      | 37.32     |
| .9 9   | 28.22      | 31.38     | 26.11      | 33.49     | 24.19      | 35.41     | 22.41      | 37.19     |
| 1.0 0  | 0.28.39    | 359.31.21 | 0.26.27    | 359.33.33 | 0.24.33    | 359.35.27 | 0.22.56    | 359.37.5  |

曲線偏角累計表(弧長百分之一)

| 弧長百分之一 | R=1.600 公尺 |           | R=1.700 公尺 |           | R=1.800 公尺 |           | R=1.900 公尺 |           |
|--------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|
|        | 右          | 左         | 右          | 左         | 右          | 左         | 右          | 左         |
| 0.1    | 0.013      | 359.59.47 | 0.012      | 359.59.48 | 0.011      | 359.59.49 | 0.011      | 359.59.49 |
| 0.2    | .26        | 59.34     | .24        | 59.36     | .23        | 59.37     | .22        | 59.38     |
| 0.3    | .39        | 59.21     | .36        | 59.24     | .34        | 59.26     | .33        | 59.27     |
| 0.4    | .52        | 59.8      | .48        | 59.12     | .46        | 59.14     | .45        | 59.17     |
| 0.5    | 1.4        | 58.56     | 1.0        | 59.0      | .57        | 59.3      | .54        | 59.6      |
| 0.6    | 1.17       | 58.43     | 1.13       | 58.47     | 1.9        | 58.51     | 1.5        | 58.55     |
| 0.7    | 1.30       | 58.30     | 1.25       | 58.35     | 1.20       | 58.40     | 1.16       | 58.44     |
| 0.8    | 1.43       | 58.17     | 1.37       | 58.23     | 1.32       | 58.28     | 1.27       | 58.33     |
| 0.9    | 1.56       | 58.4      | 1.49       | 58.11     | 1.43       | 58.17     | 1.38       | 58.22     |
| 1.0    | 0.2.9      | 359.57.51 | 0.2.1      | 359.57.59 | 0.1.55     | 359.58.5  | 0.1.48     | 359.58.12 |
| 1.1    | 0.2.22     | 359.57.38 | 0.2.13     | 359.57.47 | 0.2.6      | 57.54     | 0.2.0      | 359.58.0  |
| 1.2    | 2.35       | 57.25     | 2.26       | 57.34     | 2.17       | 57.43     | 2.10       | 57.50     |
| 1.3    | 2.48       | 57.12     | 2.38       | 57.22     | 2.29       | 57.31     | 2.21       | 57.39     |
| 1.4    | 3.1        | 56.59     | 2.50       | 57.10     | 2.40       | 57.20     | 2.32       | 57.28     |
| 1.5    | 3.13       | 56.47     | 3.2        | 56.58     | 2.52       | 57.8      | 2.43       | 57.17     |
| 1.6    | 3.26       | 56.34     | 3.14       | 56.46     | 3.3        | 56.57     | 2.54       | 57.6      |
| 1.7    | 3.39       | 56.21     | 3.26       | 56.34     | 3.15       | 56.45     | 3.5        | 56.55     |
| 1.8    | 3.52       | 56.8      | 3.38       | 56.22     | 3.26       | 56.34     | 3.15       | 56.45     |
| 1.9    | 4.5        | 55.55     | 3.51       | 56.9      | 3.38       | 56.22     | 3.26       | 56.34     |
| 2.0    | 0.4.18     | 359.55.42 | 0.4.3      | 359.55.57 | 0.3.49     | 359.56.11 | 0.3.37     | 359.56.23 |
| 2.1    | 0.4.31     | 359.55.29 | 0.4.15     | 359.55.45 | 0.4.0      | 359.56.0  | 0.3.48     | 359.56.12 |
| 2.2    | 4.44       | 55.16     | 4.27       | 55.33     | 4.12       | 55.48     | 3.59       | 56.1      |
| 2.3    | 4.56       | 55.4      | 4.39       | 55.21     | 4.24       | 55.36     | 4.10       | 55.50     |
| 2.4    | 5.10       | 54.50     | 4.51       | 55.9      | 4.35       | 55.25     | 4.21       | 55.39     |
| 2.5    | 5.22       | 54.38     | 5.3        | 54.57     | 4.46       | 55.14     | 4.31       | 55.29     |
| 2.6    | 5.35       | 54.25     | 5.15       | 54.45     | 4.58       | 55.2      | 4.42       | 55.18     |
| 2.7    | 5.48       | 54.12     | 5.27       | 54.33     | 5.9        | 54.51     | 4.53       | 55.3      |
| 2.8    | 6.1        | 53.59     | 5.40       | 54.20     | 5.21       | 54.39     | 5.4        | 54.56     |
| 2.9    | 6.14       | 53.46     | 5.52       | 54.8      | 5.32       | 54.28     | 5.15       | 54.45     |
| 3.0    | 0.6.27     | 359.53.33 | 0.6.4      | 359.53.56 | 0.5.44     | 359.54.16 | 0.5.26     | 359.54.34 |
| 3.1    | 0.6.40     | 359.53.20 | 0.6.16     | 359.53.44 | 0.5.55     | 359.54.5  | 0.5.37     | 359.54.23 |
| 3.2    | 6.52       | 53.8      | 6.28       | 53.32     | 6.7        | 53.53     | 5.47       | 54.13     |
| 3.3    | 7.5        | 52.56     | 6.40       | 53.20     | 6.18       | 53.42     | 5.58       | 54.2      |
| 3.4    | 7.18       | 52.42     | 6.53       | 53.7      | 6.30       | 53.30     | 6.9        | 53.51     |
| 3.5    | 7.31       | 52.29     | 7.5        | 52.55     | 6.41       | 53.11     | 6.20       | 53.40     |
| 3.6    | 7.44       | 52.16     | 7.17       | 52.43     | 6.53       | 53.7      | 6.31       | 53.29     |
| 3.7    | 7.57       | 52.3      | 7.29       | 52.31     | 7.4        | 52.56     | 6.42       | 53.18     |
| 3.8    | 8.10       | 51.50     | 7.41       | 52.19     | 7.15       | 52.45     | 6.52       | 53.8      |
| 3.9    | 8.23       | 51.37     | 7.53       | 52.7      | 7.27       | 52.33     | 7.3        | 52.57     |
| 4.0    | 0.8.36     | 359.51.24 | 0.8.5      | 359.51.55 | 0.7.38     | 359.52.22 | 0.7.14     | 359.52.45 |
| 4.1    | 0.8.49     | 359.51.11 | 0.8.17     | 359.51.43 | 0.7.50     | 359.52.10 | 0.7.25     | 359.52.35 |
| 4.2    | 9.1        | 50.59     | 8.30       | 51.30     | 8.1        | 51.59     | 7.36       | 52.24     |
| 4.3    | 9.14       | 50.46     | 8.42       | 51.18     | 8.13       | 51.47     | 7.47       | 52.13     |
| 4.4    | 9.27       | 50.33     | 8.54       | 51.6      | 8.24       | 51.36     | 7.58       | 52.2      |
| 4.5    | 9.40       | 50.20     | 9.6        | 50.54     | 8.36       | 51.24     | 8.8        | 51.52     |
| 4.6    | 9.53       | 50.7      | 9.18       | 50.42     | 8.47       | 51.13     | 8.19       | 51.41     |
| 4.7    | 10.6       | 49.54     | 9.30       | 50.30     | 8.59       | 51.1      | 8.30       | 51.30     |
| 4.8    | 10.19      | 49.41     | 9.42       | 50.18     | 9.10       | 50.50     | 8.41       | 51.19     |
| 4.9    | 10.32      | 49.28     | 9.54       | 50.6      | 9.22       | 50.39     | 8.52       | 51.8      |
| 5.0    | 0.10.45    | 359.49.15 | 0.10.7     | 359.49.53 | 0.9.33     | 359.50.27 | 0.9.3      | 359.50.57 |

曲線偏角累計表(弧長百分之一)

| 弧長百分之一 | R=1.600 公尺 |           | R=1.700 公尺 |           | R=1.800 公尺 |           | R=1.900 公尺 |           |
|--------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|
|        | 右          | 左         | 右          | 左         | 右          | 左         | 右          | 左         |
| .51    | 0.10.57    | 359.49.3  | 0.10.19    | 359.49.41 | 0.9.45     | 359.50.15 | 0.9.14     | 359.50.46 |
| .52    | 11.10      | 43.50     | 10.31      | 49.29     | 9.56       | 50.4      | 9.24       | 50.36     |
| .53    | 11.24      | 48.36     | 10.43      | 49.17     | 10.7       | 49.53     | 9.35       | 50.25     |
| .54    | 11.36      | 48.24     | 10.55      | 49.5      | 10.19      | 49.41     | 9.46       | 50.14     |
| .55    | 11.49      | 48.11     | 11.7       | 48.53     | 10.30      | 49.30     | 9.57       | 50.3      |
| .56    | 12.2       | 47.58     | 11.19      | 48.41     | 10.42      | 49.18     | 10.8       | 49.52     |
| .57    | 12.15      | 47.45     | 11.32      | 48.28     | 10.53      | 49.7      | 10.19      | 49.41     |
| .58    | 12.28      | 47.32     | 11.44      | 48.16     | 11.4       | 48.56     | 10.30      | 49.30     |
| .59    | 12.41      | 47.19     | 11.56      | 48.4      | 11.16      | 48.44     | 10.40      | 49.20     |
| .60    | 0.12.54    | 359.47.8  | 0.12.8     | 359.47.52 | 0.11.27    | 359.48.33 | 0.10.51    | 359.49.9  |
| .61    | 0.13.6     | 359.46.54 | 0.12.20    | 359.47.40 | 0.11.39    | 359.48.21 | 0.11.2     | 359.48.58 |
| .62    | 13.19      | 46.41     | 12.32      | 47.28     | 11.51      | 48.9      | 11.13      | 48.47     |
| .63    | 13.32      | 46.28     | 12.44      | 47.16     | 12.2       | 47.58     | 11.24      | 48.36     |
| .64    | 13.45      | 46.15     | 12.56      | 47.1      | 12.13      | 47.47     | 11.35      | 48.25     |
| .65    | 13.58      | 46.2      | 13.9       | 46.51     | 12.25      | 47.35     | 11.45      | 48.15     |
| .66    | 14.11      | 45.49     | 13.21      | 46.39     | 12.36      | 47.24     | 11.56      | 48.4      |
| .67    | 14.24      | 45.36     | 13.33      | 46.27     | 12.48      | 47.12     | 12.7       | 47.53     |
| .68    | 14.37      | 45.23     | 13.45      | 46.15     | 13.0       | 47.0      | 12.18      | 47.42     |
| .69    | 14.49      | 45.11     | 13.57      | 46.3      | 13.11      | 46.49     | 12.29      | 47.31     |
| .70    | 0.15.02    | 359.44.58 | 0.14.9     | 359.45.51 | 0.13.22    | 359.46.38 | 0.12.40    | 359.47.20 |
| .71    | 0.15.15    | 359.44.45 | 14.21      | 45.39     | 0.13.34    | 359.46.26 | 0.12.51    | 359.47.9  |
| .72    | 15.28      | 44.32     | 14.33      | 45.27     | 13.45      | 46.15     | 13.1       | 46.59     |
| .73    | 15.41      | 44.19     | 14.46      | 45.14     | 13.57      | 46.3      | 13.12      | 46.48     |
| .74    | 15.54      | 44.6      | 14.57      | 45.3      | 14.8       | 45.52     | 13.23      | 46.37     |
| .75    | 16.7       | 43.53     | 15.10      | 44.50     | 14.19      | 45.41     | 13.34      | 46.26     |
| .76    | 16.20      | 43.40     | 15.22      | 44.38     | 14.31      | 45.29     | 13.45      | 46.15     |
| .77    | 16.33      | 43.27     | 15.34      | 44.26     | 14.42      | 45.18     | 13.56      | 46.4      |
| .78    | 16.46      | 43.14     | 15.46      | 44.14     | 14.54      | 45.6      | 14.7       | 45.53     |
| .79    | 16.58      | 43.2      | 15.57      | 44.3      | 15.5       | 44.55     | 14.17      | 45.43     |
| .80    | 0.17.11    | 359.42.29 | 0.16.11    | 359.43.49 | 0.15.17    | 359.44.43 | 0.14.28    | 359.45.32 |
| .81    | 0.17.24    | 359.42.36 | 0.16.23    | 359.43.37 | 0.15.28    | 359.44.32 | 0.14.38    | 359.45.22 |
| .82    | 17.37      | 42.23     | 16.35      | 43.25     | 15.40      | 44.20     | 14.50      | 45.10     |
| .83    | 17.50      | 42.10     | 16.47      | 43.13     | 15.51      | 44.9      | 15.1       | 44.59     |
| .84    | 18.3       | 41.57     | 16.57      | 43.3      | 16.3       | 43.57     | 15.12      | 44.48     |
| .85    | 18.16      | 41.44     | 17.11      | 42.49     | 16.14      | 43.46     | 15.23      | 44.37     |
| .86    | 18.29      | 41.31     | 17.23      | 42.37     | 16.25      | 43.35     | 15.33      | 44.27     |
| .87    | 18.42      | 41.18     | 17.35      | 42.25     | 16.37      | 43.23     | 15.44      | 44.16     |
| .88    | 18.54      | 41.6      | 17.48      | 42.12     | 16.48      | 43.12     | 15.55      | 44.5      |
| .89    | 19.7       | 40.53     | 18.0       | 42.0      | 17.0       | 43.0      | 16.6       | 43.54     |
| .90    | 0.19.20    | 359.40.40 | 0.18.12    | 359.41.48 | 0.17.11    | 359.42.49 | 0.16.17    | 359.43.43 |
| .91    | 0.19.33    | 359.40.27 | 0.18.24    | 359.41.36 | 0.17.23    | 359.42.37 | 0.16.28    | 359.43.32 |
| .92    | 19.46      | 40.14     | 18.36      | 41.24     | 17.34      | 42.26     | 16.38      | 43.22     |
| .93    | 19.59      | 40.1      | 18.48      | 41.12     | 17.46      | 42.14     | 16.49      | 43.11     |
| .94    | 20.12      | 39.48     | 19.0       | 41.0      | 17.57      | 42.3      | 17.0       | 43.0      |
| .95    | 20.25      | 39.35     | 19.12      | 40.48     | 18.8       | 41.52     | 17.11      | 42.49     |
| .96    | 20.38      | 39.22     | 19.25      | 40.35     | 18.20      | 41.40     | 17.22      | 42.38     |
| .97    | 20.50      | 39.10     | 19.37      | 40.23     | 18.32      | 41.28     | 17.33      | 42.27     |
| .98    | 21.3       | 38.57     | 19.49      | 40.11     | 18.43      | 41.17     | 17.44      | 42.16     |
| .99    | 21.16      | 38.44     | 20.1       | 39.59     | 18.54      | 41.6      | 17.54      | 42.6      |
| 1.00   | 0.21.29    | 359.38.31 | 0.20.13    | 359.39.47 | 0.19.6     | 359.40.54 | 0.18.5     | 459.41.55 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=2,000 公尺 |           | R=2,400 公尺 |           | R=2,500 公尺 |           | R=3,000 公尺 |           |
|--------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|
|        | 右          | 左         | 右          | 左         | 右          | 左         | 右          | 左         |
| .01    | 0.10       | 359.59.50 | 0.0.9      | 359.59.51 | 0.0.8      | 359.59.52 | 0.0.7      | 359.59.53 |
| .02    | 0.21       | 59.39     | .17        | 59.43     | .17        | 59.43     | .14        | 59.45     |
| .03    | 0.31       | 59.29     | .26        | 59.34     | .25        | 59.35     | .21        | 59.39     |
| .04    | 0.41       | 59.19     | .34        | 59.26     | .33        | 59.27     | .27        | 59.33     |
| .05    | 0.52       | 59.8      | .43        | 59.17     | .41        | 59.19     | .34        | 59.26     |
| .06    | 1.2        | 58.58     | 0.52       | 59.8      | .50        | 59.10     | .41        | 59.19     |
| .07    | 1.12       | 58.48     | 1.0        | 59.0      | .58        | 59.2      | .48        | 59.12     |
| .08    | 1.22       | 58.38     | 1.9        | 58.51     | 1.6        | 58.54     | .55        | 59.5      |
| .09    | 1.33       | 58.27     | 1.17       | 58.43     | 1.14       | 58.46     | 1.2        | 58.58     |
| .10    | 0.1.41     | 359.58.19 | 0.1.28     | 359.58.34 | 0.1.23     | 359.58.37 | 0.1.9      | 359.58.51 |
| .11    | 0.1.53     | 359.58.7  | 0.1.35     | 359.58.25 | 0.1.31     | 359.58.29 | 0.1.16     | 359.58.44 |
| .12    | 2.4        | 57.56     | 1.43       | 59.17     | 1.39       | 58.21     | 1.22       | 58.38     |
| .13    | 2.14       | 57.46     | 1.52       | 58.8      | 1.47       | 58.13     | 1.29       | 58.31     |
| .14    | 2.24       | 57.36     | 2.0        | 58.0      | 1.56       | 58.4      | 1.36       | 58.24     |
| .15    | 2.35       | 57.25     | 2.9        | 57.51     | 2.4        | 57.56     | 1.43       | 58.17     |
| .16    | 2.45       | 37.15     | 2.18       | 57.42     | 2.12       | 57.48     | 1.50       | 58.10     |
| .17    | 2.55       | 57.5      | 2.26       | 57.34     | 2.20       | 57.40     | 1.57       | 58.3      |
| .18    | 3.15       | 56.55     | 2.35       | 57.25     | 2.29       | 57.31     | 2.4        | 57.56     |
| .19    | 3.15       | 55.45     | 2.43       | 57.17     | 2.37       | 57.23     | 2.11       | 57.49     |
| .20    | 0.3.25     | 359.56.35 | 0.2.52     | 359.57.8  | 0.2.45     | 359.57.15 | 0.2.18     | 359.57.42 |
| .21    | 0.3.37     | 359.56.23 | 0.3.1      | 359.56.59 | 0.2.53     | 359.57.7  | 0.2.24     | 359.57.36 |
| .22    | 3.47       | 56.13     | 3.9        | 56.51     | 3.2        | 56.58     | 2.31       | 57.29     |
| .23    | 3.57       | 56.3      | 3.18       | 56.42     | 3.10       | 56.50     | 2.38       | 57.22     |
| .24    | 4.7        | 55.53     | 3.26       | 56.34     | 3.18       | 56.42     | 2.45       | 57.15     |
| .25    | 4.18       | 55.42     | 3.35       | 56.25     | 3.26       | 56.34     | 2.53       | 57.8      |
| .26    | 4.28       | 55.32     | 3.43       | 56.17     | 3.35       | 56.25     | 2.59       | 57.1      |
| .27    | 4.38       | 55.22     | 3.52       | 56.8      | 3.43       | 56.17     | 3.6        | 56.54     |
| .28    | 4.49       | 55.11     | 4.1        | 55.59     | 3.51       | 56.9      | 3.12       | 56.48     |
| .29    | 4.59       | 55.1      | 4.9        | 55.51     | 3.59       | 56.1      | 3.19       | 56.41     |
| .30    | 0.5.8      | 359.54.51 | 0.4.18     | 359.55.42 | 0.4.8      | 359.55.52 | 0.3.26     | 359.56.34 |
| .31    | 0.5.20     | 359.54.40 | 0.4.27     | 359.55.33 | 0.4.16     | 359.55.44 | 0.3.33     | 359.56.27 |
| .32    | 5.30       | 54.30     | 4.35       | 55.25     | 4.24       | 56.36     | 3.40       | 56.20     |
| .33    | 5.40       | 54.20     | 4.44       | 55.16     | 4.32       | 56.28     | 3.47       | 56.13     |
| .34    | 5.51       | 54.9      | 4.52       | 55.8      | 4.41       | 55.19     | 3.54       | 56.6      |
| .35    | 6.1        | 53.59     | 5.1        | 54.59     | 4.49       | 55.11     | 4.1        | 55.59     |
| .36    | 6.11       | 53.49     | 5.10       | 54.50     | 4.57       | 55.3      | 4.8        | 55.52     |
| .37    | 6.21       | 53.39     | 5.12       | 54.48     | 5.5        | 54.55     | 4.14       | 55.46     |
| .38    | 6.32       | 53.28     | 5.27       | 54.33     | 5.13       | 54.47     | 4.21       | 55.39     |
| .39    | 6.42       | 53.18     | 5.36       | 54.24     | 5.22       | 54.38     | 4.29       | 55.32     |
| .40    | 0.6.52     | 359.53.8  | 0.5.44     | 359.54.16 | 0.5.30     | 359.54.30 | 0.4.35     | 359.55.25 |
| .41    | 7.3        | 52.57     | 0.5.52     | 359.54.8  | 0.5.38     | 359.54.22 | 0.4.42     | 359.55.18 |
| .42    | 7.13       | 52.47     | 6.1        | 53.59     | 5.47       | 54.13     | 4.49       | 56.11     |
| .43    | 7.23       | 52.37     | 6.10       | 53.50     | 5.55       | 54.5      | 4.56       | 56.4      |
| .44    | 7.34       | 52.26     | 6.18       | 53.42     | 6.3        | 53.57     | 5.3        | 54.57     |
| .45    | 0.7.44     | 52.16     | 6.27       | 53.33     | 6.11       | 53.49     | 5.9        | 54.51     |
| .46    | 7.54       | 52.6      | 6.36       | 53.24     | 6.20       | 53.40     | 5.16       | 54.44     |
| .47    | 8.5        | 51.55     | 6.44       | 53.16     | 6.28       | 53.32     | 5.23       | 54.37     |
| .48    | 8.15       | 51.45     | 6.53       | 53.7      | 6.36       | 53.24     | 5.30       | 54.30     |
| .49    | 8.25       | 51.35     | 7.1        | 52.59     | 6.44       | 53.16     | 5.37       | 54.23     |
| .50    | 0.8.36     | 359.51.24 | 0.7.10     | 359.52.50 | 0.6.53     | 359.53.7  | 0.5.44     | 359.54.16 |

曲線偏角累計表 (弧長百分之一)

| 弧長百分之一 | R=2.000 公尺 |           | R=2.400 公尺 |           | R=2.500 公尺 |           | R=3.000 公尺 |           |
|--------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|
|        | 右          | 左         | 右          | 左         | 右          | 左         | 右          | 左         |
| .51    | 0. 8.46    | 359.51.14 | 0. 7.19    | 359.52.41 | 0. 7. 1    | 359.52.59 | 0. 5.51    | 359.54. 9 |
| .52    | 8.56       | 51. 4     | 7.27       | 52.33     | 7. 9       | 52.51     | 5.57       | 54. 3     |
| .53    | 9. 7       | 50.53     | 7.36       | 52.24     | 7.17       | 52.43     | 6. 4       | 53.56     |
| .54    | 9.17       | 50.43     | 7.44       | 52.16     | 7.26       | 52.34     | 6.11       | 53.49     |
| .55    | 9.27       | 50.33     | 7.53       | 52. 7     | 7.34       | 52.26     | 6.18       | 53.42     |
| .56    | 9.37       | 50.23     | 8. 1       | 51.59     | 7.42       | 52.18     | 6.25       | 53.35     |
| .57    | 9.48       | 50.12     | 8.10       | 51.50     | 7.50       | 52.10     | 6.32       | 53.28     |
| .58    | 9.58       | 50. 2     | 8.19       | 51.41     | 7.59       | 52. 1     | 6.39       | 53.21     |
| .59    | 10.25      | 49.35     | 8.27       | 51.33     | 8. 7       | 51.53     | 6.46       | 53.14     |
| .60    | 0.10.19    | 359.49.41 | 0. 8.36    | 359.51.24 | 0. 8.15    | 359.51.45 | 0. 6.53    | 350.53. 7 |
| .61    | 0.10.29    | 49.31     | 0. 8.45    | 359.51.15 | 0. 8.23    | 359.51.37 | 0. 6.59    | 359.53. 1 |
| .62    | 10.39      | 49.21     | 8.53       | 51. 7     | 8.32       | 51.28     | 7. 6       | 52.54     |
| .63    | 10.50      | 49.10     | 9. 2       | 50.58     | 8.40       | 51.20     | 7.13       | 52.47     |
| .64    | 11. 0      | 48. 0     | 9.10       | 50.50     | 8.48       | 51.12     | 7.20       | 52.40     |
| .65    | 11.10      | 48.50     | 9.19       | 50.41     | 8.56       | 51. 4     | 7.27       | 52.33     |
| .66    | 11.21      | 48.39     | 9.28       | 50.32     | 9. 5       | 50.55     | 7.34       | 52.26     |
| .67    | 11.31      | 48.29     | 9.36       | 50.24     | 9.13       | 50.47     | 7.41       | 52.19     |
| .68    | 11.41      | 48.19     | 9.45       | 50.15     | 9.21       | 50.39     | 7.48       | 52.12     |
| .69    | 11.52      | 48. 8     | 9.53       | 50. 7     | 9.29       | 50.31     | 7.54       | 52. 6     |
| .70    | 0.12. 2    | 359.47.58 | 0.10. 2    | 359.49.58 | 0. 9.38    | 359.50.22 | 0. 8. 1    | 359.51.59 |
| .71    | 0.12.12    | 359.47.48 | 0.10.10    | 359.49.50 | 9.46       | 359.50.14 | 0. 8. 8    | 359.51.52 |
| .72    | 12.22      | 47.38     | 10.19      | 49.41     | 9.54       | 50. 6     | 8.15       | 51.45     |
| .73    | 12.33      | 47.27     | 10.28      | 49.32     | 10. 2      | 49.58     | 8.22       | 51.38     |
| .74    | 12.43      | 47.17     | 10.36      | 49.24     | 10.11      | 49.49     | 8.29       | 51.31     |
| .75    | 12.53      | 47. 7     | 10.45      | 49.15     | 10.19      | 49.41     | 8.36       | 51.24     |
| .76    | 13. 4      | 46.56     | 10.54      | 49. 6     | 10.27      | 49.33     | 8.43       | 51.17     |
| .77    | 13.14      | 46.46     | 11. 2      | 48.58     | 10.35      | 49.25     | 8.49       | 51.11     |
| .78    | 13.24      | 46.36     | 11.11      | 48.49     | 10.44      | 49.16     | 8.56       | 51. 4     |
| .79    | 13.35      | 46.25     | 11.19      | 48.41     | 10.52      | 49. 8     | 9. 3       | 50.57     |
| .80    | 0.13.46    | 359.46.15 | 0.11.28    | 359.48.32 | 0.11. 0    | 359.49. 0 | 0. 9.10    | 359.50.50 |
| .81    | 0.13.55    | 359.46. 5 | 0.11.37    | 359.48.23 | 0.11. 8    | 359.48.52 | 0. 9.17    | 359.50.43 |
| .82    | 14. 6      | 45.54     | 11.45      | 48.15     | 11.17      | 48.43     | 9.24       | 50.36     |
| .83    | 14.16      | 45.44     | 11.54      | 48. 6     | 11.25      | 48.35     | 9.31       | 50.29     |
| .84    | 14.26      | 45.34     | 12. 2      | 47.58     | 11.33      | 48.27     | 9.38       | 50.22     |
| .85    | 14.37      | 45.23     | 12.11      | 47.49     | 11.41      | 48.19     | 9.44       | 50.16     |
| .86    | 14.47      | 45.13     | 12.19      | 47.41     | 11.50      | 48.10     | 9.51       | 50. 9     |
| .87    | 14.57      | 45. 3     | 12.28      | 47.32     | 11.58      | 48. 2     | 9.58       | 50. 2     |
| .88    | 15. 8      | 44.52     | 12.37      | 47.23     | 12. 6      | 47.54     | 10. 5      | 49.55     |
| .89    | 15.18      | 44.42     | 12.45      | 47.15     | 12.14      | 47.46     | 10.12      | 49.48     |
| .90    | 0.15.28    | 359.44.32 | 0.12.54    | 359.47. 6 | 0.12.23    | 359.47.37 | 0.10.19    | 359.49.41 |
| .91    | 0.15.38    | 359.44.22 | 0.13. 3    | 359.46.57 | 0.12.31    | 359.47.29 | 0.10.26    | 359.49.34 |
| .92    | 15.49      | 44.11     | 13.11      | 46.49     | 12.39      | 47.21     | 10.33      | 49.27     |
| .93    | 15.59      | 44. 1     | 13.20      | 46.40     | 12.47      | 47.13     | 10.39      | 49.21     |
| .94    | 16. 9      | 43.51     | 13.28      | 46.32     | 12.56      | 47. 4     | 10.46      | 49.14     |
| .95    | 16.20      | 43.40     | 13.37      | 46.23     | 13. 4      | 46.56     | 10.53      | 49. 7     |
| .96    | 16.30      | 43.30     | 13.45      | 46.15     | 13.12      | 46.48     | 11. 0      | 49. 0     |
| .97    | 16.40      | 43.20     | 13.54      | 46. 6     | 13.20      | 46.40     | 11. 7      | 48.53     |
| .98    | 16.51      | 43. 9     | 14. 3      | 45.57     | 13.29      | 46.31     | 11.14      | 48.46     |
| .99    | 17. 1      | 42.59     | 14.11      | 45.49     | 13.37      | 46.23     | 11.21      | 48.39     |
| 1.00   | 0.17.11    | 359.42.49 | 0.14.20    | 359.45.40 | 0.13.45    | 359.46.15 | 0.11.28    | 359.48.32 |

# 第十一表 切線偏角支距表

弧長 = 20 公尺      1 弧 = 100 節

| 半徑<br>節 | 60    | 70    | 80    | 90    | 100   | 110   | 120   | 130   | 140   | 150   | 160   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 1       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 1       |
| 2       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 2       |
| 3       | 0.002 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 3       |
| 4       | 0.005 | 0.005 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 4       |
| 5       | 0.008 | 0.007 | 0.005 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 5       |
| 6       | 0.012 | 0.010 | 0.009 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 6       |
| 7       | 0.015 | 0.014 | 0.012 | 0.011 | 0.010 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.006 | 7       |
| 8       | 0.021 | 0.018 | 0.015 | 0.014 | 0.013 | 0.012 | 0.011 | 0.010 | 0.009 | 0.009 | 0.008 | 8       |
| 9       | 0.027 | 0.023 | 0.020 | 0.018 | 0.016 | 0.015 | 0.014 | 0.012 | 0.012 | 0.011 | 0.010 | 9       |
| 10      | 0.033 | 0.029 | 0.025 | 0.022 | 0.020 | 0.018 | 0.017 | 0.015 | 0.014 | 0.013 | 0.013 | 10      |
| 11      | 0.040 | 0.035 | 0.030 | 0.027 | 0.024 | 0.022 | 0.020 | 0.019 | 0.017 | 0.016 | 0.015 | 11      |
| 12      | 0.048 | 0.041 | 0.036 | 0.032 | 0.029 | 0.026 | 0.024 | 0.022 | 0.021 | 0.019 | 0.018 | 12      |
| 13      | 0.056 | 0.048 | 0.042 | 0.038 | 0.034 | 0.031 | 0.028 | 0.026 | 0.024 | 0.023 | 0.021 | 13      |
| 14      | 0.065 | 0.056 | 0.049 | 0.044 | 0.039 | 0.036 | 0.033 | 0.030 | 0.028 | 0.026 | 0.025 | 14      |
| 15      | 0.075 | 0.064 | 0.056 | 0.050 | 0.045 | 0.041 | 0.038 | 0.035 | 0.032 | 0.030 | 0.028 | 15      |
| 16      | 0.085 | 0.073 | 0.064 | 0.057 | 0.051 | 0.047 | 0.043 | 0.039 | 0.037 | 0.034 | 0.032 | 16      |
| 17      | 0.096 | 0.083 | 0.072 | 0.064 | 0.058 | 0.053 | 0.048 | 0.044 | 0.041 | 0.039 | 0.036 | 17      |
| 18      | 0.108 | 0.093 | 0.081 | 0.072 | 0.065 | 0.059 | 0.054 | 0.050 | 0.046 | 0.043 | 0.041 | 18      |
| 19      | 0.120 | 0.103 | 0.090 | 0.080 | 0.072 | 0.066 | 0.060 | 0.056 | 0.052 | 0.048 | 0.045 | 19      |
| 20      | 0.133 | 0.114 | 0.100 | 0.089 | 0.080 | 0.073 | 0.067 | 0.062 | 0.057 | 0.053 | 0.050 | 20      |
| 21      | 0.147 | 0.126 | 0.110 | 0.098 | 0.088 | 0.080 | 0.074 | 0.068 | 0.063 | 0.059 | 0.055 | 21      |
| 22      | 0.161 | 0.138 | 0.121 | 0.108 | 0.097 | 0.088 | 0.081 | 0.074 | 0.069 | 0.065 | 0.061 | 22      |
| 23      | 0.176 | 0.151 | 0.132 | 0.118 | 0.106 | 0.096 | 0.088 | 0.081 | 0.076 | 0.071 | 0.066 | 23      |
| 24      | 0.192 | 0.165 | 0.144 | 0.128 | 0.115 | 0.105 | 0.096 | 0.089 | 0.082 | 0.077 | 0.072 | 24      |
| 25      | 0.208 | 0.179 | 0.156 | 0.139 | 0.125 | 0.114 | 0.104 | 0.096 | 0.089 | 0.083 | 0.078 | 25      |
| 26      | 0.225 | 0.193 | 0.169 | 0.150 | 0.135 | 0.123 | 0.113 | 0.104 | 0.097 | 0.090 | 0.085 | 26      |
| 27      | 0.243 | 0.208 | 0.182 | 0.162 | 0.146 | 0.133 | 0.122 | 0.112 | 0.104 | 0.097 | 0.091 | 27      |
| 28      | 0.261 | 0.224 | 0.196 | 0.174 | 0.157 | 0.143 | 0.131 | 0.121 | 0.112 | 0.105 | 0.098 | 28      |
| 29      | 0.280 | 0.240 | 0.210 | 0.187 | 0.168 | 0.153 | 0.140 | 0.129 | 0.120 | 0.112 | 0.105 | 29      |
| 30      | 0.300 | 0.257 | 0.225 | 0.200 | 0.180 | 0.164 | 0.150 | 0.138 | 0.128 | 0.120 | 0.113 | 30      |
| 31      | 0.320 | 0.275 | 0.240 | 0.214 | 0.192 | 0.175 | 0.160 | 0.148 | 0.137 | 0.128 | 0.120 | 31      |
| 32      | 0.341 | 0.293 | 0.256 | 0.228 | 0.205 | 0.186 | 0.171 | 0.158 | 0.146 | 0.137 | 0.128 | 32      |
| 33      | 0.363 | 0.311 | 0.272 | 0.242 | 0.218 | 0.198 | 0.181 | 0.168 | 0.156 | 0.145 | 0.136 | 33      |
| 34      | 0.385 | 0.330 | 0.289 | 0.257 | 0.231 | 0.210 | 0.193 | 0.178 | 0.165 | 0.154 | 0.145 | 34      |
| 35      | 0.403 | 0.350 | 0.306 | 0.272 | 0.245 | 0.223 | 0.204 | 0.188 | 0.175 | 0.163 | 0.153 | 35      |
| 36      | 0.432 | 0.370 | 0.324 | 0.288 | 0.259 | 0.235 | 0.216 | 0.199 | 0.185 | 0.173 | 0.162 | 36      |
| 37      | 0.456 | 0.391 | 0.342 | 0.304 | 0.274 | 0.249 | 0.228 | 0.211 | 0.196 | 0.183 | 0.171 | 37      |
| 38      | 0.481 | 0.413 | 0.361 | 0.321 | 0.289 | 0.263 | 0.241 | 0.222 | 0.206 | 0.193 | 0.181 | 38      |
| 39      | 0.507 | 0.435 | 0.380 | 0.338 | 0.304 | 0.277 | 0.254 | 0.234 | 0.217 | 0.203 | 0.190 | 39      |
| 40      | 0.533 | 0.457 | 0.400 | 0.356 | 0.320 | 0.291 | 0.267 | 0.246 | 0.229 | 0.213 | 0.200 | 40      |
| 41      | 0.560 | 0.480 | 0.420 | 0.374 | 0.336 | 0.306 | 0.280 | 0.259 | 0.240 | 0.224 | 0.210 | 41      |
| 42      | 0.588 | 0.504 | 0.441 | 0.392 | 0.353 | 0.321 | 0.294 | 0.271 | 0.252 | 0.235 | 0.221 | 42      |
| 43      | 0.616 | 0.528 | 0.462 | 0.411 | 0.370 | 0.336 | 0.308 | 0.284 | 0.264 | 0.247 | 0.231 | 43      |
| 44      | 0.645 | 0.553 | 0.484 | 0.430 | 0.387 | 0.352 | 0.323 | 0.298 | 0.277 | 0.258 | 0.242 | 44      |
| 45      | 0.675 | 0.579 | 0.506 | 0.450 | 0.405 | 0.368 | 0.338 | 0.312 | 0.289 | 0.270 | 0.253 | 45      |
| 46      | 0.705 | 0.605 | 0.529 | 0.470 | 0.423 | 0.385 | 0.353 | 0.326 | 0.302 | 0.282 | 0.265 | 46      |
| 47      | 0.736 | 0.631 | 0.552 | 0.491 | 0.442 | 0.402 | 0.368 | 0.340 | 0.316 | 0.295 | 0.277 | 47      |
| 48      | 0.768 | 0.658 | 0.576 | 0.512 | 0.461 | 0.419 | 0.384 | 0.354 | 0.329 | 0.307 | 0.288 | 48      |
| 49      | 0.800 | 0.686 | 0.600 | 0.534 | 0.480 | 0.437 | 0.400 | 0.369 | 0.343 | 0.320 | 0.300 | 49      |
| 50      | 0.833 | 0.714 | 0.625 | 0.566 | 0.500 | 0.455 | 0.417 | 0.385 | 0.357 | 0.333 | 0.312 | 50      |

弧長=20公尺 1弧=100節

| 半徑  | 60    | 70    | 80    | 90    | 100   | 110   | 120   | 130   | 140   | 150   | 160   | 半徑  |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| 51  | 0.867 | 0.743 | 0.650 | 0.578 | 0.520 | 0.473 | 0.434 | 0.400 | 0.372 | 0.347 | 0.325 | 51  |
| 52  | 0.901 | 0.773 | 0.676 | 0.601 | 0.541 | 0.492 | 0.451 | 0.416 | 0.386 | 0.361 | 0.338 | 52  |
| 53  | 0.936 | 0.803 | 0.702 | 0.624 | 0.562 | 0.511 | 0.468 | 0.432 | 0.401 | 0.375 | 0.351 | 53  |
| 54  | 0.972 | 0.833 | 0.729 | 0.648 | 0.583 | 0.530 | 0.486 | 0.449 | 0.417 | 0.389 | 0.365 | 54  |
| 55  | 1.008 | 0.864 | 0.756 | 0.672 | 0.605 | 0.550 | 0.504 | 0.465 | 0.432 | 0.403 | 0.378 | 55  |
| 56  | 1.045 | 0.896 | 0.784 | 0.697 | 0.627 | 0.570 | 0.523 | 0.482 | 0.444 | 0.418 | 0.392 | 56  |
| 57  | 1.083 | 0.928 | 0.812 | 0.722 | 0.650 | 0.591 | 0.542 | 0.500 | 0.464 | 0.433 | 0.405 | 57  |
| 58  | 1.121 | 0.961 | 0.841 | 0.748 | 0.673 | 0.612 | 0.561 | 0.518 | 0.481 | 0.449 | 0.421 | 58  |
| 59  | 1.160 | 0.995 | 0.870 | 0.774 | 0.696 | 0.633 | 0.580 | 0.536 | 0.495 | 0.464 | 0.435 | 59  |
| 60  | 1.200 | 1.029 | 0.900 | 0.800 | 0.720 | 0.655 | 0.600 | 0.554 | 0.514 | 0.480 | 0.450 | 60  |
| 61  | 1.240 | 1.063 | 0.930 | 0.827 | 0.744 | 0.677 | 0.620 | 0.572 | 0.532 | 0.496 | 0.465 | 61  |
| 62  | 1.281 | 1.098 | 0.961 | 0.854 | 0.769 | 0.699 | 0.641 | 0.591 | 0.549 | 0.513 | 0.481 | 62  |
| 63  | 1.323 | 1.134 | 0.992 | 0.882 | 0.794 | 0.722 | 0.662 | 0.611 | 0.567 | 0.529 | 0.496 | 63  |
| 64  | 1.365 | 1.170 | 1.024 | 0.910 | 0.819 | 0.745 | 0.683 | 0.630 | 0.585 | 0.546 | 0.512 | 64  |
| 65  | 1.408 | 1.207 | 1.056 | 0.939 | 0.845 | 0.768 | 0.704 | 0.650 | 0.603 | 0.563 | 0.528 | 65  |
| 66  | 1.452 | 1.245 | 1.089 | 0.969 | 0.871 | 0.792 | 0.726 | 0.670 | 0.622 | 0.581 | 0.545 | 66  |
| 67  | 1.496 | 1.283 | 1.122 | 0.998 | 0.898 | 0.816 | 0.748 | 0.691 | 0.641 | 0.599 | 0.561 | 67  |
| 68  | 1.541 | 1.321 | 1.156 | 1.028 | 0.925 | 0.841 | 0.771 | 0.711 | 0.661 | 0.617 | 0.578 | 68  |
| 69  | 1.537 | 1.360 | 1.190 | 1.058 | 0.952 | 0.866 | 0.794 | 0.732 | 0.680 | 0.635 | 0.595 | 69  |
| 70  | 1.633 | 1.400 | 1.225 | 1.089 | 0.980 | 0.891 | 0.817 | 0.754 | 0.700 | 0.653 | 0.613 | 70  |
| 71  | 1.680 | 1.440 | 1.260 | 1.120 | 1.009 | 0.917 | 0.840 | 0.776 | 0.720 | 0.672 | 0.630 | 71  |
| 72  | 1.728 | 1.481 | 1.296 | 1.152 | 1.087 | 0.943 | 0.864 | 0.798 | 0.741 | 0.691 | 0.648 | 72  |
| 73  | 1.776 | 1.523 | 1.332 | 1.184 | 1.066 | 0.969 | 0.888 | 0.820 | 0.761 | 0.711 | 0.666 | 73  |
| 74  | 1.825 | 1.565 | 1.369 | 1.217 | 1.096 | 0.995 | 0.913 | 0.842 | 0.782 | 0.730 | 0.685 | 74  |
| 75  | 1.875 | 1.607 | 1.406 | 1.250 | 1.125 | 1.023 | 0.939 | 0.865 | 0.804 | 0.750 | 0.703 | 75  |
| 76  | 1.925 | 1.650 | 1.444 | 1.284 | 1.155 | 1.050 | 0.963 | 0.889 | 0.825 | 0.770 | 0.722 | 76  |
| 77  | 1.976 | 1.694 | 1.482 | 1.318 | 1.186 | 1.078 | 0.989 | 0.912 | 0.847 | 0.791 | 0.741 | 77  |
| 78  | 2.028 | 1.738 | 1.521 | 1.352 | 1.217 | 1.108 | 1.014 | 0.936 | 0.869 | 0.811 | 0.761 | 78  |
| 79  | 2.080 | 1.783 | 1.560 | 1.387 | 1.249 | 1.135 | 1.040 | 0.960 | 0.892 | 0.832 | 0.780 | 79  |
| 80  | 2.133 | 1.829 | 1.600 | 1.422 | 1.280 | 1.164 | 1.067 | 0.985 | 0.914 | 0.853 | 0.800 | 80  |
| 81  | 2.187 | 1.875 | 1.640 | 1.455 | 1.312 | 1.193 | 1.094 | 1.009 | 0.937 | 0.875 | 0.820 | 81  |
| 82  | 2.241 | 1.921 | 1.681 | 1.494 | 1.345 | 1.223 | 1.121 | 1.034 | 0.961 | 0.897 | 0.841 | 82  |
| 83  | 2.296 | 1.968 | 1.722 | 1.531 | 1.378 | 1.253 | 1.148 | 1.060 | 0.984 | 0.919 | 0.861 | 83  |
| 84  | 2.352 | 2.016 | 1.764 | 1.568 | 1.411 | 1.283 | 1.176 | 1.086 | 1.009 | 0.941 | 0.882 | 84  |
| 85  | 2.408 | 2.064 | 1.806 | 1.606 | 1.445 | 1.314 | 1.204 | 1.112 | 1.032 | 0.963 | 0.903 | 85  |
| 86  | 2.465 | 2.113 | 1.849 | 1.644 | 1.479 | 1.345 | 1.233 | 1.139 | 1.057 | 0.986 | 0.925 | 86  |
| 87  | 2.523 | 2.163 | 1.892 | 1.682 | 1.514 | 1.376 | 1.262 | 1.164 | 1.031 | 1.009 | 0.946 | 87  |
| 88  | 2.581 | 2.213 | 1.936 | 1.721 | 1.549 | 1.408 | 1.291 | 1.191 | 1.106 | 1.033 | 0.968 | 88  |
| 89  | 2.640 | 2.263 | 1.980 | 1.760 | 1.584 | 1.440 | 1.320 | 1.219 | 1.132 | 1.056 | 0.990 | 89  |
| 90  | 2.700 | 2.314 | 2.025 | 1.800 | 1.620 | 1.473 | 1.350 | 1.246 | 1.157 | 1.080 | 1.013 | 90  |
| 91  | 2.760 | 2.366 | 2.070 | 1.840 | 1.655 | 1.506 | 1.380 | 1.274 | 1.183 | 1.104 | 1.035 | 91  |
| 92  | 2.821 | 2.418 | 2.116 | 1.881 | 1.693 | 1.539 | 1.411 | 1.302 | 1.209 | 1.129 | 1.058 | 92  |
| 93  | 2.883 | 2.471 | 2.162 | 1.922 | 1.730 | 1.573 | 1.442 | 1.331 | 1.235 | 1.153 | 1.081 | 93  |
| 94  | 2.945 | 2.525 | 2.209 | 1.964 | 1.767 | 1.607 | 1.473 | 1.359 | 1.262 | 1.178 | 1.105 | 94  |
| 95  | 3.003 | 2.579 | 2.256 | 2.006 | 1.806 | 1.641 | 1.504 | 1.388 | 1.289 | 1.203 | 1.128 | 95  |
| 96  | 3.072 | 2.633 | 2.304 | 2.048 | 1.843 | 1.676 | 1.536 | 1.418 | 1.317 | 1.229 | 1.152 | 96  |
| 97  | 3.136 | 2.688 | 2.352 | 2.091 | 1.882 | 1.711 | 1.568 | 1.448 | 1.344 | 1.255 | 1.176 | 97  |
| 98  | 3.201 | 2.744 | 2.401 | 2.134 | 1.921 | 1.746 | 1.601 | 1.478 | 1.372 | 1.281 | 1.201 | 98  |
| 99  | 3.267 | 2.800 | 2.450 | 2.178 | 1.960 | 1.782 | 1.634 | 1.508 | 1.400 | 1.307 | 1.225 | 99  |
| 100 | 3.333 | 2.857 | 2.500 | 2.222 | 2.000 | 1.818 | 1.667 | 1.538 | 1.429 | 1.333 | 1.250 | 100 |

弧長=20公尺 1弧=100節

| 半徑<br>節 | 170   | 180   | 190   | 200   | 210   | 220   | 230   | 240   | 250   | 260   | 270   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 1       | --    | --    | --    | --    | --    | --    | --    | --    | --    | --    | --    | 1       |
| 2       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 2       |
| 3       | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 3       |
| 4       | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 4       |
| 5       |       |       |       |       |       |       |       |       |       |       |       | 5       |
| 6       | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 6       |
| 7       | 0.006 | 0.005 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 7       |
| 8       | 0.003 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.005 | 8       |
| 9       | 0.010 | 0.009 | 0.009 | 0.009 | 0.009 | 0.007 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 9       |
| 10      | 0.012 | 0.011 | 0.011 | 0.010 | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 0.008 | 0.007 | 10      |
| 11      | 0.014 | 0.013 | 0.013 | 0.012 | 0.012 | 0.011 | 0.011 | 0.010 | 0.009 | 0.009 | 0.009 | 11      |
| 12      | 0.017 | 0.016 | 0.015 | 0.014 | 0.014 | 0.013 | 0.013 | 0.012 | 0.012 | 0.011 | 0.011 | 12      |
| 13      | 0.020 | 0.019 | 0.018 | 0.017 | 0.016 | 0.015 | 0.015 | 0.014 | 0.014 | 0.013 | 0.013 | 13      |
| 14      | 0.023 | 0.022 | 0.021 | 0.020 | 0.019 | 0.018 | 0.017 | 0.016 | 0.016 | 0.015 | 0.015 | 14      |
| 15      | 0.026 | 0.025 | 0.024 | 0.023 | 0.021 | 0.020 | 0.020 | 0.019 | 0.018 | 0.017 | 0.017 | 15      |
| 16      | 0.030 | 0.028 | 0.027 | 0.026 | 0.024 | 0.023 | 0.022 | 0.021 | 0.020 | 0.020 | 0.019 | 16      |
| 17      | 0.034 | 0.032 | 0.030 | 0.029 | 0.028 | 0.026 | 0.025 | 0.024 | 0.023 | 0.022 | 0.021 | 17      |
| 18      | 0.038 | 0.036 | 0.034 | 0.032 | 0.031 | 0.029 | 0.028 | 0.027 | 0.026 | 0.025 | 0.024 | 18      |
| 19      | 0.042 | 0.040 | 0.038 | 0.036 | 0.034 | 0.033 | 0.031 | 0.030 | 0.029 | 0.028 | 0.027 | 19      |
| 20      | 0.047 | 0.044 | 0.042 | 0.040 | 0.038 | 0.036 | 0.035 | 0.033 | 0.032 | 0.031 | 0.030 | 20      |
| 21      | 0.052 | 0.049 | 0.046 | 0.044 | 0.042 | 0.040 | 0.038 | 0.037 | 0.035 | 0.034 | 0.033 | 21      |
| 22      | 0.057 | 0.054 | 0.051 | 0.048 | 0.046 | 0.044 | 0.042 | 0.040 | 0.039 | 0.037 | 0.036 | 22      |
| 23      | 0.062 | 0.059 | 0.056 | 0.053 | 0.050 | 0.048 | 0.046 | 0.044 | 0.042 | 0.041 | 0.039 | 23      |
| 24      | 0.068 | 0.064 | 0.061 | 0.058 | 0.055 | 0.052 | 0.050 | 0.048 | 0.046 | 0.044 | 0.043 | 24      |
| 25      | 0.074 | 0.069 | 0.066 | 0.063 | 0.060 | 0.057 | 0.054 | 0.052 | 0.050 | 0.048 | 0.046 | 25      |
| 26      | 0.080 | 0.075 | 0.071 | 0.068 | 0.064 | 0.061 | 0.059 | 0.056 | 0.054 | 0.052 | 0.050 | 26      |
| 27      | 0.086 | 0.081 | 0.077 | 0.073 | 0.069 | 0.066 | 0.063 | 0.061 | 0.058 | 0.056 | 0.054 | 27      |
| 28      | 0.092 | 0.087 | 0.083 | 0.078 | 0.075 | 0.071 | 0.068 | 0.065 | 0.063 | 0.060 | 0.058 | 28      |
| 29      | 0.099 | 0.093 | 0.089 | 0.084 | 0.080 | 0.076 | 0.073 | 0.070 | 0.067 | 0.065 | 0.062 | 29      |
| 30      | 0.106 | 0.100 | 0.095 | 0.090 | 0.086 | 0.082 | 0.078 | 0.075 | 0.072 | 0.069 | 0.067 | 30      |
| 31      | 0.113 | 0.107 | 0.101 | 0.096 | 0.092 | 0.087 | 0.084 | 0.080 | 0.077 | 0.074 | 0.071 | 31      |
| 32      | 0.120 | 0.114 | 0.108 | 0.102 | 0.098 | 0.093 | 0.089 | 0.085 | 0.082 | 0.079 | 0.076 | 32      |
| 33      | 0.128 | 0.121 | 0.115 | 0.109 | 0.104 | 0.099 | 0.095 | 0.091 | 0.087 | 0.084 | 0.081 | 33      |
| 34      | 0.136 | 0.128 | 0.122 | 0.116 | 0.110 | 0.105 | 0.101 | 0.096 | 0.092 | 0.089 | 0.086 | 34      |
| 35      | 0.144 | 0.136 | 0.129 | 0.123 | 0.117 | 0.111 | 0.107 | 0.102 | 0.098 | 0.094 | 0.091 | 35      |
| 36      | 0.152 | 0.144 | 0.136 | 0.130 | 0.123 | 0.118 | 0.113 | 0.108 | 0.104 | 0.100 | 0.096 | 36      |
| 37      | 0.161 | 0.152 | 0.144 | 0.137 | 0.130 | 0.124 | 0.119 | 0.114 | 0.110 | 0.105 | 0.101 | 37      |
| 38      | 0.170 | 0.160 | 0.152 | 0.144 | 0.138 | 0.131 | 0.126 | 0.120 | 0.116 | 0.111 | 0.107 | 38      |
| 39      | 0.179 | 0.169 | 0.160 | 0.152 | 0.145 | 0.138 | 0.132 | 0.127 | 0.122 | 0.117 | 0.113 | 39      |
| 40      | 0.188 | 0.178 | 0.168 | 0.160 | 0.152 | 0.145 | 0.139 | 0.133 | 0.128 | 0.123 | 0.119 | 40      |
| 41      | 0.198 | 0.187 | 0.177 | 0.168 | 0.160 | 0.153 | 0.146 | 0.140 | 0.134 | 0.129 | 0.125 | 41      |
| 42      | 0.203 | 0.196 | 0.186 | 0.176 | 0.168 | 0.160 | 0.153 | 0.147 | 0.141 | 0.136 | 0.131 | 42      |
| 43      | 0.218 | 0.205 | 0.195 | 0.185 | 0.176 | 0.168 | 0.161 | 0.154 | 0.148 | 0.142 | 0.137 | 43      |
| 44      | 0.228 | 0.215 | 0.204 | 0.194 | 0.184 | 0.176 | 0.168 | 0.161 | 0.155 | 0.149 | 0.143 | 44      |
| 45      | 0.238 | 0.225 | 0.213 | 0.203 | 0.193 | 0.184 | 0.176 | 0.169 | 0.162 | 0.156 | 0.150 | 45      |
| 46      | 0.249 | 0.235 | 0.223 | 0.212 | 0.202 | 0.192 | 0.184 | 0.176 | 0.169 | 0.163 | 0.157 | 46      |
| 47      | 0.260 | 0.245 | 0.233 | 0.221 | 0.210 | 0.201 | 0.192 | 0.184 | 0.177 | 0.170 | 0.164 | 47      |
| 48      | 0.271 | 0.256 | 0.243 | 0.230 | 0.219 | 0.209 | 0.200 | 0.192 | 0.184 | 0.177 | 0.171 | 48      |
| 49      | 0.282 | 0.267 | 0.253 | 0.240 | 0.229 | 0.218 | 0.208 | 0.200 | 0.192 | 0.185 | 0.178 | 49      |
| 50      | 0.294 | 0.278 | 0.263 | 0.250 | 0.238 | 0.227 | 0.217 | 0.208 | 0.200 | 0.192 | 0.185 | 50      |



弧長=20公尺 1弧=100節

| 半徑<br>節 | 170   | 180   | 190   | 200   | 210   | 220   | 230   | 240   | 250   | 260   | 270   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 5 1     | 0.306 | 0.283 | 0.274 | 0.260 | 0.243 | 0.236 | 0.226 | 0.217 | 0.209 | 0.200 | 0.193 | 5 1     |
| 5 2     | 0.318 | 0.300 | 0.285 | 0.270 | 0.258 | 0.246 | 0.235 | 0.225 | 0.216 | 0.208 | 0.200 | 5 2     |
| 5 3     | 0.330 | 0.312 | 0.296 | 0.281 | 0.268 | 0.255 | 0.244 | 0.234 | 0.225 | 0.216 | 0.203 | 5 3     |
| 5 4     | 0.343 | 0.324 | 0.307 | 0.292 | 0.278 | 0.265 | 0.254 | 0.243 | 0.233 | 0.224 | 0.216 | 5 4     |
| 5 5     | 0.356 | 0.336 | 0.318 | 0.303 | 0.288 | 0.275 | 0.263 | 0.252 | 0.242 | 0.233 | 0.224 | 5 5     |
| 5 6     | 0.369 | 0.349 | 0.330 | 0.314 | 0.299 | 0.285 | 0.273 | 0.261 | 0.251 | 0.241 | 0.232 | 5 6     |
| 5 7     | 0.382 | 0.361 | 0.342 | 0.325 | 0.309 | 0.295 | 0.283 | 0.271 | 0.260 | 0.250 | 0.241 | 5 7     |
| 5 8     | 0.396 | 0.374 | 0.354 | 0.336 | 0.320 | 0.306 | 0.293 | 0.280 | 0.269 | 0.259 | 0.249 | 5 8     |
| 5 9     | 0.410 | 0.387 | 0.366 | 0.348 | 0.332 | 0.316 | 0.303 | 0.290 | 0.278 | 0.268 | 0.258 | 5 9     |
| 6 0     | 0.424 | 0.400 | 0.379 | 0.350 | 0.343 | 0.327 | 0.313 | 0.300 | 0.288 | 0.277 | 0.267 | 6 0     |
| 6 1     | 0.438 | 0.413 | 0.392 | 0.372 | 0.354 | 0.338 | 0.324 | 0.310 | 0.298 | 0.286 | 0.276 | 6 1     |
| 6 2     | 0.452 | 0.427 | 0.405 | 0.384 | 0.365 | 0.349 | 0.334 | 0.320 | 0.308 | 0.296 | 0.285 | 6 2     |
| 6 3     | 0.467 | 0.441 | 0.418 | 0.397 | 0.378 | 0.361 | 0.345 | 0.331 | 0.318 | 0.305 | 0.294 | 6 3     |
| 6 4     | 0.482 | 0.455 | 0.431 | 0.410 | 0.390 | 0.372 | 0.356 | 0.341 | 0.328 | 0.315 | 0.303 | 6 4     |
| 6 5     | 0.497 | 0.469 | 0.445 | 0.423 | 0.402 | 0.384 | 0.367 | 0.352 | 0.338 | 0.325 | 0.313 | 6 5     |
| 6 6     | 0.512 | 0.484 | 0.459 | 0.436 | 0.415 | 0.396 | 0.379 | 0.363 | 0.348 | 0.335 | 0.323 | 6 6     |
| 6 7     | 0.528 | 0.499 | 0.473 | 0.449 | 0.428 | 0.408 | 0.390 | 0.374 | 0.359 | 0.345 | 0.333 | 6 7     |
| 6 8     | 0.544 | 0.514 | 0.487 | 0.462 | 0.440 | 0.420 | 0.402 | 0.385 | 0.370 | 0.356 | 0.343 | 6 8     |
| 6 9     | 0.560 | 0.529 | 0.501 | 0.476 | 0.453 | 0.433 | 0.414 | 0.397 | 0.381 | 0.366 | 0.353 | 6 9     |
| 7 0     | 0.576 | 0.544 | 0.516 | 0.490 | 0.467 | 0.445 | 0.426 | 0.408 | 0.392 | 0.377 | 0.363 | 7 0     |
| 7 1     | 0.593 | 0.560 | 0.531 | 0.504 | 0.480 | 0.458 | 0.438 | 0.420 | 0.403 | 0.388 | 0.373 | 7 1     |
| 7 2     | 0.610 | 0.576 | 0.546 | 0.518 | 0.494 | 0.471 | 0.451 | 0.432 | 0.415 | 0.399 | 0.384 | 7 2     |
| 7 3     | 0.627 | 0.592 | 0.561 | 0.533 | 0.508 | 0.484 | 0.463 | 0.444 | 0.426 | 0.410 | 0.395 | 7 3     |
| 7 4     | 0.644 | 0.608 | 0.576 | 0.548 | 0.522 | 0.498 | 0.476 | 0.456 | 0.438 | 0.421 | 0.406 | 7 4     |
| 7 5     | 0.662 | 0.625 | 0.592 | 0.563 | 0.536 | 0.511 | 0.489 | 0.469 | 0.450 | 0.433 | 0.417 | 7 5     |
| 7 6     | 0.680 | 0.642 | 0.608 | 0.578 | 0.550 | 0.525 | 0.502 | 0.481 | 0.462 | 0.444 | 0.428 | 7 6     |
| 7 7     | 0.698 | 0.659 | 0.624 | 0.593 | 0.565 | 0.539 | 0.516 | 0.494 | 0.474 | 0.456 | 0.439 | 7 7     |
| 7 8     | 0.716 | 0.676 | 0.640 | 0.608 | 0.579 | 0.553 | 0.529 | 0.507 | 0.487 | 0.468 | 0.451 | 7 8     |
| 7 9     | 0.734 | 0.693 | 0.657 | 0.624 | 0.594 | 0.567 | 0.543 | 0.520 | 0.499 | 0.480 | 0.462 | 7 9     |
| 8 0     | 0.753 | 0.711 | 0.674 | 0.640 | 0.610 | 0.582 | 0.557 | 0.533 | 0.512 | 0.492 | 0.474 | 8 0     |
| 8 1     | 0.772 | 0.729 | 0.691 | 0.656 | 0.625 | 0.596 | 0.571 | 0.547 | 0.525 | 0.505 | 0.486 | 8 1     |
| 8 2     | 0.791 | 0.747 | 0.708 | 0.672 | 0.640 | 0.611 | 0.585 | 0.560 | 0.538 | 0.517 | 0.498 | 8 2     |
| 8 3     | 0.810 | 0.765 | 0.725 | 0.689 | 0.656 | 0.626 | 0.599 | 0.574 | 0.551 | 0.530 | 0.510 | 8 3     |
| 8 4     | 0.830 | 0.784 | 0.743 | 0.706 | 0.672 | 0.641 | 0.614 | 0.588 | 0.564 | 0.543 | 0.523 | 8 4     |
| 8 5     | 0.850 | 0.803 | 0.761 | 0.723 | 0.688 | 0.657 | 0.628 | 0.602 | 0.578 | 0.556 | 0.535 | 8 5     |
| 8 6     | 0.870 | 0.822 | 0.779 | 0.740 | 0.704 | 0.672 | 0.643 | 0.616 | 0.592 | 0.569 | 0.548 | 8 6     |
| 8 7     | 0.890 | 0.841 | 0.797 | 0.757 | 0.721 | 0.688 | 0.658 | 0.631 | 0.606 | 0.582 | 0.561 | 8 7     |
| 8 8     | 0.911 | 0.860 | 0.815 | 0.774 | 0.738 | 0.704 | 0.673 | 0.645 | 0.620 | 0.596 | 0.574 | 8 8     |
| 8 9     | 0.932 | 0.880 | 0.834 | 0.792 | 0.754 | 0.720 | 0.689 | 0.660 | 0.634 | 0.609 | 0.587 | 8 9     |
| 9 0     | 0.953 | 0.900 | 0.853 | 0.810 | 0.771 | 0.736 | 0.704 | 0.675 | 0.648 | 0.623 | 0.600 | 9 0     |
| 9 1     | 0.974 | 0.920 | 0.872 | 0.828 | 0.789 | 0.753 | 0.720 | 0.690 | 0.663 | 0.637 | 0.613 | 9 1     |
| 9 2     | 0.996 | 0.940 | 0.891 | 0.846 | 0.806 | 0.769 | 0.736 | 0.705 | 0.677 | 0.651 | 0.627 | 9 2     |
| 9 3     | 1.018 | 0.961 | 0.910 | 0.865 | 0.824 | 0.786 | 0.752 | 0.721 | 0.692 | 0.665 | 0.641 | 9 3     |
| 9 4     | 1.040 | 0.982 | 0.930 | 0.884 | 0.842 | 0.803 | 0.768 | 0.736 | 0.707 | 0.680 | 0.655 | 9 4     |
| 9 5     | 1.062 | 1.003 | 0.950 | 0.903 | 0.860 | 0.820 | 0.785 | 0.752 | 0.722 | 0.694 | 0.669 | 9 5     |
| 9 6     | 1.084 | 1.024 | 0.970 | 0.922 | 0.878 | 0.838 | 0.801 | 0.768 | 0.737 | 0.709 | 0.683 | 9 6     |
| 9 7     | 1.107 | 1.045 | 0.990 | 0.941 | 0.896 | 0.855 | 0.818 | 0.784 | 0.753 | 0.724 | 0.697 | 9 7     |
| 9 8     | 1.130 | 1.067 | 1.011 | 0.960 | 0.915 | 0.873 | 0.835 | 0.800 | 0.768 | 0.739 | 0.711 | 9 8     |
| 9 9     | 1.153 | 1.089 | 1.032 | 0.980 | 0.933 | 0.891 | 0.852 | 0.817 | 0.784 | 0.754 | 0.726 | 9 9     |
| 100     | 1.176 | 1.111 | 1.053 | 1.000 | 0.952 | 0.909 | 0.870 | 0.833 | 0.800 | 0.769 | 0.741 | 100     |

弧長 = 20 公尺      1 弧 = 100 節

| 半徑<br>數 | 280   | 290   | 300   | 310   | 320   | 330   | 340   | 350   | 360   | 370   | 380   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 1       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 1       |
| 2       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 2       |
| 3       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 3       |
| 4       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 4       |
| 5       | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 5       |
| 6       | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 6       |
| 7       | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 7       |
| 8       | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 8       |
| 9       | 0.005 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 9       |
| 10      | 0.007 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 10      |
| 11      | 0.009 | 0.008 | 0.008 | 0.008 | 0.008 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.006 | 11      |
| 12      | 0.010 | 0.010 | 0.010 | 0.009 | 0.009 | 0.009 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 12      |
| 13      | 0.012 | 0.012 | 0.011 | 0.011 | 0.011 | 0.010 | 0.010 | 0.009 | 0.009 | 0.009 | 0.009 | 13      |
| 14      | 0.014 | 0.014 | 0.013 | 0.013 | 0.012 | 0.012 | 0.012 | 0.011 | 0.011 | 0.011 | 0.010 | 14      |
| 15      | 0.016 | 0.016 | 0.015 | 0.015 | 0.014 | 0.014 | 0.013 | 0.013 | 0.013 | 0.012 | 0.012 | 15      |
| 16      | 0.018 | 0.018 | 0.017 | 0.017 | 0.016 | 0.016 | 0.015 | 0.015 | 0.014 | 0.014 | 0.013 | 16      |
| 17      | 0.021 | 0.020 | 0.019 | 0.019 | 0.018 | 0.018 | 0.017 | 0.017 | 0.016 | 0.016 | 0.015 | 17      |
| 18      | 0.023 | 0.022 | 0.022 | 0.021 | 0.020 | 0.020 | 0.019 | 0.019 | 0.018 | 0.018 | 0.017 | 18      |
| 19      | 0.026 | 0.025 | 0.024 | 0.023 | 0.023 | 0.022 | 0.021 | 0.021 | 0.020 | 0.020 | 0.019 | 19      |
| 20      | 0.029 | 0.028 | 0.027 | 0.026 | 0.025 | 0.024 | 0.024 | 0.023 | 0.022 | 0.022 | 0.021 | 20      |
| 21      | 0.032 | 0.030 | 0.029 | 0.028 | 0.028 | 0.027 | 0.026 | 0.025 | 0.025 | 0.024 | 0.023 | 21      |
| 22      | 0.035 | 0.033 | 0.032 | 0.031 | 0.030 | 0.029 | 0.028 | 0.028 | 0.027 | 0.026 | 0.025 | 22      |
| 23      | 0.033 | 0.036 | 0.035 | 0.034 | 0.033 | 0.032 | 0.031 | 0.030 | 0.029 | 0.029 | 0.028 | 23      |
| 24      | 0.041 | 0.040 | 0.038 | 0.037 | 0.036 | 0.035 | 0.034 | 0.033 | 0.032 | 0.031 | 0.030 | 24      |
| 25      | 0.045 | 0.043 | 0.042 | 0.040 | 0.039 | 0.038 | 0.037 | 0.036 | 0.035 | 0.034 | 0.033 | 25      |
| 26      | 0.048 | 0.047 | 0.045 | 0.044 | 0.042 | 0.041 | 0.040 | 0.039 | 0.038 | 0.037 | 0.036 | 26      |
| 27      | 0.052 | 0.050 | 0.049 | 0.047 | 0.046 | 0.044 | 0.043 | 0.042 | 0.041 | 0.039 | 0.038 | 27      |
| 28      | 0.056 | 0.054 | 0.052 | 0.051 | 0.049 | 0.048 | 0.046 | 0.045 | 0.044 | 0.042 | 0.041 | 28      |
| 29      | 0.060 | 0.058 | 0.056 | 0.054 | 0.053 | 0.051 | 0.049 | 0.048 | 0.047 | 0.045 | 0.044 | 29      |
| 30      | 0.064 | 0.062 | 0.060 | 0.058 | 0.056 | 0.055 | 0.053 | 0.051 | 0.050 | 0.049 | 0.047 | 30      |
| 31      | 0.069 | 0.066 | 0.064 | 0.062 | 0.060 | 0.058 | 0.057 | 0.055 | 0.053 | 0.052 | 0.051 | 31      |
| 32      | 0.073 | 0.071 | 0.068 | 0.066 | 0.064 | 0.062 | 0.060 | 0.059 | 0.057 | 0.055 | 0.054 | 32      |
| 33      | 0.078 | 0.075 | 0.073 | 0.070 | 0.068 | 0.066 | 0.064 | 0.062 | 0.061 | 0.059 | 0.057 | 33      |
| 34      | 0.083 | 0.080 | 0.077 | 0.075 | 0.072 | 0.070 | 0.068 | 0.066 | 0.064 | 0.062 | 0.061 | 34      |
| 35      | 0.088 | 0.084 | 0.082 | 0.079 | 0.077 | 0.074 | 0.072 | 0.070 | 0.068 | 0.066 | 0.064 | 35      |
| 36      | 0.093 | 0.089 | 0.086 | 0.084 | 0.081 | 0.079 | 0.076 | 0.074 | 0.072 | 0.070 | 0.068 | 36      |
| 37      | 0.098 | 0.094 | 0.091 | 0.088 | 0.086 | 0.083 | 0.081 | 0.079 | 0.076 | 0.074 | 0.072 | 37      |
| 38      | 0.103 | 0.100 | 0.096 | 0.093 | 0.090 | 0.088 | 0.085 | 0.083 | 0.080 | 0.078 | 0.076 | 38      |
| 39      | 0.109 | 0.105 | 0.101 | 0.098 | 0.095 | 0.092 | 0.089 | 0.087 | 0.085 | 0.082 | 0.080 | 39      |
| 40      | 0.114 | 0.110 | 0.107 | 0.103 | 0.100 | 0.097 | 0.094 | 0.091 | 0.089 | 0.086 | 0.084 | 40      |
| 41      | 0.120 | 0.115 | 0.112 | 0.108 | 0.105 | 0.102 | 0.099 | 0.096 | 0.093 | 0.091 | 0.088 | 41      |
| 42      | 0.126 | 0.122 | 0.118 | 0.114 | 0.110 | 0.107 | 0.104 | 0.101 | 0.098 | 0.095 | 0.093 | 42      |
| 43      | 0.132 | 0.128 | 0.123 | 0.119 | 0.116 | 0.112 | 0.109 | 0.106 | 0.103 | 0.100 | 0.097 | 43      |
| 44      | 0.138 | 0.134 | 0.129 | 0.125 | 0.121 | 0.117 | 0.114 | 0.111 | 0.108 | 0.105 | 0.102 | 44      |
| 45      | 0.145 | 0.140 | 0.135 | 0.131 | 0.127 | 0.123 | 0.119 | 0.116 | 0.113 | 0.109 | 0.107 | 45      |
| 46      | 0.151 | 0.146 | 0.141 | 0.137 | 0.132 | 0.128 | 0.124 | 0.121 | 0.118 | 0.114 | 0.111 | 46      |
| 47      | 0.158 | 0.152 | 0.147 | 0.143 | 0.138 | 0.134 | 0.130 | 0.126 | 0.123 | 0.119 | 0.116 | 47      |
| 48      | 0.165 | 0.159 | 0.154 | 0.149 | 0.144 | 0.140 | 0.136 | 0.132 | 0.128 | 0.125 | 0.121 | 48      |
| 49      | 0.172 | 0.166 | 0.160 | 0.155 | 0.150 | 0.146 | 0.141 | 0.137 | 0.133 | 0.130 | 0.126 | 49      |
| 50      | 0.179 | 0.172 | 0.167 | 0.161 | 0.156 | 0.152 | 0.147 | 0.143 | 0.139 | 0.135 | 0.132 | 50      |

弧長 = 20 公尺      1 弧 = 100 節

| 半徑<br>節 | 280   | 290   | 300   | 310   | 320   | 330   | 340   | 350   | 360   | 370   | 380   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 5 1     | 0.186 | 0.179 | 0.173 | 0.168 | 0.163 | 0.158 | 0.153 | 0.149 | 0.145 | 0.141 | 0.131 | 5 1     |
| 5 2     | 0.193 | 0.186 | 0.180 | 0.174 | 0.169 | 0.164 | 0.159 | 0.155 | 0.150 | 0.146 | 0.142 | 5 2     |
| 5 3     | 0.201 | 0.194 | 0.187 | 0.181 | 0.176 | 0.170 | 0.165 | 0.161 | 0.156 | 0.152 | 0.148 | 5 3     |
| 5 4     | 0.208 | 0.201 | 0.194 | 0.188 | 0.182 | 0.177 | 0.172 | 0.167 | 0.162 | 0.158 | 0.153 | 5 4     |
| 5 5     | 0.216 | 0.209 | 0.201 | 0.195 | 0.189 | 0.183 | 0.178 | 0.173 | 0.168 | 0.164 | 0.159 | 5 5     |
| 5 6     | 0.224 | 0.216 | 0.209 | 0.202 | 0.196 | 0.190 | 0.184 | 0.179 | 0.174 | 0.170 | 0.165 | 5 6     |
| 5 7     | 0.232 | 0.224 | 0.217 | 0.210 | 0.203 | 0.197 | 0.191 | 0.186 | 0.181 | 0.176 | 0.171 | 5 7     |
| 5 8     | 0.240 | 0.232 | 0.224 | 0.217 | 0.210 | 0.204 | 0.198 | 0.192 | 0.187 | 0.182 | 0.177 | 5 8     |
| 5 9     | 0.249 | 0.240 | 0.232 | 0.224 | 0.218 | 0.211 | 0.205 | 0.199 | 0.193 | 0.188 | 0.183 | 5 9     |
| 5 0     | 0.257 | 0.248 | 0.240 | 0.232 | 0.225 | 0.218 | 0.212 | 0.206 | 0.200 | 0.195 | 0.190 | 5 0     |
| 6 1     | 0.266 | 0.257 | 0.248 | 0.240 | 0.233 | 0.226 | 0.219 | 0.213 | 0.207 | 0.201 | 0.196 | 6 1     |
| 6 2     | 0.275 | 0.265 | 0.256 | 0.248 | 0.240 | 0.233 | 0.226 | 0.220 | 0.214 | 0.208 | 0.202 | 6 2     |
| 6 3     | 0.284 | 0.274 | 0.265 | 0.256 | 0.248 | 0.241 | 0.233 | 0.227 | 0.221 | 0.215 | 0.209 | 6 3     |
| 6 4     | 0.293 | 0.282 | 0.273 | 0.264 | 0.256 | 0.248 | 0.241 | 0.234 | 0.228 | 0.221 | 0.216 | 6 4     |
| 6 5     | 0.302 | 0.291 | 0.282 | 0.273 | 0.264 | 0.256 | 0.248 | 0.241 | 0.235 | 0.228 | 0.222 | 6 5     |
| 6 6     | 0.311 | 0.300 | 0.290 | 0.281 | 0.272 | 0.264 | 0.256 | 0.249 | 0.242 | 0.235 | 0.229 | 6 6     |
| 6 7     | 0.321 | 0.310 | 0.299 | 0.290 | 0.281 | 0.272 | 0.264 | 0.257 | 0.249 | 0.243 | 0.236 | 6 7     |
| 6 8     | 0.330 | 0.319 | 0.308 | 0.298 | 0.289 | 0.280 | 0.272 | 0.264 | 0.257 | 0.250 | 0.243 | 6 8     |
| 6 9     | 0.340 | 0.328 | 0.317 | 0.307 | 0.298 | 0.289 | 0.280 | 0.272 | 0.265 | 0.257 | 0.251 | 6 9     |
| 6 0     | 0.350 | 0.338 | 0.327 | 0.316 | 0.306 | 0.297 | 0.288 | 0.280 | 0.272 | 0.265 | 0.258 | 6 0     |
| 7 1     | 0.360 | 0.348 | 0.336 | 0.325 | 0.315 | 0.306 | 0.297 | 0.289 | 0.280 | 0.272 | 0.265 | 7 1     |
| 7 2     | 0.370 | 0.358 | 0.346 | 0.334 | 0.324 | 0.314 | 0.305 | 0.296 | 0.288 | 0.280 | 0.273 | 7 2     |
| 7 3     | 0.381 | 0.368 | 0.356 | 0.344 | 0.333 | 0.323 | 0.313 | 0.305 | 0.296 | 0.288 | 0.280 | 7 3     |
| 7 4     | 0.391 | 0.378 | 0.365 | 0.353 | 0.342 | 0.332 | 0.322 | 0.313 | 0.304 | 0.296 | 0.288 | 7 4     |
| 7 5     | 0.402 | 0.388 | 0.375 | 0.363 | 0.352 | 0.341 | 0.331 | 0.321 | 0.313 | 0.304 | 0.296 | 7 5     |
| 7 6     | 0.413 | 0.398 | 0.385 | 0.373 | 0.361 | 0.350 | 0.340 | 0.330 | 0.321 | 0.312 | 0.304 | 7 6     |
| 7 7     | 0.424 | 0.409 | 0.395 | 0.383 | 0.371 | 0.359 | 0.349 | 0.339 | 0.329 | 0.320 | 0.312 | 7 7     |
| 7 8     | 0.435 | 0.420 | 0.406 | 0.393 | 0.380 | 0.369 | 0.358 | 0.348 | 0.338 | 0.329 | 0.320 | 7 8     |
| 7 9     | 0.446 | 0.430 | 0.416 | 0.403 | 0.390 | 0.378 | 0.367 | 0.357 | 0.347 | 0.337 | 0.328 | 7 9     |
| 8 0     | 0.457 | 0.441 | 0.427 | 0.413 | 0.400 | 0.388 | 0.376 | 0.366 | 0.356 | 0.346 | 0.337 | 8 0     |
| 8 1     | 0.469 | 0.452 | 0.437 | 0.423 | 0.410 | 0.398 | 0.386 | 0.375 | 0.365 | 0.355 | 0.345 | 8 1     |
| 8 2     | 0.480 | 0.464 | 0.448 | 0.434 | 0.420 | 0.408 | 0.396 | 0.384 | 0.374 | 0.363 | 0.354 | 8 2     |
| 8 3     | 0.492 | 0.475 | 0.459 | 0.444 | 0.431 | 0.418 | 0.405 | 0.394 | 0.383 | 0.372 | 0.363 | 8 3     |
| 8 4     | 0.504 | 0.487 | 0.470 | 0.455 | 0.441 | 0.428 | 0.415 | 0.403 | 0.392 | 0.381 | 0.371 | 8 4     |
| 8 5     | 0.516 | 0.498 | 0.482 | 0.466 | 0.452 | 0.438 | 0.425 | 0.413 | 0.401 | 0.391 | 0.380 | 8 5     |
| 8 6     | 0.528 | 0.510 | 0.493 | 0.477 | 0.462 | 0.448 | 0.435 | 0.423 | 0.411 | 0.400 | 0.389 | 8 6     |
| 8 7     | 0.541 | 0.522 | 0.505 | 0.488 | 0.473 | 0.459 | 0.445 | 0.433 | 0.421 | 0.409 | 0.398 | 8 7     |
| 8 8     | 0.553 | 0.534 | 0.516 | 0.500 | 0.484 | 0.469 | 0.456 | 0.443 | 0.430 | 0.419 | 0.408 | 8 8     |
| 8 9     | 0.566 | 0.546 | 0.528 | 0.511 | 0.495 | 0.480 | 0.466 | 0.453 | 0.440 | 0.428 | 0.417 | 8 9     |
| 9 0     | 0.579 | 0.559 | 0.540 | 0.523 | 0.506 | 0.491 | 0.476 | 0.463 | 0.450 | 0.438 | 0.426 | 9 0     |
| 9 1     | 0.592 | 0.571 | 0.552 | 0.534 | 0.518 | 0.502 | 0.487 | 0.473 | 0.460 | 0.448 | 0.436 | 9 1     |
| 9 2     | 0.605 | 0.584 | 0.564 | 0.546 | 0.529 | 0.513 | 0.498 | 0.484 | 0.470 | 0.458 | 0.445 | 9 2     |
| 9 3     | 0.618 | 0.596 | 0.577 | 0.558 | 0.541 | 0.524 | 0.509 | 0.494 | 0.481 | 0.468 | 0.455 | 9 3     |
| 9 4     | 0.631 | 0.609 | 0.589 | 0.570 | 0.552 | 0.536 | 0.520 | 0.505 | 0.491 | 0.478 | 0.465 | 9 4     |
| 9 5     | 0.645 | 0.622 | 0.602 | 0.582 | 0.564 | 0.547 | 0.531 | 0.516 | 0.501 | 0.488 | 0.475 | 9 5     |
| 9 6     | 0.658 | 0.636 | 0.614 | 0.595 | 0.576 | 0.559 | 0.542 | 0.527 | 0.512 | 0.498 | 0.485 | 9 6     |
| 9 7     | 0.672 | 0.649 | 0.627 | 0.607 | 0.588 | 0.570 | 0.553 | 0.538 | 0.523 | 0.509 | 0.495 | 9 7     |
| 9 8     | 0.686 | 0.662 | 0.640 | 0.620 | 0.600 | 0.582 | 0.565 | 0.549 | 0.534 | 0.519 | 0.505 | 9 8     |
| 9 9     | 0.700 | 0.676 | 0.653 | 0.632 | 0.613 | 0.594 | 0.577 | 0.560 | 0.545 | 0.530 | 0.516 | 9 9     |
| 100     | 0.714 | 0.690 | 0.667 | 0.645 | 0.625 | 0.606 | 0.588 | 0.571 | 0.556 | 0.541 | 0.526 | 100     |

弧長=20公尺 1弧=100節

| 半徑<br>節 | 390   | 400   | 410   | 420   | 430   | 440   | 450   | 460   | 470   | 480   | 490   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 1       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 1       |
| 2       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 2       |
| 3       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 3       |
| 4       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 4       |
| 5       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 5       |
| 6       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 6       |
| 7       | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 7       |
| 8       | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 8       |
| 9       | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 9       |
| 10      | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 10      |
| 11      | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 11      |
| 12      | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 12      |
| 13      | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 13      |
| 14      | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 14      |
| 15      | 0.012 | 0.011 | 0.011 | 0.011 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.009 | 0.009 | 15      |
| 16      | 0.013 | 0.013 | 0.012 | 0.012 | 0.012 | 0.012 | 0.011 | 0.011 | 0.011 | 0.011 | 0.010 | 16      |
| 17      | 0.015 | 0.014 | 0.014 | 0.014 | 0.013 | 0.013 | 0.013 | 0.013 | 0.012 | 0.012 | 0.012 | 17      |
| 18      | 0.017 | 0.016 | 0.016 | 0.015 | 0.015 | 0.015 | 0.014 | 0.014 | 0.014 | 0.014 | 0.013 | 18      |
| 19      | 0.019 | 0.018 | 0.018 | 0.017 | 0.017 | 0.016 | 0.016 | 0.016 | 0.015 | 0.015 | 0.015 | 19      |
| 20      | 0.021 | 0.020 | 0.020 | 0.019 | 0.019 | 0.018 | 0.018 | 0.017 | 0.017 | 0.017 | 0.016 | 20      |
| 21      | 0.023 | 0.022 | 0.022 | 0.021 | 0.021 | 0.020 | 0.020 | 0.019 | 0.019 | 0.018 | 0.018 | 21      |
| 22      | 0.025 | 0.024 | 0.024 | 0.023 | 0.023 | 0.022 | 0.022 | 0.021 | 0.021 | 0.020 | 0.020 | 22      |
| 23      | 0.027 | 0.026 | 0.026 | 0.025 | 0.025 | 0.024 | 0.024 | 0.023 | 0.023 | 0.022 | 0.022 | 23      |
| 24      | 0.030 | 0.029 | 0.028 | 0.027 | 0.027 | 0.026 | 0.026 | 0.025 | 0.025 | 0.024 | 0.024 | 24      |
| 25      | 0.032 | 0.031 | 0.030 | 0.030 | 0.029 | 0.028 | 0.028 | 0.027 | 0.027 | 0.026 | 0.026 | 25      |
| 26      | 0.035 | 0.034 | 0.033 | 0.032 | 0.031 | 0.031 | 0.030 | 0.029 | 0.029 | 0.028 | 0.028 | 26      |
| 27      | 0.037 | 0.036 | 0.036 | 0.035 | 0.034 | 0.033 | 0.032 | 0.032 | 0.031 | 0.030 | 0.030 | 27      |
| 28      | 0.040 | 0.039 | 0.039 | 0.037 | 0.036 | 0.036 | 0.035 | 0.034 | 0.033 | 0.033 | 0.032 | 28      |
| 29      | 0.043 | 0.042 | 0.041 | 0.040 | 0.039 | 0.038 | 0.037 | 0.037 | 0.036 | 0.035 | 0.034 | 29      |
| 30      | 0.046 | 0.045 | 0.044 | 0.043 | 0.042 | 0.041 | 0.040 | 0.039 | 0.039 | 0.038 | 0.037 | 30      |
| 31      | 0.049 | 0.048 | 0.047 | 0.046 | 0.045 | 0.044 | 0.043 | 0.042 | 0.041 | 0.040 | 0.039 | 31      |
| 32      | 0.053 | 0.051 | 0.050 | 0.049 | 0.048 | 0.047 | 0.046 | 0.045 | 0.044 | 0.043 | 0.042 | 32      |
| 33      | 0.056 | 0.054 | 0.053 | 0.052 | 0.051 | 0.050 | 0.048 | 0.047 | 0.046 | 0.045 | 0.044 | 33      |
| 34      | 0.059 | 0.058 | 0.056 | 0.055 | 0.054 | 0.053 | 0.051 | 0.050 | 0.049 | 0.048 | 0.047 | 34      |
| 35      | 0.063 | 0.061 | 0.060 | 0.058 | 0.057 | 0.056 | 0.054 | 0.053 | 0.052 | 0.051 | 0.050 | 35      |
| 36      | 0.066 | 0.065 | 0.063 | 0.062 | 0.060 | 0.059 | 0.058 | 0.056 | 0.055 | 0.054 | 0.053 | 36      |
| 37      | 0.070 | 0.068 | 0.067 | 0.065 | 0.064 | 0.062 | 0.061 | 0.060 | 0.058 | 0.057 | 0.056 | 37      |
| 38      | 0.074 | 0.072 | 0.070 | 0.069 | 0.067 | 0.066 | 0.064 | 0.063 | 0.061 | 0.060 | 0.059 | 38      |
| 39      | 0.078 | 0.076 | 0.074 | 0.072 | 0.071 | 0.069 | 0.068 | 0.066 | 0.065 | 0.063 | 0.062 | 39      |
| 40      | 0.082 | 0.080 | 0.078 | 0.076 | 0.074 | 0.073 | 0.071 | 0.070 | 0.068 | 0.067 | 0.065 | 40      |
| 41      | 0.086 | 0.084 | 0.082 | 0.080 | 0.078 | 0.076 | 0.075 | 0.073 | 0.072 | 0.070 | 0.069 | 41      |
| 42      | 0.090 | 0.088 | 0.086 | 0.084 | 0.082 | 0.080 | 0.078 | 0.077 | 0.075 | 0.074 | 0.072 | 42      |
| 43      | 0.095 | 0.092 | 0.090 | 0.088 | 0.086 | 0.084 | 0.082 | 0.080 | 0.079 | 0.077 | 0.076 | 43      |
| 44      | 0.099 | 0.097 | 0.094 | 0.092 | 0.090 | 0.088 | 0.086 | 0.084 | 0.082 | 0.081 | 0.079 | 44      |
| 45      | 0.104 | 0.101 | 0.099 | 0.096 | 0.094 | 0.092 | 0.090 | 0.088 | 0.086 | 0.084 | 0.083 | 45      |
| 46      | 0.109 | 0.106 | 0.103 | 0.101 | 0.098 | 0.096 | 0.094 | 0.092 | 0.090 | 0.088 | 0.086 | 46      |
| 47      | 0.113 | 0.110 | 0.108 | 0.105 | 0.103 | 0.100 | 0.098 | 0.096 | 0.094 | 0.092 | 0.090 | 47      |
| 48      | 0.118 | 0.115 | 0.112 | 0.110 | 0.107 | 0.105 | 0.102 | 0.100 | 0.098 | 0.096 | 0.094 | 48      |
| 49      | 0.123 | 0.120 | 0.117 | 0.114 | 0.112 | 0.109 | 0.107 | 0.104 | 0.102 | 0.100 | 0.098 | 49      |
| 50      | 0.128 | 0.125 | 0.122 | 0.119 | 0.116 | 0.114 | 0.111 | 0.109 | 0.106 | 0.104 | 0.102 | 50      |

弧長=20公尺 1弧=100節

| 半徑  | 390   | 400   | 410   | 420   | 430   | 440   | 450   | 460   | 470   | 480   | 490   | 半徑  |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| 5 1 | 0.133 | 0.130 | 0.127 | 0.124 | 0.121 | 0.118 | 0.116 | 0.113 | 0.111 | 0.109 | 0.106 | 5 1 |
| 5 2 | 0.139 | 0.135 | 0.132 | 0.129 | 0.126 | 0.123 | 0.120 | 0.118 | 0.115 | 0.113 | 0.110 | 5 2 |
| 5 3 | 0.144 | 0.140 | 0.137 | 0.134 | 0.131 | 0.128 | 0.125 | 0.122 | 0.120 | 0.117 | 0.115 | 5 3 |
| 5 4 | 0.150 | 0.146 | 0.142 | 0.139 | 0.136 | 0.133 | 0.130 | 0.127 | 0.124 | 0.122 | 0.119 | 5 4 |
| 5 5 | 0.155 | 0.151 | 0.148 | 0.144 | 0.141 | 0.138 | 0.134 | 0.132 | 0.129 | 0.126 | 0.123 | 5 5 |
| 6 6 | 0.161 | 0.157 | 0.153 | 0.149 | 0.146 | 0.143 | 0.139 | 0.136 | 0.133 | 0.131 | 0.128 | 6 6 |
| 6 7 | 0.167 | 0.162 | 0.158 | 0.155 | 0.151 | 0.148 | 0.144 | 0.141 | 0.138 | 0.135 | 0.133 | 6 7 |
| 6 8 | 0.173 | 0.168 | 0.164 | 0.160 | 0.156 | 0.153 | 0.150 | 0.146 | 0.143 | 0.140 | 0.137 | 6 8 |
| 6 9 | 0.179 | 0.174 | 0.170 | 0.166 | 0.162 | 0.158 | 0.155 | 0.151 | 0.148 | 0.145 | 0.142 | 6 9 |
| 6 0 | 0.185 | 0.180 | 0.176 | 0.171 | 0.167 | 0.164 | 0.160 | 0.157 | 0.153 | 0.150 | 0.147 | 6 0 |
| 6 1 | 0.191 | 0.186 | 0.182 | 0.177 | 0.173 | 0.169 | 0.165 | 0.162 | 0.158 | 0.155 | 0.152 | 6 1 |
| 6 2 | 0.197 | 0.192 | 0.188 | 0.183 | 0.179 | 0.175 | 0.171 | 0.167 | 0.164 | 0.160 | 0.157 | 6 2 |
| 6 3 | 0.204 | 0.198 | 0.194 | 0.189 | 0.185 | 0.180 | 0.176 | 0.173 | 0.169 | 0.165 | 0.162 | 6 3 |
| 6 4 | 0.210 | 0.205 | 0.200 | 0.195 | 0.191 | 0.186 | 0.182 | 0.178 | 0.174 | 0.171 | 0.167 | 6 4 |
| 6 5 | 0.217 | 0.211 | 0.206 | 0.201 | 0.197 | 0.192 | 0.188 | 0.184 | 0.180 | 0.176 | 0.172 | 6 5 |
| 6 6 | 0.223 | 0.218 | 0.212 | 0.207 | 0.203 | 0.198 | 0.194 | 0.189 | 0.185 | 0.182 | 0.178 | 6 6 |
| 6 7 | 0.230 | 0.224 | 0.219 | 0.214 | 0.209 | 0.204 | 0.200 | 0.195 | 0.191 | 0.187 | 0.183 | 6 7 |
| 6 8 | 0.237 | 0.231 | 0.226 | 0.220 | 0.215 | 0.210 | 0.206 | 0.201 | 0.197 | 0.193 | 0.189 | 6 8 |
| 6 9 | 0.244 | 0.238 | 0.232 | 0.227 | 0.221 | 0.216 | 0.212 | 0.207 | 0.203 | 0.198 | 0.194 | 6 9 |
| 6 0 | 0.251 | 0.245 | 0.239 | 0.233 | 0.228 | 0.223 | 0.218 | 0.213 | 0.209 | 0.204 | 0.200 | 6 0 |
| 7 1 | 0.259 | 0.252 | 0.246 | 0.240 | 0.234 | 0.229 | 0.224 | 0.219 | 0.215 | 0.210 | 0.206 | 7 1 |
| 7 2 | 0.266 | 0.259 | 0.253 | 0.247 | 0.241 | 0.236 | 0.230 | 0.225 | 0.221 | 0.216 | 0.212 | 7 2 |
| 7 3 | 0.273 | 0.266 | 0.260 | 0.254 | 0.248 | 0.242 | 0.237 | 0.232 | 0.227 | 0.222 | 0.218 | 7 3 |
| 7 4 | 0.281 | 0.274 | 0.267 | 0.261 | 0.255 | 0.249 | 0.243 | 0.238 | 0.233 | 0.228 | 0.224 | 7 4 |
| 7 5 | 0.288 | 0.281 | 0.274 | 0.268 | 0.262 | 0.256 | 0.250 | 0.245 | 0.239 | 0.234 | 0.230 | 7 5 |
| 7 6 | 0.296 | 0.289 | 0.282 | 0.275 | 0.269 | 0.263 | 0.257 | 0.251 | 0.246 | 0.241 | 0.236 | 7 6 |
| 7 7 | 0.304 | 0.296 | 0.289 | 0.282 | 0.276 | 0.270 | 0.264 | 0.258 | 0.252 | 0.247 | 0.242 | 7 7 |
| 7 8 | 0.312 | 0.304 | 0.297 | 0.290 | 0.283 | 0.277 | 0.270 | 0.265 | 0.259 | 0.254 | 0.248 | 7 8 |
| 7 9 | 0.320 | 0.312 | 0.304 | 0.297 | 0.290 | 0.284 | 0.277 | 0.271 | 0.266 | 0.260 | 0.255 | 7 9 |
| 7 0 | 0.328 | 0.320 | 0.312 | 0.305 | 0.298 | 0.291 | 0.284 | 0.278 | 0.272 | 0.267 | 0.261 | 7 0 |
| 8 1 | 0.336 | 0.328 | 0.320 | 0.312 | 0.305 | 0.298 | 0.292 | 0.285 | 0.279 | 0.273 | 0.268 | 8 1 |
| 8 2 | 0.345 | 0.336 | 0.328 | 0.320 | 0.313 | 0.306 | 0.299 | 0.292 | 0.286 | 0.280 | 0.274 | 8 2 |
| 8 3 | 0.353 | 0.344 | 0.336 | 0.328 | 0.320 | 0.313 | 0.306 | 0.300 | 0.293 | 0.287 | 0.281 | 8 3 |
| 8 4 | 0.362 | 0.353 | 0.344 | 0.336 | 0.328 | 0.321 | 0.314 | 0.307 | 0.300 | 0.294 | 0.288 | 8 4 |
| 8 5 | 0.371 | 0.361 | 0.352 | 0.344 | 0.336 | 0.329 | 0.321 | 0.314 | 0.307 | 0.301 | 0.295 | 8 5 |
| 8 6 | 0.379 | 0.370 | 0.361 | 0.352 | 0.344 | 0.336 | 0.329 | 0.322 | 0.315 | 0.308 | 0.302 | 8 6 |
| 8 7 | 0.388 | 0.378 | 0.369 | 0.360 | 0.352 | 0.344 | 0.336 | 0.329 | 0.322 | 0.315 | 0.309 | 8 7 |
| 8 8 | 0.397 | 0.387 | 0.378 | 0.369 | 0.360 | 0.352 | 0.344 | 0.337 | 0.330 | 0.323 | 0.316 | 8 8 |
| 8 9 | 0.406 | 0.396 | 0.386 | 0.377 | 0.368 | 0.360 | 0.352 | 0.344 | 0.337 | 0.330 | 0.323 | 8 9 |
| 8 0 | 0.415 | 0.405 | 0.395 | 0.386 | 0.377 | 0.368 | 0.360 | 0.352 | 0.345 | 0.338 | 0.331 | 8 0 |
| 9 1 | 0.425 | 0.414 | 0.404 | 0.394 | 0.385 | 0.376 | 0.368 | 0.360 | 0.352 | 0.345 | 0.338 | 9 1 |
| 9 2 | 0.434 | 0.423 | 0.413 | 0.403 | 0.394 | 0.385 | 0.376 | 0.368 | 0.360 | 0.353 | 0.346 | 9 2 |
| 9 3 | 0.444 | 0.432 | 0.422 | 0.412 | 0.402 | 0.393 | 0.384 | 0.376 | 0.368 | 0.360 | 0.353 | 9 3 |
| 9 4 | 0.453 | 0.442 | 0.431 | 0.421 | 0.411 | 0.402 | 0.393 | 0.384 | 0.376 | 0.368 | 0.361 | 9 4 |
| 9 5 | 0.463 | 0.451 | 0.440 | 0.430 | 0.420 | 0.410 | 0.401 | 0.393 | 0.384 | 0.376 | 0.368 | 9 5 |
| 9 6 | 0.473 | 0.461 | 0.450 | 0.439 | 0.429 | 0.419 | 0.410 | 0.401 | 0.392 | 0.384 | 0.376 | 9 6 |
| 9 7 | 0.483 | 0.470 | 0.459 | 0.448 | 0.438 | 0.428 | 0.418 | 0.409 | 0.400 | 0.392 | 0.384 | 9 7 |
| 9 8 | 0.493 | 0.480 | 0.468 | 0.457 | 0.447 | 0.437 | 0.427 | 0.418 | 0.409 | 0.400 | 0.392 | 9 8 |
| 9 9 | 0.503 | 0.490 | 0.478 | 0.467 | 0.456 | 0.446 | 0.436 | 0.426 | 0.417 | 0.408 | 0.400 | 9 9 |
| 100 | 0.513 | 0.500 | 0.488 | 0.476 | 0.465 | 0.455 | 0.445 | 0.435 | 0.426 | 0.417 | 0.408 | 100 |

弧長=20公尺 1弧=100節

| 半徑<br>節 | 500   | 510   | 520   | 530   | 540   | 550   | 560   | 570   | 580   | 590   | 600   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 1       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 1       |
| 2       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 2       |
| 3       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 3       |
| 4       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 4       |
| 5       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 5       |
| 6       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 6       |
| 7       | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 7       |
| 8       | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 8       |
| 9       | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 9       |
| 10      | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 10      |
| 11      | 0.005 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 11      |
| 12      | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 12      |
| 13      | 0.007 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 13      |
| 14      | 0.008 | 0.008 | 0.008 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 14      |
| 15      | 0.009 | 0.009 | 0.009 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 15      |
| 16      | 0.010 | 0.010 | 0.010 | 0.010 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 16      |
| 17      | 0.012 | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 17      |
| 18      | 0.013 | 0.013 | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.011 | 0.011 | 0.011 | 0.011 | 18      |
| 19      | 0.014 | 0.014 | 0.014 | 0.014 | 0.013 | 0.013 | 0.013 | 0.013 | 0.012 | 0.012 | 0.012 | 19      |
| 20      | 0.016 | 0.016 | 0.015 | 0.015 | 0.015 | 0.015 | 0.014 | 0.014 | 0.014 | 0.014 | 0.013 | 20      |
| 21      | 0.018 | 0.017 | 0.017 | 0.017 | 0.016 | 0.016 | 0.016 | 0.015 | 0.015 | 0.015 | 0.015 | 21      |
| 22      | 0.019 | 0.019 | 0.019 | 0.018 | 0.018 | 0.018 | 0.017 | 0.017 | 0.017 | 0.016 | 0.016 | 22      |
| 23      | 0.021 | 0.021 | 0.020 | 0.020 | 0.020 | 0.019 | 0.019 | 0.019 | 0.018 | 0.018 | 0.018 | 23      |
| 24      | 0.023 | 0.023 | 0.022 | 0.022 | 0.021 | 0.021 | 0.021 | 0.020 | 0.020 | 0.020 | 0.019 | 24      |
| 25      | 0.025 | 0.025 | 0.024 | 0.024 | 0.023 | 0.023 | 0.022 | 0.022 | 0.022 | 0.021 | 0.021 | 25      |
| 26      | 0.027 | 0.027 | 0.026 | 0.026 | 0.025 | 0.025 | 0.024 | 0.024 | 0.023 | 0.023 | 0.023 | 26      |
| 27      | 0.029 | 0.029 | 0.028 | 0.028 | 0.027 | 0.027 | 0.026 | 0.026 | 0.025 | 0.025 | 0.024 | 27      |
| 28      | 0.031 | 0.031 | 0.030 | 0.030 | 0.029 | 0.029 | 0.028 | 0.028 | 0.027 | 0.027 | 0.026 | 28      |
| 29      | 0.034 | 0.033 | 0.032 | 0.032 | 0.031 | 0.031 | 0.030 | 0.030 | 0.029 | 0.029 | 0.028 | 29      |
| 30      | 0.035 | 0.035 | 0.035 | 0.034 | 0.033 | 0.033 | 0.032 | 0.032 | 0.031 | 0.031 | 0.030 | 30      |
| 31      | 0.033 | 0.033 | 0.037 | 0.036 | 0.035 | 0.035 | 0.034 | 0.034 | 0.033 | 0.033 | 0.032 | 31      |
| 32      | 0.041 | 0.040 | 0.039 | 0.039 | 0.039 | 0.037 | 0.037 | 0.036 | 0.035 | 0.035 | 0.034 | 32      |
| 33      | 0.044 | 0.043 | 0.042 | 0.041 | 0.040 | 0.040 | 0.039 | 0.038 | 0.038 | 0.037 | 0.036 | 33      |
| 34      | 0.045 | 0.045 | 0.044 | 0.044 | 0.043 | 0.042 | 0.041 | 0.041 | 0.040 | 0.039 | 0.039 | 34      |
| 35      | 0.049 | 0.048 | 0.047 | 0.046 | 0.045 | 0.045 | 0.044 | 0.043 | 0.042 | 0.042 | 0.041 | 35      |
| 36      | 0.052 | 0.051 | 0.050 | 0.049 | 0.048 | 0.047 | 0.046 | 0.045 | 0.045 | 0.044 | 0.043 | 36      |
| 37      | 0.055 | 0.054 | 0.053 | 0.052 | 0.051 | 0.050 | 0.049 | 0.048 | 0.047 | 0.047 | 0.046 | 37      |
| 38      | 0.058 | 0.057 | 0.056 | 0.054 | 0.053 | 0.053 | 0.052 | 0.051 | 0.050 | 0.049 | 0.048 | 38      |
| 39      | 0.061 | 0.060 | 0.059 | 0.057 | 0.056 | 0.055 | 0.054 | 0.053 | 0.052 | 0.052 | 0.051 | 39      |
| 40      | 0.064 | 0.063 | 0.062 | 0.060 | 0.059 | 0.058 | 0.057 | 0.056 | 0.055 | 0.054 | 0.053 | 40      |
| 41      | 0.067 | 0.066 | 0.065 | 0.063 | 0.062 | 0.061 | 0.060 | 0.059 | 0.058 | 0.057 | 0.056 | 41      |
| 42      | 0.071 | 0.069 | 0.068 | 0.067 | 0.065 | 0.064 | 0.063 | 0.062 | 0.061 | 0.060 | 0.059 | 42      |
| 43      | 0.074 | 0.073 | 0.071 | 0.070 | 0.068 | 0.067 | 0.066 | 0.065 | 0.064 | 0.063 | 0.062 | 43      |
| 44      | 0.077 | 0.076 | 0.074 | 0.073 | 0.072 | 0.070 | 0.069 | 0.068 | 0.067 | 0.066 | 0.065 | 44      |
| 45      | 0.081 | 0.079 | 0.078 | 0.076 | 0.075 | 0.074 | 0.072 | 0.071 | 0.070 | 0.069 | 0.068 | 45      |
| 46      | 0.085 | 0.083 | 0.081 | 0.080 | 0.078 | 0.077 | 0.076 | 0.074 | 0.073 | 0.072 | 0.071 | 46      |
| 47      | 0.088 | 0.087 | 0.085 | 0.083 | 0.082 | 0.080 | 0.079 | 0.078 | 0.076 | 0.075 | 0.074 | 47      |
| 48      | 0.092 | 0.090 | 0.089 | 0.087 | 0.085 | 0.084 | 0.082 | 0.081 | 0.079 | 0.078 | 0.077 | 48      |
| 49      | 0.096 | 0.094 | 0.092 | 0.091 | 0.089 | 0.087 | 0.086 | 0.084 | 0.083 | 0.081 | 0.080 | 49      |
| 50      | 0.100 | 0.098 | 0.096 | 0.094 | 0.093 | 0.091 | 0.089 | 0.088 | 0.086 | 0.085 | 0.083 | 50      |

弧長 = 20 公尺 1 弧 = 100 節

| 半徑<br>節 | 500   | 510   | 590   | 530   | 540   | 550   | 560   | 570   | 580   | 590   | 600   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 5 1     | 0.104 | 0.102 | 0.100 | 0.098 | 0.096 | 0.095 | 0.093 | 0.091 | 0.090 | 0.088 | 0.087 | 5 1     |
| 5 2     | 0.108 | 0.106 | 0.104 | 0.102 | 0.100 | 0.099 | 0.097 | 0.095 | 0.093 | 0.092 | 0.090 | 5 2     |
| 5 3     | 0.112 | 0.110 | 0.108 | 0.106 | 0.104 | 0.102 | 0.100 | 0.099 | 0.097 | 0.095 | 0.094 | 5 3     |
| 5 4     | 0.117 | 0.114 | 0.112 | 0.110 | 0.108 | 0.106 | 0.104 | 0.102 | 0.101 | 0.099 | 0.097 | 5 4     |
| 5 5     | 0.121 | 0.119 | 0.116 | 0.114 | 0.112 | 0.110 | 0.108 | 0.106 | 0.104 | 0.103 | 0.101 | 5 5     |
| 5 6     | 0.125 | 0.123 | 0.121 | 0.118 | 0.116 | 0.114 | 0.112 | 0.110 | 0.108 | 0.106 | 0.105 | 5 6     |
| 5 7     | 0.130 | 0.127 | 0.125 | 0.123 | 0.120 | 0.118 | 0.116 | 0.114 | 0.112 | 0.110 | 0.108 | 5 7     |
| 5 8     | 0.135 | 0.132 | 0.129 | 0.127 | 0.125 | 0.122 | 0.120 | 0.118 | 0.116 | 0.114 | 0.112 | 5 8     |
| 5 9     | 0.139 | 0.137 | 0.134 | 0.131 | 0.129 | 0.127 | 0.124 | 0.122 | 0.120 | 0.118 | 0.116 | 5 9     |
| 5 0     | 0.144 | 0.141 | 0.138 | 0.136 | 0.133 | 0.131 | 0.129 | 0.126 | 0.124 | 0.122 | 0.120 | 5 0     |
| 6 1     | 0.149 | 0.146 | 0.143 | 0.140 | 0.138 | 0.135 | 0.133 | 0.131 | 0.128 | 0.126 | 0.124 | 6 1     |
| 6 2     | 0.154 | 0.151 | 0.148 | 0.145 | 0.142 | 0.140 | 0.137 | 0.135 | 0.133 | 0.130 | 0.128 | 6 2     |
| 6 3     | 0.159 | 0.156 | 0.153 | 0.150 | 0.147 | 0.144 | 0.142 | 0.139 | 0.137 | 0.135 | 0.132 | 6 3     |
| 6 4     | 0.164 | 0.161 | 0.158 | 0.155 | 0.152 | 0.149 | 0.146 | 0.144 | 0.141 | 0.139 | 0.137 | 6 4     |
| 6 5     | 0.169 | 0.166 | 0.163 | 0.159 | 0.156 | 0.154 | 0.151 | 0.148 | 0.146 | 0.143 | 0.141 | 6 5     |
| 6 6     | 0.174 | 0.171 | 0.168 | 0.164 | 0.161 | 0.158 | 0.156 | 0.153 | 0.150 | 0.148 | 0.145 | 6 6     |
| 6 7     | 0.180 | 0.176 | 0.173 | 0.169 | 0.166 | 0.163 | 0.160 | 0.158 | 0.155 | 0.152 | 0.150 | 6 7     |
| 6 8     | 0.185 | 0.181 | 0.178 | 0.174 | 0.171 | 0.168 | 0.165 | 0.162 | 0.159 | 0.157 | 0.154 | 6 8     |
| 6 9     | 0.190 | 0.187 | 0.183 | 0.180 | 0.176 | 0.173 | 0.170 | 0.167 | 0.164 | 0.161 | 0.159 | 6 9     |
| 6 0     | 0.196 | 0.192 | 0.188 | 0.185 | 0.181 | 0.178 | 0.175 | 0.172 | 0.169 | 0.166 | 0.163 | 6 0     |
| 7 1     | 0.202 | 0.198 | 0.194 | 0.190 | 0.187 | 0.183 | 0.180 | 0.177 | 0.174 | 0.171 | 0.168 | 7 1     |
| 7 2     | 0.207 | 0.203 | 0.199 | 0.196 | 0.192 | 0.189 | 0.185 | 0.182 | 0.179 | 0.176 | 0.173 | 7 2     |
| 7 3     | 0.213 | 0.209 | 0.205 | 0.201 | 0.197 | 0.194 | 0.190 | 0.187 | 0.184 | 0.181 | 0.178 | 7 3     |
| 7 4     | 0.219 | 0.215 | 0.211 | 0.207 | 0.203 | 0.199 | 0.196 | 0.192 | 0.189 | 0.186 | 0.183 | 7 4     |
| 7 5     | 0.225 | 0.221 | 0.216 | 0.212 | 0.208 | 0.205 | 0.201 | 0.197 | 0.194 | 0.191 | 0.188 | 7 5     |
| 7 6     | 0.231 | 0.227 | 0.222 | 0.218 | 0.214 | 0.210 | 0.206 | 0.203 | 0.199 | 0.196 | 0.193 | 7 6     |
| 7 7     | 0.237 | 0.233 | 0.228 | 0.224 | 0.220 | 0.216 | 0.212 | 0.208 | 0.204 | 0.201 | 0.198 | 7 7     |
| 7 8     | 0.243 | 0.239 | 0.234 | 0.230 | 0.225 | 0.221 | 0.217 | 0.213 | 0.210 | 0.206 | 0.203 | 7 8     |
| 7 9     | 0.250 | 0.245 | 0.240 | 0.236 | 0.231 | 0.227 | 0.223 | 0.219 | 0.215 | 0.212 | 0.208 | 7 9     |
| 8 0     | 0.256 | 0.251 | 0.246 | 0.242 | 0.237 | 0.233 | 0.229 | 0.225 | 0.221 | 0.217 | 0.213 | 8 0     |
| 8 1     | 0.262 | 0.257 | 0.252 | 0.248 | 0.243 | 0.239 | 0.234 | 0.230 | 0.226 | 0.222 | 0.219 | 8 1     |
| 8 2     | 0.269 | 0.264 | 0.259 | 0.254 | 0.249 | 0.245 | 0.240 | 0.236 | 0.232 | 0.228 | 0.224 | 8 2     |
| 8 3     | 0.276 | 0.270 | 0.265 | 0.260 | 0.255 | 0.251 | 0.246 | 0.242 | 0.238 | 0.234 | 0.229 | 8 3     |
| 8 4     | 0.282 | 0.277 | 0.271 | 0.266 | 0.261 | 0.257 | 0.252 | 0.248 | 0.243 | 0.239 | 0.235 | 8 4     |
| 8 5     | 0.289 | 0.283 | 0.278 | 0.273 | 0.268 | 0.263 | 0.258 | 0.254 | 0.249 | 0.245 | 0.241 | 8 5     |
| 8 6     | 0.296 | 0.290 | 0.284 | 0.279 | 0.274 | 0.269 | 0.264 | 0.260 | 0.255 | 0.251 | 0.247 | 8 6     |
| 8 7     | 0.303 | 0.297 | 0.291 | 0.286 | 0.280 | 0.275 | 0.270 | 0.266 | 0.261 | 0.257 | 0.252 | 8 7     |
| 8 8     | 0.310 | 0.304 | 0.298 | 0.292 | 0.287 | 0.282 | 0.277 | 0.272 | 0.267 | 0.263 | 0.258 | 8 8     |
| 8 9     | 0.317 | 0.311 | 0.305 | 0.299 | 0.293 | 0.288 | 0.283 | 0.278 | 0.273 | 0.269 | 0.264 | 8 9     |
| 9 0     | 0.324 | 0.318 | 0.312 | 0.306 | 0.300 | 0.295 | 0.289 | 0.284 | 0.279 | 0.275 | 0.270 | 9 0     |
| 9 1     | 0.331 | 0.325 | 0.319 | 0.313 | 0.307 | 0.301 | 0.296 | 0.291 | 0.286 | 0.281 | 0.276 | 9 1     |
| 9 2     | 0.339 | 0.332 | 0.326 | 0.319 | 0.313 | 0.308 | 0.302 | 0.297 | 0.292 | 0.287 | 0.282 | 9 2     |
| 9 3     | 0.346 | 0.339 | 0.333 | 0.326 | 0.320 | 0.315 | 0.309 | 0.303 | 0.298 | 0.293 | 0.288 | 9 3     |
| 9 4     | 0.353 | 0.347 | 0.340 | 0.333 | 0.327 | 0.321 | 0.315 | 0.310 | 0.305 | 0.300 | 0.295 | 9 4     |
| 9 5     | 0.361 | 0.354 | 0.347 | 0.341 | 0.334 | 0.328 | 0.322 | 0.317 | 0.311 | 0.306 | 0.301 | 9 5     |
| 9 6     | 0.369 | 0.361 | 0.354 | 0.348 | 0.341 | 0.335 | 0.329 | 0.323 | 0.318 | 0.312 | 0.307 | 9 6     |
| 9 7     | 0.376 | 0.369 | 0.362 | 0.355 | 0.348 | 0.342 | 0.336 | 0.330 | 0.324 | 0.319 | 0.314 | 9 7     |
| 9 8     | 0.384 | 0.377 | 0.369 | 0.362 | 0.356 | 0.349 | 0.343 | 0.337 | 0.331 | 0.326 | 0.320 | 9 8     |
| 9 9     | 0.392 | 0.384 | 0.377 | 0.370 | 0.363 | 0.356 | 0.350 | 0.344 | 0.338 | 0.332 | 0.327 | 9 9     |
| 100     | 0.400 | 0.392 | 0.385 | 0.377 | 0.370 | 0.364 | 0.357 | 0.351 | 0.345 | 0.339 | 0.333 | 100     |

弧長 = 20 公尺      1 弧 = 100 節

| 半徑                                   | 610                                       | 620                                       | 630                                       | 640                                       | 650                                       | 660                                       | 670                                       | 680                                       | 690                                       | 700                                       | 710                                       | 半徑  |                                      |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|--------------------------------------|
| 1<br>5<br>4<br>3<br>2<br>1           | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 0.001<br>0.001<br>0.001<br>0.001<br>0.001 | 1<br>5<br>4<br>3<br>2<br>1           |
| 1<br>0<br>9<br>8<br>7<br>6<br>5      | 0.001<br>0.002<br>0.002<br>0.002<br>0.003 | 0.001<br>0.002<br>0.002<br>0.002<br>0.003 | 0.001<br>0.002<br>0.002<br>0.002<br>0.003 | 0.001<br>0.002<br>0.002<br>0.002<br>0.003 | 0.001<br>0.002<br>0.002<br>0.002<br>0.003 | 0.001<br>0.001<br>0.002<br>0.002<br>0.002 | 0.001<br>0.001<br>0.002<br>0.002<br>0.002 | 0.001<br>0.001<br>0.002<br>0.002<br>0.002 | 0.001<br>0.001<br>0.002<br>0.002<br>0.002 | 0.001<br>0.001<br>0.002<br>0.002<br>0.002 | 0.001<br>0.001<br>0.002<br>0.002<br>0.002 | 0.001<br>0.001<br>0.002<br>0.002<br>0.002 | 1<br>0<br>9<br>8<br>7<br>6<br>5      |
| 1<br>1<br>1<br>1<br>1<br>1<br>5      | 0.004<br>0.005<br>0.006<br>0.006<br>0.007 | 0.004<br>0.005<br>0.005<br>0.006<br>0.007 | 0.004<br>0.005<br>0.005<br>0.006<br>0.007 | 0.004<br>0.005<br>0.005<br>0.006<br>0.007 | 0.004<br>0.004<br>0.005<br>0.005<br>0.007 | 0.004<br>0.004<br>0.005<br>0.005<br>0.006 | 0.004<br>0.004<br>0.005<br>0.005<br>0.006 | 0.004<br>0.004<br>0.005<br>0.005<br>0.006 | 0.004<br>0.004<br>0.005<br>0.005<br>0.006 | 0.003<br>0.004<br>0.005<br>0.005<br>0.006 | 0.003<br>0.004<br>0.005<br>0.005<br>0.006 | 0.003<br>0.004<br>0.005<br>0.005<br>0.006 | 1<br>1<br>1<br>1<br>1<br>1<br>5      |
| 1<br>1<br>1<br>1<br>1<br>1<br>2<br>0 | 0.009<br>0.009<br>0.011<br>0.012<br>0.013 | 0.008<br>0.009<br>0.010<br>0.011<br>0.013 | 0.008<br>0.009<br>0.010<br>0.011<br>0.013 | 0.008<br>0.009<br>0.010<br>0.011<br>0.013 | 0.008<br>0.009<br>0.010<br>0.011<br>0.012 | 0.008<br>0.009<br>0.010<br>0.011<br>0.012 | 0.008<br>0.009<br>0.010<br>0.011<br>0.012 | 0.008<br>0.009<br>0.010<br>0.011<br>0.012 | 0.007<br>0.008<br>0.009<br>0.010<br>0.011 | 0.007<br>0.008<br>0.009<br>0.010<br>0.011 | 0.007<br>0.008<br>0.009<br>0.010<br>0.011 | 0.007<br>0.008<br>0.009<br>0.010<br>0.011 | 1<br>1<br>1<br>1<br>1<br>1<br>2<br>0 |
| 2<br>2<br>2<br>2<br>2<br>2<br>5      | 0.014<br>0.016<br>0.017<br>0.019<br>0.020 | 0.014<br>0.016<br>0.017<br>0.019<br>0.020 | 0.014<br>0.015<br>0.017<br>0.018<br>0.020 | 0.014<br>0.015<br>0.017<br>0.018<br>0.020 | 0.014<br>0.015<br>0.016<br>0.018<br>0.019 | 0.013<br>0.015<br>0.016<br>0.017<br>0.019 | 0.013<br>0.014<br>0.016<br>0.017<br>0.019 | 0.013<br>0.014<br>0.016<br>0.017<br>0.018 | 0.013<br>0.014<br>0.015<br>0.017<br>0.018 | 0.013<br>0.014<br>0.015<br>0.016<br>0.018 | 0.012<br>0.014<br>0.015<br>0.016<br>0.018 | 0.012<br>0.014<br>0.015<br>0.016<br>0.018 | 2<br>2<br>2<br>2<br>2<br>2<br>5      |
| 2<br>2<br>2<br>2<br>2<br>2<br>0      | 0.022<br>0.024<br>0.026<br>0.027<br>0.030 | 0.022<br>0.024<br>0.025<br>0.027<br>0.029 | 0.021<br>0.023<br>0.025<br>0.026<br>0.028 | 0.021<br>0.023<br>0.025<br>0.026<br>0.028 | 0.021<br>0.022<br>0.024<br>0.026<br>0.028 | 0.020<br>0.022<br>0.024<br>0.025<br>0.027 | 0.020<br>0.022<br>0.023<br>0.025<br>0.027 | 0.020<br>0.021<br>0.023<br>0.025<br>0.026 | 0.020<br>0.021<br>0.023<br>0.024<br>0.026 | 0.019<br>0.021<br>0.022<br>0.024<br>0.026 | 0.019<br>0.021<br>0.022<br>0.024<br>0.025 | 0.019<br>0.021<br>0.022<br>0.024<br>0.025 | 2<br>2<br>2<br>2<br>2<br>2<br>0      |
| 3<br>3<br>3<br>3<br>3<br>3<br>5      | 0.032<br>0.034<br>0.036<br>0.038<br>0.040 | 0.031<br>0.033<br>0.035<br>0.037<br>0.040 | 0.031<br>0.033<br>0.035<br>0.037<br>0.039 | 0.030<br>0.032<br>0.034<br>0.036<br>0.038 | 0.030<br>0.032<br>0.034<br>0.036<br>0.038 | 0.029<br>0.031<br>0.033<br>0.035<br>0.037 | 0.029<br>0.031<br>0.033<br>0.035<br>0.037 | 0.028<br>0.030<br>0.032<br>0.034<br>0.036 | 0.028<br>0.030<br>0.032<br>0.034<br>0.036 | 0.028<br>0.029<br>0.031<br>0.033<br>0.035 | 0.027<br>0.029<br>0.031<br>0.033<br>0.035 | 0.027<br>0.029<br>0.031<br>0.033<br>0.035 | 3<br>3<br>3<br>3<br>3<br>3<br>5      |
| 4<br>4<br>4<br>4<br>4<br>4<br>0      | 0.042<br>0.045<br>0.047<br>0.050<br>0.052 | 0.042<br>0.044<br>0.047<br>0.049<br>0.052 | 0.041<br>0.043<br>0.046<br>0.048<br>0.051 | 0.041<br>0.043<br>0.045<br>0.048<br>0.050 | 0.040<br>0.042<br>0.044<br>0.047<br>0.050 | 0.039<br>0.041<br>0.044<br>0.046<br>0.048 | 0.039<br>0.041<br>0.043<br>0.045<br>0.048 | 0.038<br>0.040<br>0.042<br>0.044<br>0.047 | 0.038<br>0.040<br>0.042<br>0.044<br>0.046 | 0.037<br>0.039<br>0.041<br>0.043<br>0.046 | 0.037<br>0.039<br>0.041<br>0.043<br>0.045 | 0.037<br>0.039<br>0.041<br>0.043<br>0.045 | 4<br>4<br>4<br>4<br>4<br>4<br>0      |
| 4<br>4<br>4<br>4<br>4<br>4<br>5      | 0.055<br>0.058<br>0.061<br>0.063<br>0.066 | 0.054<br>0.057<br>0.060<br>0.062<br>0.065 | 0.053<br>0.056<br>0.059<br>0.061<br>0.064 | 0.053<br>0.055<br>0.058<br>0.061<br>0.063 | 0.052<br>0.054<br>0.057<br>0.060<br>0.062 | 0.051<br>0.053<br>0.056<br>0.059<br>0.061 | 0.050<br>0.053<br>0.055<br>0.058<br>0.060 | 0.049<br>0.052<br>0.054<br>0.057<br>0.060 | 0.049<br>0.051<br>0.054<br>0.056<br>0.059 | 0.048<br>0.050<br>0.053<br>0.055<br>0.058 | 0.047<br>0.050<br>0.052<br>0.055<br>0.057 | 0.047<br>0.050<br>0.052<br>0.055<br>0.057 | 4<br>4<br>4<br>4<br>4<br>4<br>5      |
| 4<br>4<br>4<br>4<br>4<br>4<br>0      | 0.069<br>0.072<br>0.076<br>0.079<br>0.082 | 0.068<br>0.071<br>0.074<br>0.077<br>0.081 | 0.067<br>0.070<br>0.073<br>0.076<br>0.079 | 0.066<br>0.069<br>0.072<br>0.075<br>0.078 | 0.065<br>0.068<br>0.071<br>0.074<br>0.077 | 0.064<br>0.067<br>0.070<br>0.073<br>0.076 | 0.063<br>0.066<br>0.069<br>0.072<br>0.075 | 0.062<br>0.065<br>0.068<br>0.071<br>0.074 | 0.061<br>0.064<br>0.067<br>0.070<br>0.072 | 0.060<br>0.063<br>0.066<br>0.069<br>0.071 | 0.060<br>0.062<br>0.065<br>0.068<br>0.070 | 0.060<br>0.062<br>0.065<br>0.068<br>0.070 | 4<br>4<br>4<br>4<br>4<br>4<br>0      |



弧長=20公尺 1弧=100節

| 半徑<br>節 | 610   | 620   | 630   | 640   | 650   | 660   | 670   | 680   | 690   | 700   | 710   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 5 1     | 0.035 | 0.034 | 0.033 | 0.031 | 0.030 | 0.029 | 0.028 | 0.027 | 0.025 | 0.024 | 0.023 | 5 1     |
| 5 2     | 0.039 | 0.037 | 0.035 | 0.033 | 0.032 | 0.031 | 0.030 | 0.029 | 0.027 | 0.026 | 0.025 | 5 2     |
| 5 3     | 0.042 | 0.041 | 0.039 | 0.037 | 0.036 | 0.035 | 0.034 | 0.033 | 0.031 | 0.030 | 0.029 | 5 3     |
| 5 4     | 0.046 | 0.044 | 0.042 | 0.040 | 0.039 | 0.038 | 0.037 | 0.036 | 0.034 | 0.033 | 0.032 | 5 4     |
| 5 5     | 0.049 | 0.048 | 0.046 | 0.044 | 0.043 | 0.042 | 0.041 | 0.040 | 0.038 | 0.037 | 0.036 | 5 5     |
| 5 6     | 0.053 | 0.051 | 0.049 | 0.047 | 0.046 | 0.045 | 0.044 | 0.043 | 0.041 | 0.040 | 0.039 | 5 6     |
| 5 7     | 0.057 | 0.055 | 0.053 | 0.051 | 0.050 | 0.049 | 0.048 | 0.047 | 0.045 | 0.044 | 0.043 | 5 7     |
| 5 8     | 0.061 | 0.059 | 0.057 | 0.055 | 0.054 | 0.053 | 0.052 | 0.051 | 0.049 | 0.048 | 0.047 | 5 8     |
| 5 9     | 0.065 | 0.063 | 0.061 | 0.059 | 0.058 | 0.057 | 0.056 | 0.055 | 0.053 | 0.052 | 0.051 | 5 9     |
| 5 10    | 0.069 | 0.067 | 0.065 | 0.063 | 0.062 | 0.061 | 0.060 | 0.059 | 0.057 | 0.056 | 0.055 | 5 10    |
| 6 1     | 0.122 | 0.120 | 0.118 | 0.116 | 0.114 | 0.113 | 0.111 | 0.109 | 0.108 | 0.106 | 0.105 | 6 1     |
| 6 2     | 0.126 | 0.124 | 0.122 | 0.120 | 0.118 | 0.116 | 0.115 | 0.113 | 0.111 | 0.110 | 0.108 | 6 2     |
| 6 3     | 0.130 | 0.128 | 0.126 | 0.124 | 0.122 | 0.120 | 0.118 | 0.117 | 0.115 | 0.113 | 0.112 | 6 3     |
| 6 4     | 0.134 | 0.132 | 0.130 | 0.128 | 0.126 | 0.124 | 0.122 | 0.120 | 0.119 | 0.117 | 0.115 | 6 4     |
| 6 5     | 0.133 | 0.136 | 0.134 | 0.132 | 0.130 | 0.128 | 0.126 | 0.124 | 0.122 | 0.121 | 0.119 | 6 5     |
| 6 6     | 0.143 | 0.141 | 0.139 | 0.136 | 0.134 | 0.132 | 0.130 | 0.128 | 0.126 | 0.124 | 0.123 | 6 6     |
| 6 7     | 0.147 | 0.145 | 0.143 | 0.140 | 0.138 | 0.136 | 0.134 | 0.132 | 0.130 | 0.128 | 0.126 | 6 7     |
| 6 8     | 0.152 | 0.149 | 0.147 | 0.145 | 0.142 | 0.140 | 0.138 | 0.136 | 0.134 | 0.132 | 0.130 | 6 8     |
| 6 9     | 0.156 | 0.154 | 0.151 | 0.149 | 0.146 | 0.144 | 0.142 | 0.140 | 0.139 | 0.136 | 0.134 | 6 9     |
| 6 10    | 0.161 | 0.158 | 0.156 | 0.153 | 0.151 | 0.148 | 0.146 | 0.144 | 0.142 | 0.140 | 0.138 | 6 10    |
| 7 1     | 0.165 | 0.163 | 0.160 | 0.158 | 0.155 | 0.153 | 0.150 | 0.148 | 0.146 | 0.144 | 0.142 | 7 1     |
| 7 2     | 0.170 | 0.167 | 0.165 | 0.162 | 0.160 | 0.157 | 0.155 | 0.152 | 0.150 | 0.148 | 0.146 | 7 2     |
| 7 3     | 0.175 | 0.172 | 0.169 | 0.167 | 0.164 | 0.161 | 0.159 | 0.157 | 0.154 | 0.152 | 0.150 | 7 3     |
| 7 4     | 0.180 | 0.177 | 0.174 | 0.171 | 0.168 | 0.166 | 0.163 | 0.161 | 0.159 | 0.156 | 0.154 | 7 4     |
| 7 5     | 0.184 | 0.181 | 0.179 | 0.176 | 0.173 | 0.170 | 0.168 | 0.165 | 0.163 | 0.161 | 0.156 | 7 5     |
| 7 6     | 0.189 | 0.186 | 0.183 | 0.181 | 0.178 | 0.175 | 0.172 | 0.170 | 0.167 | 0.165 | 0.163 | 7 6     |
| 7 7     | 0.194 | 0.191 | 0.188 | 0.185 | 0.182 | 0.180 | 0.177 | 0.174 | 0.172 | 0.170 | 0.167 | 7 7     |
| 7 8     | 0.199 | 0.196 | 0.193 | 0.190 | 0.187 | 0.184 | 0.182 | 0.179 | 0.176 | 0.174 | 0.171 | 7 8     |
| 7 9     | 0.205 | 0.201 | 0.198 | 0.195 | 0.192 | 0.189 | 0.186 | 0.184 | 0.181 | 0.178 | 0.176 | 7 9     |
| 7 10    | 0.210 | 0.206 | 0.203 | 0.200 | 0.197 | 0.194 | 0.191 | 0.188 | 0.185 | 0.183 | 0.180 | 7 10    |
| 8 1     | 0.215 | 0.212 | 0.208 | 0.205 | 0.202 | 0.199 | 0.195 | 0.193 | 0.190 | 0.187 | 0.185 | 8 1     |
| 8 2     | 0.220 | 0.217 | 0.213 | 0.210 | 0.207 | 0.204 | 0.201 | 0.198 | 0.195 | 0.192 | 0.189 | 8 2     |
| 8 3     | 0.226 | 0.222 | 0.219 | 0.215 | 0.212 | 0.209 | 0.206 | 0.203 | 0.200 | 0.197 | 0.194 | 8 3     |
| 8 4     | 0.231 | 0.228 | 0.224 | 0.221 | 0.217 | 0.214 | 0.211 | 0.208 | 0.205 | 0.202 | 0.199 | 8 4     |
| 8 5     | 0.237 | 0.233 | 0.229 | 0.226 | 0.222 | 0.219 | 0.216 | 0.213 | 0.209 | 0.206 | 0.204 | 8 5     |
| 8 6     | 0.242 | 0.239 | 0.235 | 0.231 | 0.228 | 0.224 | 0.221 | 0.218 | 0.214 | 0.211 | 0.206 | 8 6     |
| 8 7     | 0.243 | 0.244 | 0.240 | 0.237 | 0.233 | 0.229 | 0.226 | 0.223 | 0.219 | 0.216 | 0.213 | 8 7     |
| 8 8     | 0.244 | 0.250 | 0.246 | 0.242 | 0.238 | 0.235 | 0.231 | 0.228 | 0.224 | 0.221 | 0.218 | 8 8     |
| 8 9     | 0.250 | 0.256 | 0.251 | 0.248 | 0.244 | 0.240 | 0.236 | 0.233 | 0.230 | 0.226 | 0.223 | 8 9     |
| 8 10    | 0.256 | 0.261 | 0.257 | 0.253 | 0.249 | 0.245 | 0.242 | 0.238 | 0.235 | 0.231 | 0.228 | 8 10    |
| 9 1     | 0.272 | 0.267 | 0.263 | 0.259 | 0.255 | 0.251 | 0.247 | 0.244 | 0.240 | 0.237 | 0.233 | 9 1     |
| 9 2     | 0.278 | 0.273 | 0.269 | 0.265 | 0.260 | 0.256 | 0.253 | 0.249 | 0.245 | 0.242 | 0.238 | 9 2     |
| 9 3     | 0.284 | 0.279 | 0.275 | 0.270 | 0.266 | 0.262 | 0.258 | 0.254 | 0.251 | 0.247 | 0.244 | 9 3     |
| 9 4     | 0.290 | 0.285 | 0.281 | 0.276 | 0.272 | 0.268 | 0.264 | 0.260 | 0.256 | 0.252 | 0.249 | 9 4     |
| 9 5     | 0.296 | 0.291 | 0.287 | 0.282 | 0.278 | 0.273 | 0.269 | 0.265 | 0.262 | 0.258 | 0.254 | 9 5     |
| 9 6     | 0.302 | 0.297 | 0.293 | 0.288 | 0.284 | 0.279 | 0.275 | 0.271 | 0.267 | 0.263 | 0.260 | 9 6     |
| 9 7     | 0.309 | 0.304 | 0.299 | 0.294 | 0.290 | 0.285 | 0.281 | 0.277 | 0.273 | 0.269 | 0.265 | 9 7     |
| 9 8     | 0.315 | 0.310 | 0.305 | 0.300 | 0.296 | 0.291 | 0.287 | 0.282 | 0.278 | 0.274 | 0.271 | 9 8     |
| 9 9     | 0.321 | 0.316 | 0.311 | 0.306 | 0.302 | 0.297 | 0.293 | 0.288 | 0.284 | 0.280 | 0.276 | 9 9     |
| 9 10    | 0.328 | 0.323 | 0.318 | 0.313 | 0.308 | 0.303 | 0.299 | 0.294 | 0.290 | 0.286 | 0.282 | 9 10    |

弧長=20公尺 1弧=100節

| 半徑<br>節 | 720   | 730   | 740   | 750   | 760   | 770   | 780   | 790   | 800   | 850   | 900   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 1       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 1       |
| 2       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 2       |
| 3       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 3       |
| 4       | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 4       |
| 5       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 5       |
| 6       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 6       |
| 7       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 7       |
| 8       | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 8       |
| 9       | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 9       |
| 10      | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 10      |
| 11      | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 11      |
| 12      | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 12      |
| 13      | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 13      |
| 14      | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.005 | 0.004 | 14      |
| 15      | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 15      |
| 16      | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.006 | 16      |
| 17      | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.008 | 0.007 | 0.007 | 0.007 | 0.007 | 0.006 | 17      |
| 18      | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.009 | 0.008 | 0.008 | 0.008 | 0.008 | 0.007 | 18      |
| 19      | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.009 | 0.009 | 0.009 | 0.008 | 0.008 | 19      |
| 20      | 0.011 | 0.011 | 0.011 | 0.011 | 0.011 | 0.010 | 0.010 | 0.010 | 0.010 | 0.009 | 0.009 | 20      |
| 21      | 0.012 | 0.012 | 0.012 | 0.012 | 0.012 | 0.011 | 0.011 | 0.011 | 0.011 | 0.010 | 0.010 | 21      |
| 22      | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.012 | 0.012 | 0.012 | 0.011 | 0.011 | 22      |
| 23      | 0.015 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 | 0.013 | 0.013 | 0.012 | 0.012 | 23      |
| 24      | 0.016 | 0.016 | 0.016 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.014 | 0.014 | 0.013 | 24      |
| 25      | 0.017 | 0.017 | 0.017 | 0.017 | 0.016 | 0.016 | 0.016 | 0.016 | 0.016 | 0.015 | 0.014 | 25      |
| 26      | 0.019 | 0.019 | 0.018 | 0.018 | 0.018 | 0.018 | 0.017 | 0.017 | 0.017 | 0.016 | 0.015 | 26      |
| 27      | 0.020 | 0.020 | 0.020 | 0.019 | 0.019 | 0.019 | 0.019 | 0.018 | 0.018 | 0.017 | 0.016 | 27      |
| 28      | 0.022 | 0.021 | 0.021 | 0.021 | 0.021 | 0.020 | 0.020 | 0.020 | 0.020 | 0.018 | 0.017 | 28      |
| 29      | 0.023 | 0.023 | 0.023 | 0.022 | 0.022 | 0.022 | 0.022 | 0.021 | 0.021 | 0.020 | 0.019 | 29      |
| 30      | 0.025 | 0.025 | 0.024 | 0.024 | 0.024 | 0.023 | 0.023 | 0.023 | 0.023 | 0.021 | 0.020 | 30      |
| 31      | 0.027 | 0.026 | 0.026 | 0.026 | 0.025 | 0.025 | 0.025 | 0.024 | 0.024 | 0.023 | 0.021 | 31      |
| 32      | 0.028 | 0.028 | 0.028 | 0.027 | 0.027 | 0.027 | 0.026 | 0.026 | 0.026 | 0.024 | 0.023 | 32      |
| 33      | 0.030 | 0.030 | 0.029 | 0.029 | 0.029 | 0.028 | 0.028 | 0.028 | 0.027 | 0.025 | 0.024 | 33      |
| 34      | 0.032 | 0.032 | 0.031 | 0.031 | 0.030 | 0.030 | 0.029 | 0.029 | 0.029 | 0.027 | 0.026 | 34      |
| 35      | 0.034 | 0.034 | 0.033 | 0.033 | 0.032 | 0.032 | 0.031 | 0.031 | 0.031 | 0.029 | 0.027 | 35      |
| 36      | 0.036 | 0.036 | 0.035 | 0.035 | 0.034 | 0.034 | 0.033 | 0.033 | 0.032 | 0.031 | 0.029 | 36      |
| 37      | 0.038 | 0.038 | 0.037 | 0.037 | 0.036 | 0.036 | 0.035 | 0.035 | 0.034 | 0.032 | 0.030 | 37      |
| 38      | 0.040 | 0.040 | 0.039 | 0.039 | 0.038 | 0.038 | 0.037 | 0.037 | 0.036 | 0.034 | 0.032 | 38      |
| 39      | 0.042 | 0.042 | 0.041 | 0.041 | 0.040 | 0.040 | 0.039 | 0.039 | 0.038 | 0.036 | 0.034 | 39      |
| 40      | 0.044 | 0.044 | 0.043 | 0.043 | 0.042 | 0.042 | 0.041 | 0.041 | 0.040 | 0.038 | 0.036 | 40      |
| 41      | 0.047 | 0.046 | 0.045 | 0.045 | 0.044 | 0.044 | 0.043 | 0.043 | 0.042 | 0.040 | 0.037 | 41      |
| 42      | 0.049 | 0.048 | 0.048 | 0.047 | 0.046 | 0.046 | 0.045 | 0.045 | 0.044 | 0.042 | 0.039 | 42      |
| 43      | 0.051 | 0.051 | 0.050 | 0.049 | 0.049 | 0.048 | 0.047 | 0.047 | 0.046 | 0.044 | 0.041 | 43      |
| 44      | 0.054 | 0.053 | 0.052 | 0.052 | 0.051 | 0.050 | 0.050 | 0.049 | 0.048 | 0.046 | 0.043 | 44      |
| 45      | 0.056 | 0.055 | 0.055 | 0.054 | 0.053 | 0.053 | 0.052 | 0.051 | 0.051 | 0.048 | 0.045 | 45      |
| 46      | 0.059 | 0.058 | 0.057 | 0.056 | 0.056 | 0.055 | 0.054 | 0.054 | 0.053 | 0.050 | 0.047 | 46      |
| 47      | 0.061 | 0.061 | 0.060 | 0.059 | 0.058 | 0.057 | 0.057 | 0.056 | 0.055 | 0.052 | 0.049 | 47      |
| 48      | 0.064 | 0.063 | 0.062 | 0.061 | 0.061 | 0.060 | 0.059 | 0.058 | 0.058 | 0.054 | 0.051 | 48      |
| 49      | 0.067 | 0.066 | 0.065 | 0.064 | 0.063 | 0.062 | 0.062 | 0.061 | 0.060 | 0.056 | 0.053 | 49      |
| 50      | 0.070 | 0.069 | 0.068 | 0.067 | 0.066 | 0.065 | 0.064 | 0.063 | 0.063 | 0.059 | 0.056 | 50      |

弧長=20公尺 1弧=100節

| 半徑<br>節 | 720   | 730   | 740   | 750   | 760   | 770   | 780   | 790   | 800   | 850   | 900   | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 5 1     | 0.072 | 0.071 | 0.070 | 0.069 | 0.068 | 0.068 | 0.067 | 0.066 | 0.065 | 0.061 | 0.058 | 5 1     |
| 5 2     | 0.075 | 0.074 | 0.073 | 0.072 | 0.071 | 0.070 | 0.069 | 0.068 | 0.068 | 0.064 | 0.060 | 5 2     |
| 5 3     | 0.078 | 0.077 | 0.076 | 0.075 | 0.074 | 0.073 | 0.072 | 0.071 | 0.070 | 0.065 | 0.062 | 5 3     |
| 5 4     | 0.081 | 0.080 | 0.079 | 0.078 | 0.077 | 0.076 | 0.075 | 0.074 | 0.073 | 0.069 | 0.065 | 5 4     |
| 5 5     | 0.084 | 0.083 | 0.082 | 0.081 | 0.080 | 0.079 | 0.078 | 0.077 | 0.076 | 0.071 | 0.067 | 5 5     |
| 5 6     | 0.087 | 0.086 | 0.085 | 0.084 | 0.083 | 0.081 | 0.080 | 0.079 | 0.078 | 0.074 | 0.070 | 5 6     |
| 5 7     | 0.090 | 0.089 | 0.088 | 0.087 | 0.086 | 0.084 | 0.083 | 0.082 | 0.081 | 0.076 | 0.072 | 5 7     |
| 5 8     | 0.093 | 0.092 | 0.091 | 0.090 | 0.089 | 0.087 | 0.086 | 0.085 | 0.084 | 0.079 | 0.075 | 5 8     |
| 5 9     | 0.097 | 0.095 | 0.094 | 0.093 | 0.092 | 0.090 | 0.089 | 0.088 | 0.087 | 0.082 | 0.077 | 5 9     |
| 5 0     | 0.100 | 0.099 | 0.097 | 0.096 | 0.095 | 0.093 | 0.092 | 0.091 | 0.090 | 0.085 | 0.080 | 5 0     |
| 6 1     | 0.103 | 0.102 | 0.101 | 0.099 | 0.098 | 0.097 | 0.095 | 0.094 | 0.093 | 0.088 | 0.083 | 6 1     |
| 6 2     | 0.107 | 0.105 | 0.104 | 0.103 | 0.101 | 0.100 | 0.099 | 0.097 | 0.096 | 0.090 | 0.085 | 6 2     |
| 6 3     | 0.110 | 0.109 | 0.107 | 0.106 | 0.104 | 0.103 | 0.102 | 0.100 | 0.099 | 0.093 | 0.088 | 6 3     |
| 6 4     | 0.114 | 0.112 | 0.111 | 0.109 | 0.108 | 0.106 | 0.105 | 0.104 | 0.102 | 0.096 | 0.091 | 6 4     |
| 6 5     | 0.117 | 0.116 | 0.114 | 0.113 | 0.111 | 0.110 | 0.108 | 0.107 | 0.106 | 0.099 | 0.094 | 6 5     |
| 6 6     | 0.121 | 0.119 | 0.118 | 0.116 | 0.115 | 0.113 | 0.112 | 0.110 | 0.109 | 0.102 | 0.097 | 6 6     |
| 6 7     | 0.125 | 0.123 | 0.121 | 0.120 | 0.118 | 0.117 | 0.115 | 0.114 | 0.112 | 0.106 | 0.100 | 6 7     |
| 6 8     | 0.128 | 0.127 | 0.125 | 0.123 | 0.122 | 0.120 | 0.119 | 0.117 | 0.116 | 0.109 | 0.103 | 6 8     |
| 6 9     | 0.132 | 0.130 | 0.129 | 0.127 | 0.125 | 0.124 | 0.122 | 0.121 | 0.119 | 0.112 | 0.106 | 6 9     |
| 6 0     | 0.136 | 0.134 | 0.132 | 0.131 | 0.129 | 0.127 | 0.126 | 0.124 | 0.123 | 0.116 | 0.109 | 6 0     |
| 7 1     | 0.140 | 0.138 | 0.136 | 0.134 | 0.133 | 0.131 | 0.129 | 0.128 | 0.126 | 0.119 | 0.112 | 7 1     |
| 7 2     | 0.144 | 0.142 | 0.140 | 0.138 | 0.136 | 0.135 | 0.133 | 0.131 | 0.130 | 0.122 | 0.115 | 7 2     |
| 7 3     | 0.148 | 0.146 | 0.144 | 0.142 | 0.140 | 0.138 | 0.137 | 0.135 | 0.133 | 0.125 | 0.118 | 7 3     |
| 7 4     | 0.152 | 0.150 | 0.148 | 0.146 | 0.144 | 0.142 | 0.140 | 0.139 | 0.137 | 0.129 | 0.122 | 7 4     |
| 7 5     | 0.156 | 0.154 | 0.152 | 0.150 | 0.148 | 0.146 | 0.144 | 0.142 | 0.141 | 0.132 | 0.125 | 7 5     |
| 7 6     | 0.160 | 0.158 | 0.156 | 0.154 | 0.152 | 0.150 | 0.148 | 0.146 | 0.144 | 0.136 | 0.128 | 7 6     |
| 7 7     | 0.165 | 0.162 | 0.160 | 0.158 | 0.156 | 0.154 | 0.152 | 0.150 | 0.148 | 0.140 | 0.132 | 7 7     |
| 7 8     | 0.169 | 0.167 | 0.164 | 0.162 | 0.160 | 0.158 | 0.156 | 0.154 | 0.152 | 0.143 | 0.135 | 7 8     |
| 7 9     | 0.173 | 0.171 | 0.169 | 0.166 | 0.164 | 0.162 | 0.160 | 0.158 | 0.156 | 0.147 | 0.139 | 7 9     |
| 7 0     | 0.178 | 0.175 | 0.173 | 0.171 | 0.168 | 0.166 | 0.164 | 0.162 | 0.160 | 0.151 | 0.142 | 7 0     |
| 8 1     | 0.182 | 0.180 | 0.177 | 0.175 | 0.173 | 0.170 | 0.168 | 0.166 | 0.164 | 0.154 | 0.146 | 8 1     |
| 8 2     | 0.187 | 0.184 | 0.182 | 0.179 | 0.177 | 0.175 | 0.172 | 0.170 | 0.168 | 0.158 | 0.149 | 8 2     |
| 8 3     | 0.191 | 0.189 | 0.186 | 0.184 | 0.181 | 0.179 | 0.177 | 0.174 | 0.172 | 0.162 | 0.153 | 8 3     |
| 8 4     | 0.196 | 0.193 | 0.191 | 0.188 | 0.186 | 0.183 | 0.181 | 0.179 | 0.176 | 0.166 | 0.157 | 8 4     |
| 8 5     | 0.201 | 0.198 | 0.195 | 0.193 | 0.190 | 0.188 | 0.185 | 0.183 | 0.181 | 0.170 | 0.161 | 8 5     |
| 8 6     | 0.205 | 0.203 | 0.200 | 0.197 | 0.195 | 0.192 | 0.190 | 0.187 | 0.185 | 0.174 | 0.164 | 8 6     |
| 8 7     | 0.210 | 0.207 | 0.205 | 0.202 | 0.199 | 0.197 | 0.194 | 0.192 | 0.189 | 0.178 | 0.168 | 8 7     |
| 8 8     | 0.215 | 0.212 | 0.209 | 0.207 | 0.204 | 0.201 | 0.199 | 0.196 | 0.194 | 0.182 | 0.172 | 8 8     |
| 8 9     | 0.220 | 0.217 | 0.214 | 0.211 | 0.208 | 0.206 | 0.203 | 0.201 | 0.198 | 0.186 | 0.176 | 8 9     |
| 8 0     | 0.225 | 0.222 | 0.219 | 0.216 | 0.213 | 0.210 | 0.208 | 0.205 | 0.203 | 0.191 | 0.180 | 8 0     |
| 9 1     | 0.230 | 0.227 | 0.224 | 0.221 | 0.218 | 0.215 | 0.212 | 0.210 | 0.207 | 0.195 | 0.184 | 9 1     |
| 9 2     | 0.235 | 0.232 | 0.229 | 0.226 | 0.223 | 0.220 | 0.217 | 0.214 | 0.212 | 0.199 | 0.188 | 9 2     |
| 9 3     | 0.240 | 0.237 | 0.234 | 0.231 | 0.228 | 0.225 | 0.222 | 0.219 | 0.216 | 0.204 | 0.192 | 9 3     |
| 9 4     | 0.245 | 0.242 | 0.239 | 0.236 | 0.233 | 0.230 | 0.227 | 0.224 | 0.221 | 0.208 | 0.196 | 9 4     |
| 9 5     | 0.251 | 0.247 | 0.244 | 0.241 | 0.238 | 0.234 | 0.231 | 0.228 | 0.226 | 0.212 | 0.201 | 9 5     |
| 9 6     | 0.256 | 0.252 | 0.249 | 0.246 | 0.242 | 0.239 | 0.236 | 0.233 | 0.230 | 0.217 | 0.205 | 9 6     |
| 9 7     | 0.261 | 0.258 | 0.254 | 0.251 | 0.248 | 0.244 | 0.241 | 0.238 | 0.236 | 0.221 | 0.209 | 9 7     |
| 9 8     | 0.267 | 0.263 | 0.260 | 0.256 | 0.253 | 0.249 | 0.246 | 0.243 | 0.240 | 0.226 | 0.213 | 9 8     |
| 9 9     | 0.272 | 0.269 | 0.265 | 0.261 | 0.258 | 0.255 | 0.251 | 0.248 | 0.245 | 0.231 | 0.218 | 9 9     |
| 100     | 0.278 | 0.274 | 0.270 | 0.267 | 0.263 | 0.260 | 0.256 | 0.253 | 0.250 | 0.235 | 0.222 | 100     |

弧長 = 20 公尺      1 弧 = 100 節

| 半徑<br>節   | 950   | 1,000 | 1,100 | 1,200 | 1,300 | 1,400 | 1,500 | 1,600 | 1,700 | 1,800 | 1,900 | 半徑<br>節 |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 574642-1  | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 1       |
| 574642-2  | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 2       |
| 574642-3  | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 3       |
| 574642-4  | 0.001 | 0.001 | —     | —     | —     | —     | —     | —     | —     | —     | —     | 4       |
| 574642-5  | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | —     | 5       |
| 1 02000-1 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | —     | —     | —     | —     | —     | 6       |
| 1 02000-2 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | —     | —     | —     | —     | 7       |
| 1 02000-3 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | —     | —     | —     | 8       |
| 1 02000-4 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | —     | —     | 9       |
| 1 02000-5 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | —     | 10      |
| 1 11000-1 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 1       |
| 1 11000-2 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 2       |
| 1 11000-3 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 3       |
| 1 11000-4 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 4       |
| 1 11000-5 | 0.005 | 0.005 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 5       |
| 1 2000-1  | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 1       |
| 1 2000-2  | 0.006 | 0.006 | 0.006 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 2       |
| 1 2000-3  | 0.007 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 3       |
| 1 2000-4  | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 4       |
| 1 2000-5  | 0.008 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 5       |
| 2 1000-1  | 0.009 | 0.009 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 2       |
| 2 1000-2  | 0.010 | 0.010 | 0.009 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 3       |
| 2 1000-3  | 0.011 | 0.011 | 0.010 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 4       |
| 2 1000-4  | 0.012 | 0.012 | 0.010 | 0.010 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 5       |
| 2 1000-5  | 0.013 | 0.013 | 0.011 | 0.010 | 0.010 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.007 | 6       |
| 3 000-1   | 0.014 | 0.014 | 0.012 | 0.011 | 0.010 | 0.010 | 0.009 | 0.008 | 0.008 | 0.008 | 0.007 | 7       |
| 3 000-2   | 0.015 | 0.015 | 0.013 | 0.012 | 0.011 | 0.010 | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 8       |
| 3 000-3   | 0.017 | 0.016 | 0.014 | 0.013 | 0.012 | 0.011 | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 9       |
| 3 000-4   | 0.018 | 0.017 | 0.015 | 0.014 | 0.013 | 0.012 | 0.011 | 0.010 | 0.009 | 0.009 | 0.009 | 10      |
| 3 000-5   | 0.019 | 0.018 | 0.016 | 0.015 | 0.014 | 0.013 | 0.012 | 0.011 | 0.010 | 0.009 | 0.009 | 11      |
| 4 000-1   | 0.020 | 0.019 | 0.017 | 0.016 | 0.015 | 0.014 | 0.013 | 0.012 | 0.011 | 0.011 | 0.010 | 12      |
| 4 000-2   | 0.022 | 0.020 | 0.019 | 0.017 | 0.016 | 0.015 | 0.014 | 0.013 | 0.012 | 0.011 | 0.011 | 13      |
| 4 000-3   | 0.023 | 0.021 | 0.020 | 0.018 | 0.017 | 0.016 | 0.015 | 0.014 | 0.013 | 0.012 | 0.011 | 14      |
| 4 000-4   | 0.024 | 0.023 | 0.021 | 0.019 | 0.018 | 0.017 | 0.016 | 0.014 | 0.014 | 0.013 | 0.012 | 15      |
| 4 000-5   | 0.026 | 0.025 | 0.022 | 0.020 | 0.019 | 0.018 | 0.015 | 0.015 | 0.014 | 0.014 | 0.013 | 16      |
| 4 100-1   | 0.027 | 0.026 | 0.024 | 0.022 | 0.020 | 0.019 | 0.017 | 0.016 | 0.015 | 0.014 | 0.014 | 17      |
| 4 100-2   | 0.029 | 0.027 | 0.025 | 0.023 | 0.021 | 0.020 | 0.018 | 0.017 | 0.016 | 0.015 | 0.014 | 18      |
| 4 100-3   | 0.030 | 0.029 | 0.026 | 0.024 | 0.022 | 0.021 | 0.019 | 0.018 | 0.017 | 0.016 | 0.015 | 19      |
| 4 100-4   | 0.032 | 0.030 | 0.028 | 0.025 | 0.023 | 0.022 | 0.020 | 0.019 | 0.018 | 0.017 | 0.016 | 20      |
| 4 100-5   | 0.034 | 0.032 | 0.029 | 0.027 | 0.025 | 0.023 | 0.021 | 0.020 | 0.019 | 0.018 | 0.017 | 21      |
| 4 200-1   | 0.035 | 0.034 | 0.031 | 0.028 | 0.026 | 0.024 | 0.022 | 0.021 | 0.020 | 0.019 | 0.018 | 22      |
| 4 200-2   | 0.037 | 0.035 | 0.032 | 0.029 | 0.027 | 0.025 | 0.024 | 0.022 | 0.021 | 0.020 | 0.019 | 23      |
| 4 200-3   | 0.039 | 0.037 | 0.034 | 0.031 | 0.028 | 0.026 | 0.025 | 0.023 | 0.022 | 0.021 | 0.019 | 24      |
| 4 200-4   | 0.041 | 0.039 | 0.035 | 0.032 | 0.030 | 0.028 | 0.026 | 0.024 | 0.023 | 0.022 | 0.020 | 25      |
| 4 200-5   | 0.043 | 0.041 | 0.037 | 0.034 | 0.031 | 0.029 | 0.027 | 0.025 | 0.024 | 0.023 | 0.021 | 26      |
| 4 300-1   | 0.045 | 0.044 | 0.038 | 0.035 | 0.033 | 0.030 | 0.028 | 0.026 | 0.025 | 0.024 | 0.022 | 27      |
| 4 300-2   | 0.047 | 0.044 | 0.040 | 0.037 | 0.034 | 0.032 | 0.029 | 0.028 | 0.026 | 0.025 | 0.023 | 28      |
| 4 300-3   | 0.049 | 0.048 | 0.042 | 0.038 | 0.035 | 0.033 | 0.031 | 0.029 | 0.027 | 0.026 | 0.024 | 29      |
| 4 300-4   | 0.051 | 0.048 | 0.044 | 0.040 | 0.037 | 0.034 | 0.032 | 0.030 | 0.028 | 0.027 | 0.025 | 30      |
| 4 300-5   | 0.053 | 0.050 | 0.045 | 0.042 | 0.039 | 0.036 | 0.033 | 0.031 | 0.029 | 0.028 | 0.026 | 31      |

弧長=20公尺 1弧=100節

| 半徑<br>節 | 950   | 1,000 | 1,100 | 1,200 | 1,300 | 1,400 | 1,500 | 1,600 | 1,700 | 1,800 | 1,900 | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 5 1     | 0.055 | 0.052 | 0.047 | 0.043 | 0.040 | 0.037 | 0.035 | 0.033 | 0.031 | 0.029 | 0.027 | 5 1     |
| 5 2     | 0.057 | 0.054 | 0.049 | 0.045 | 0.042 | 0.039 | 0.036 | 0.034 | 0.032 | 0.030 | 0.028 | 5 2     |
| 5 3     | 0.059 | 0.056 | 0.051 | 0.047 | 0.043 | 0.040 | 0.037 | 0.035 | 0.033 | 0.031 | 0.030 | 5 3     |
| 5 4     | 0.061 | 0.058 | 0.053 | 0.049 | 0.045 | 0.042 | 0.039 | 0.036 | 0.034 | 0.032 | 0.031 | 5 4     |
| 5 5     | 0.064 | 0.060 | 0.055 | 0.050 | 0.047 | 0.043 | 0.040 | 0.038 | 0.036 | 0.034 | 0.032 | 5 5     |
| 5 6     | 0.066 | 0.063 | 0.057 | 0.052 | 0.048 | 0.044 | 0.042 | 0.039 | 0.037 | 0.035 | 0.033 | 5 6     |
| 5 7     | 0.068 | 0.065 | 0.059 | 0.054 | 0.050 | 0.046 | 0.043 | 0.041 | 0.038 | 0.036 | 0.034 | 5 7     |
| 5 8     | 0.071 | 0.067 | 0.061 | 0.056 | 0.052 | 0.048 | 0.045 | 0.042 | 0.040 | 0.037 | 0.035 | 5 8     |
| 5 9     | 0.073 | 0.070 | 0.063 | 0.058 | 0.054 | 0.050 | 0.046 | 0.043 | 0.041 | 0.039 | 0.037 | 5 9     |
| 6 0     | 0.076 | 0.072 | 0.065 | 0.060 | 0.055 | 0.051 | 0.048 | 0.045 | 0.042 | 0.040 | 0.038 | 6 0     |
| 6 1     | 0.078 | 0.074 | 0.068 | 0.062 | 0.057 | 0.053 | 0.050 | 0.047 | 0.044 | 0.041 | 0.039 | 6 1     |
| 6 2     | 0.081 | 0.077 | 0.070 | 0.064 | 0.059 | 0.055 | 0.051 | 0.048 | 0.045 | 0.043 | 0.040 | 6 2     |
| 6 3     | 0.084 | 0.079 | 0.072 | 0.066 | 0.061 | 0.057 | 0.053 | 0.050 | 0.047 | 0.044 | 0.042 | 6 3     |
| 6 4     | 0.086 | 0.082 | 0.074 | 0.068 | 0.063 | 0.059 | 0.055 | 0.051 | 0.048 | 0.046 | 0.043 | 6 4     |
| 6 5     | 0.089 | 0.085 | 0.077 | 0.070 | 0.065 | 0.060 | 0.056 | 0.053 | 0.050 | 0.047 | 0.044 | 6 5     |
| 6 6     | 0.092 | 0.087 | 0.079 | 0.073 | 0.067 | 0.062 | 0.058 | 0.054 | 0.051 | 0.048 | 0.046 | 6 6     |
| 6 7     | 0.095 | 0.090 | 0.082 | 0.075 | 0.069 | 0.064 | 0.060 | 0.056 | 0.053 | 0.050 | 0.047 | 6 7     |
| 6 8     | 0.097 | 0.093 | 0.084 | 0.077 | 0.071 | 0.066 | 0.062 | 0.058 | 0.054 | 0.051 | 0.049 | 6 8     |
| 6 9     | 0.100 | 0.095 | 0.087 | 0.079 | 0.073 | 0.068 | 0.063 | 0.060 | 0.056 | 0.053 | 0.050 | 6 9     |
| 7 0     | 0.103 | 0.098 | 0.089 | 0.082 | 0.075 | 0.070 | 0.065 | 0.061 | 0.058 | 0.054 | 0.052 | 7 0     |
| 7 1     | 0.106 | 0.101 | 0.092 | 0.084 | 0.078 | 0.072 | 0.067 | 0.063 | 0.059 | 0.056 | 0.053 | 7 1     |
| 7 2     | 0.109 | 0.104 | 0.094 | 0.086 | 0.080 | 0.074 | 0.069 | 0.065 | 0.061 | 0.058 | 0.055 | 7 2     |
| 7 3     | 0.112 | 0.107 | 0.097 | 0.089 | 0.082 | 0.076 | 0.071 | 0.067 | 0.063 | 0.059 | 0.056 | 7 3     |
| 7 4     | 0.115 | 0.110 | 0.100 | 0.091 | 0.084 | 0.078 | 0.073 | 0.068 | 0.064 | 0.061 | 0.058 | 7 4     |
| 7 5     | 0.118 | 0.113 | 0.102 | 0.094 | 0.087 | 0.080 | 0.075 | 0.070 | 0.066 | 0.063 | 0.059 | 7 5     |
| 7 6     | 0.122 | 0.116 | 0.105 | 0.096 | 0.089 | 0.083 | 0.077 | 0.072 | 0.068 | 0.064 | 0.061 | 7 6     |
| 7 7     | 0.125 | 0.119 | 0.108 | 0.099 | 0.091 | 0.085 | 0.079 | 0.074 | 0.070 | 0.066 | 0.062 | 7 7     |
| 7 8     | 0.128 | 0.122 | 0.110 | 0.101 | 0.094 | 0.087 | 0.081 | 0.076 | 0.072 | 0.068 | 0.064 | 7 8     |
| 7 9     | 0.131 | 0.125 | 0.113 | 0.104 | 0.096 | 0.089 | 0.083 | 0.078 | 0.073 | 0.069 | 0.066 | 7 9     |
| 8 0     | 0.135 | 0.128 | 0.116 | 0.107 | 0.098 | 0.091 | 0.085 | 0.080 | 0.075 | 0.071 | 0.067 | 8 0     |
| 8 1     | 0.138 | 0.131 | 0.119 | 0.109 | 0.101 | 0.094 | 0.087 | 0.082 | 0.077 | 0.073 | 0.069 | 8 1     |
| 8 2     | 0.142 | 0.134 | 0.122 | 0.112 | 0.103 | 0.096 | 0.090 | 0.084 | 0.079 | 0.075 | 0.071 | 8 2     |
| 8 3     | 0.145 | 0.138 | 0.125 | 0.115 | 0.106 | 0.098 | 0.092 | 0.086 | 0.081 | 0.077 | 0.073 | 8 3     |
| 8 4     | 0.149 | 0.141 | 0.128 | 0.118 | 0.109 | 0.101 | 0.094 | 0.088 | 0.083 | 0.078 | 0.074 | 8 4     |
| 8 5     | 0.152 | 0.145 | 0.131 | 0.120 | 0.111 | 0.103 | 0.096 | 0.090 | 0.085 | 0.080 | 0.076 | 8 5     |
| 8 6     | 0.156 | 0.148 | 0.134 | 0.123 | 0.114 | 0.106 | 0.099 | 0.092 | 0.087 | 0.082 | 0.078 | 8 6     |
| 8 7     | 0.159 | 0.151 | 0.139 | 0.126 | 0.116 | 0.108 | 0.101 | 0.095 | 0.089 | 0.084 | 0.080 | 8 7     |
| 8 8     | 0.163 | 0.155 | 0.141 | 0.129 | 0.119 | 0.111 | 0.104 | 0.097 | 0.091 | 0.086 | 0.082 | 8 8     |
| 8 9     | 0.167 | 0.158 | 0.144 | 0.132 | 0.122 | 0.113 | 0.106 | 0.099 | 0.093 | 0.088 | 0.083 | 8 9     |
| 9 0     | 0.171 | 0.162 | 0.147 | 0.135 | 0.125 | 0.116 | 0.108 | 0.101 | 0.095 | 0.090 | 0.085 | 9 0     |
| 9 1     | 0.174 | 0.166 | 0.151 | 0.139 | 0.127 | 0.118 | 0.110 | 0.104 | 0.097 | 0.092 | 0.087 | 9 1     |
| 9 2     | 0.178 | 0.169 | 0.154 | 0.141 | 0.130 | 0.121 | 0.113 | 0.106 | 0.100 | 0.094 | 0.089 | 9 2     |
| 9 3     | 0.182 | 0.173 | 0.157 | 0.144 | 0.133 | 0.124 | 0.115 | 0.108 | 0.102 | 0.096 | 0.091 | 9 3     |
| 9 4     | 0.186 | 0.177 | 0.161 | 0.147 | 0.136 | 0.126 | 0.118 | 0.110 | 0.104 | 0.098 | 0.093 | 9 4     |
| 9 5     | 0.190 | 0.181 | 0.164 | 0.150 | 0.139 | 0.129 | 0.120 | 0.113 | 0.106 | 0.100 | 0.095 | 9 5     |
| 9 6     | 0.194 | 0.184 | 0.168 | 0.154 | 0.142 | 0.132 | 0.123 | 0.115 | 0.108 | 0.102 | 0.097 | 9 6     |
| 9 7     | 0.198 | 0.188 | 0.171 | 0.157 | 0.145 | 0.134 | 0.125 | 0.118 | 0.111 | 0.105 | 0.099 | 9 7     |
| 9 8     | 0.202 | 0.192 | 0.175 | 0.160 | 0.148 | 0.137 | 0.128 | 0.120 | 0.113 | 0.107 | 0.101 | 9 8     |
| 9 9     | 0.206 | 0.196 | 0.178 | 0.163 | 0.151 | 0.140 | 0.131 | 0.123 | 0.115 | 0.109 | 0.103 | 9 9     |
| 100     | 0.211 | 0.200 | 0.182 | 0.167 | 0.154 | 0.143 | 0.133 | 0.125 | 0.118 | 0.111 | 0.105 | 100     |

弧長=20公尺 1弧=100節

| 半徑<br>節 | 2,000 | 2,200 | 2,400 | 2,500 | 2,600 | 2,800 | 3,000 | 3,200 | 3,400 | 3,500 | 3,600 | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 1       | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | 1       |
| 2       | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | 2       |
| 3       | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | 3       |
| 4       | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | 4       |
| 5       | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | 5       |
| 6       | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | 6       |
| 7       | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | ---   | 7       |
| 8       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 8       |
| 9       | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 9       |
| 10      | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 10      |
| 11      | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 11      |
| 12      | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 12      |
| 13      | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 13      |
| 14      | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 14      |
| 15      | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 15      |
| 16      | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.001 | 0.001 | 16      |
| 17      | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 17      |
| 18      | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 18      |
| 19      | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 | 19      |
| 20      | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 0.002 | 0.002 | 20      |
| 21      | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.002 | 21      |
| 22      | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 22      |
| 23      | 0.006 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 23      |
| 24      | 0.006 | 0.005 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 0.003 | 0.003 | 0.003 | 24      |
| 25      | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 0.004 | 0.003 | 25      |
| 26      | 0.007 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 0.004 | 26      |
| 27      | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 0.004 | 27      |
| 28      | 0.007 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.004 | 0.004 | 28      |
| 29      | 0.008 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 0.005 | 29      |
| 30      | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 0.005 | 30      |
| 31      | 0.010 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.005 | 0.005 | 31      |
| 32      | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 0.006 | 32      |
| 33      | 0.011 | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.006 | 0.006 | 0.006 | 33      |
| 34      | 0.012 | 0.011 | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.007 | 0.006 | 34      |
| 35      | 0.012 | 0.011 | 0.010 | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 0.007 | 35      |
| 36      | 0.013 | 0.012 | 0.011 | 0.011 | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 0.007 | 0.007 | 36      |
| 37      | 0.014 | 0.012 | 0.011 | 0.011 | 0.011 | 0.010 | 0.009 | 0.009 | 0.008 | 0.008 | 0.008 | 37      |
| 38      | 0.014 | 0.013 | 0.012 | 0.012 | 0.011 | 0.010 | 0.010 | 0.009 | 0.008 | 0.008 | 0.008 | 38      |
| 39      | 0.015 | 0.014 | 0.013 | 0.012 | 0.012 | 0.011 | 0.010 | 0.010 | 0.009 | 0.009 | 0.009 | 39      |
| 40      | 0.016 | 0.015 | 0.013 | 0.013 | 0.012 | 0.011 | 0.011 | 0.010 | 0.009 | 0.009 | 0.009 | 40      |
| 41      | 0.017 | 0.015 | 0.014 | 0.013 | 0.013 | 0.012 | 0.011 | 0.011 | 0.010 | 0.010 | 0.009 | 41      |
| 42      | 0.018 | 0.016 | 0.015 | 0.014 | 0.014 | 0.013 | 0.012 | 0.011 | 0.010 | 0.010 | 0.010 | 42      |
| 43      | 0.018 | 0.017 | 0.015 | 0.015 | 0.014 | 0.013 | 0.012 | 0.012 | 0.011 | 0.011 | 0.010 | 43      |
| 44      | 0.019 | 0.018 | 0.016 | 0.015 | 0.015 | 0.014 | 0.013 | 0.012 | 0.011 | 0.011 | 0.010 | 44      |
| 45      | 0.020 | 0.018 | 0.017 | 0.016 | 0.016 | 0.014 | 0.014 | 0.013 | 0.012 | 0.012 | 0.011 | 45      |
| 46      | 0.021 | 0.019 | 0.018 | 0.017 | 0.016 | 0.015 | 0.014 | 0.013 | 0.012 | 0.012 | 0.012 | 46      |
| 47      | 0.022 | 0.020 | 0.018 | 0.018 | 0.017 | 0.016 | 0.015 | 0.014 | 0.013 | 0.013 | 0.012 | 47      |
| 48      | 0.023 | 0.021 | 0.019 | 0.018 | 0.018 | 0.016 | 0.015 | 0.014 | 0.014 | 0.013 | 0.013 | 48      |
| 49      | 0.024 | 0.022 | 0.020 | 0.019 | 0.018 | 0.017 | 0.016 | 0.015 | 0.014 | 0.014 | 0.013 | 49      |
| 50      | 0.025 | 0.023 | 0.021 | 0.020 | 0.019 | 0.018 | 0.017 | 0.016 | 0.015 | 0.014 | 0.014 | 50      |

弧長 = 20 公尺      1 弧 = 100 節

| 半徑<br>碼 | 2.000 | 2.200 | 2.400 | 2.500 | 2.600 | 2.800 | 3.000 | 3.200 | 3.400 | 3.500 | 3.600 | 半徑<br>節 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 5 1     | 0.026 | 0.024 | 0.022 | 0.021 | 0.020 | 0.019 | 0.017 | 0.016 | 0.015 | 0.015 | 0.014 | 5 1     |
| 5 2     | 0.027 | 0.025 | 0.023 | 0.022 | 0.021 | 0.019 | 0.018 | 0.017 | 0.016 | 0.016 | 0.015 | 5 2     |
| 5 3     | 0.028 | 0.026 | 0.023 | 0.023 | 0.022 | 0.020 | 0.019 | 0.018 | 0.017 | 0.016 | 0.016 | 5 3     |
| 5 4     | 0.029 | 0.027 | 0.024 | 0.023 | 0.022 | 0.021 | 0.019 | 0.018 | 0.017 | 0.017 | 0.016 | 5 4     |
| 5 5     | 0.030 | 0.028 | 0.025 | 0.024 | 0.023 | 0.022 | 0.020 | 0.019 | 0.018 | 0.017 | 0.017 | 5 5     |
| 5 6     | 0.031 | 0.029 | 0.026 | 0.025 | 0.024 | 0.022 | 0.021 | 0.020 | 0.018 | 0.018 | 0.017 | 5 6     |
| 5 7     | 0.032 | 0.030 | 0.027 | 0.026 | 0.025 | 0.023 | 0.022 | 0.020 | 0.019 | 0.019 | 0.018 | 5 7     |
| 5 8     | 0.034 | 0.031 | 0.028 | 0.027 | 0.026 | 0.024 | 0.022 | 0.021 | 0.020 | 0.019 | 0.019 | 5 8     |
| 5 9     | 0.035 | 0.032 | 0.029 | 0.028 | 0.027 | 0.025 | 0.023 | 0.022 | 0.020 | 0.020 | 0.019 | 5 9     |
| 6 0     | 0.035 | 0.033 | 0.030 | 0.029 | 0.028 | 0.026 | 0.024 | 0.023 | 0.021 | 0.021 | 0.020 | 6 0     |
| 6 1     | 0.037 | 0.034 | 0.031 | 0.030 | 0.029 | 0.027 | 0.025 | 0.023 | 0.022 | 0.021 | 0.021 | 6 1     |
| 6 2     | 0.038 | 0.035 | 0.032 | 0.031 | 0.030 | 0.027 | 0.026 | 0.024 | 0.023 | 0.022 | 0.021 | 6 2     |
| 6 3     | 0.040 | 0.036 | 0.033 | 0.032 | 0.031 | 0.028 | 0.026 | 0.025 | 0.023 | 0.023 | 0.022 | 6 3     |
| 6 4     | 0.041 | 0.037 | 0.034 | 0.033 | 0.032 | 0.029 | 0.027 | 0.026 | 0.024 | 0.023 | 0.023 | 6 4     |
| 6 5     | 0.043 | 0.038 | 0.035 | 0.034 | 0.033 | 0.030 | 0.028 | 0.026 | 0.025 | 0.024 | 0.023 | 6 5     |
| 6 6     | 0.044 | 0.040 | 0.036 | 0.035 | 0.033 | 0.031 | 0.029 | 0.027 | 0.026 | 0.025 | 0.024 | 6 6     |
| 6 7     | 0.045 | 0.041 | 0.037 | 0.036 | 0.035 | 0.032 | 0.030 | 0.028 | 0.026 | 0.026 | 0.025 | 6 7     |
| 6 8     | 0.046 | 0.042 | 0.039 | 0.037 | 0.036 | 0.033 | 0.031 | 0.029 | 0.027 | 0.026 | 0.026 | 6 8     |
| 6 9     | 0.048 | 0.043 | 0.040 | 0.038 | 0.037 | 0.034 | 0.032 | 0.030 | 0.028 | 0.027 | 0.027 | 6 9     |
| 7 0     | 0.049 | 0.045 | 0.041 | 0.039 | 0.038 | 0.035 | 0.033 | 0.031 | 0.029 | 0.028 | 0.027 | 7 0     |
| 7 1     | 0.050 | 0.046 | 0.042 | 0.040 | 0.039 | 0.036 | 0.034 | 0.032 | 0.030 | 0.029 | 0.028 | 7 1     |
| 7 2     | 0.052 | 0.047 | 0.043 | 0.041 | 0.040 | 0.037 | 0.035 | 0.032 | 0.030 | 0.030 | 0.029 | 7 2     |
| 7 3     | 0.053 | 0.048 | 0.044 | 0.043 | 0.041 | 0.038 | 0.036 | 0.033 | 0.031 | 0.030 | 0.030 | 7 3     |
| 7 4     | 0.055 | 0.050 | 0.046 | 0.044 | 0.042 | 0.039 | 0.037 | 0.034 | 0.032 | 0.031 | 0.030 | 7 4     |
| 7 5     | 0.056 | 0.051 | 0.047 | 0.045 | 0.043 | 0.040 | 0.038 | 0.035 | 0.033 | 0.032 | 0.031 | 7 5     |
| 7 6     | 0.058 | 0.053 | 0.048 | 0.046 | 0.044 | 0.041 | 0.039 | 0.036 | 0.034 | 0.033 | 0.032 | 7 6     |
| 7 7     | 0.059 | 0.054 | 0.049 | 0.047 | 0.045 | 0.042 | 0.040 | 0.037 | 0.035 | 0.034 | 0.033 | 7 7     |
| 7 8     | 0.061 | 0.055 | 0.051 | 0.049 | 0.047 | 0.043 | 0.041 | 0.038 | 0.036 | 0.035 | 0.034 | 7 8     |
| 7 9     | 0.062 | 0.057 | 0.052 | 0.050 | 0.048 | 0.045 | 0.042 | 0.039 | 0.037 | 0.036 | 0.035 | 7 9     |
| 8 0     | 0.064 | 0.058 | 0.053 | 0.051 | 0.049 | 0.046 | 0.043 | 0.040 | 0.038 | 0.037 | 0.036 | 8 0     |
| 8 1     | 0.066 | 0.060 | 0.055 | 0.052 | 0.050 | 0.047 | 0.044 | 0.041 | 0.039 | 0.037 | 0.036 | 8 1     |
| 8 2     | 0.067 | 0.061 | 0.056 | 0.054 | 0.052 | 0.048 | 0.045 | 0.042 | 0.040 | 0.038 | 0.037 | 8 2     |
| 8 3     | 0.069 | 0.063 | 0.057 | 0.055 | 0.053 | 0.049 | 0.046 | 0.043 | 0.041 | 0.039 | 0.038 | 8 3     |
| 8 4     | 0.071 | 0.064 | 0.059 | 0.056 | 0.054 | 0.050 | 0.047 | 0.044 | 0.042 | 0.040 | 0.039 | 8 4     |
| 8 5     | 0.072 | 0.065 | 0.060 | 0.058 | 0.056 | 0.052 | 0.048 | 0.045 | 0.043 | 0.041 | 0.040 | 8 5     |
| 8 6     | 0.074 | 0.067 | 0.062 | 0.059 | 0.057 | 0.053 | 0.049 | 0.046 | 0.044 | 0.042 | 0.041 | 8 6     |
| 8 7     | 0.075 | 0.069 | 0.063 | 0.061 | 0.058 | 0.054 | 0.050 | 0.047 | 0.045 | 0.043 | 0.042 | 8 7     |
| 8 8     | 0.077 | 0.070 | 0.065 | 0.062 | 0.060 | 0.055 | 0.052 | 0.048 | 0.046 | 0.044 | 0.043 | 8 8     |
| 8 9     | 0.079 | 0.072 | 0.066 | 0.063 | 0.061 | 0.057 | 0.053 | 0.050 | 0.047 | 0.045 | 0.044 | 8 9     |
| 9 0     | 0.081 | 0.074 | 0.068 | 0.065 | 0.062 | 0.058 | 0.054 | 0.051 | 0.048 | 0.046 | 0.045 | 9 0     |
| 9 1     | 0.083 | 0.075 | 0.069 | 0.066 | 0.064 | 0.059 | 0.055 | 0.052 | 0.049 | 0.047 | 0.046 | 9 1     |
| 9 2     | 0.085 | 0.077 | 0.071 | 0.068 | 0.065 | 0.060 | 0.056 | 0.053 | 0.050 | 0.048 | 0.047 | 9 2     |
| 9 3     | 0.086 | 0.079 | 0.072 | 0.069 | 0.067 | 0.062 | 0.058 | 0.054 | 0.051 | 0.049 | 0.048 | 9 3     |
| 9 4     | 0.088 | 0.080 | 0.074 | 0.071 | 0.068 | 0.063 | 0.059 | 0.055 | 0.052 | 0.050 | 0.049 | 9 4     |
| 9 5     | 0.090 | 0.082 | 0.075 | 0.072 | 0.069 | 0.064 | 0.060 | 0.056 | 0.053 | 0.052 | 0.050 | 9 5     |
| 9 6     | 0.092 | 0.084 | 0.077 | 0.074 | 0.071 | 0.066 | 0.061 | 0.058 | 0.054 | 0.053 | 0.051 | 9 6     |
| 9 7     | 0.094 | 0.086 | 0.078 | 0.075 | 0.072 | 0.067 | 0.063 | 0.059 | 0.055 | 0.054 | 0.052 | 9 7     |
| 9 8     | 0.096 | 0.087 | 0.080 | 0.077 | 0.074 | 0.069 | 0.064 | 0.060 | 0.056 | 0.055 | 0.053 | 9 8     |
| 9 9     | 0.098 | 0.089 | 0.082 | 0.078 | 0.075 | 0.070 | 0.065 | 0.061 | 0.057 | 0.056 | 0.054 | 9 9     |
| 100     | 1.100 | 1.091 | 1.083 | 1.080 | 1.077 | 1.071 | 1.067 | 1.063 | 1.059 | 1.057 | 1.056 | 100     |

第十二表:—緩和曲綫偏角表

| R=200 公尺 |        |          |          |          |          |           |
|----------|--------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$  | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 8°36'  | 0°19'    | 1°16'    | 2°52'    |          |           |
| 80       | 14°27' | 0°14'    | 0°57'    | 2°09'    | 3°49'    |           |
| 100      | 11°19' | 0°11'    | 0°46'    | 1°43'    | 3°02'    | 4°46'     |

| R=230 公尺 |        |          |          |          |          |           |
|----------|--------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$  | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 7°28'  | 0°16'    | 1°06'    | 2°29'    |          |           |
| 80       | 9°58'  | 0°12'    | 0°50'    | 1°52'    | 3°19'    |           |
| 100      | 12°27' | 0°10'    | 0°40'    | 1°30'    | 2°40'    | 4°09'     |

| R=250 公尺 |        |          |          |          |          |           |
|----------|--------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$  | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 6°52'  | 0°15'    | 1°01'    | 2°17'    |          |           |
| 80       | 9°10'  | 0°11'    | 0°46'    | 1°43'    | 3°03'    |           |
| 100      | 11°27' | 0°09'    | 0°36'    | 1°21'    | 2°24'    | 3°49'     |

| R=280 公尺 |        |          |          |          |          |           |
|----------|--------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$  | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 6°08'  | 0°14'    | 0°54'    | 2°03'    |          |           |
| 80       | 8°11'  | 0°10'    | 0°41'    | 1°32'    | 2°44'    |           |
| 100      | 10°14' | 0°08'    | 0°33'    | 1°14'    | 2°11'    | 3°25'     |

| R=300 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 5°44' | 0°13'    | 0°52'    | 1°55'    |          |           |
| 80       | 7°38' | 0°09'    | 0°38'    | 1°26'    | 2°33'    |           |
| 100      | 9°33' | 0°07'    | 0°30'    | 1°08'    | 2°02'    | 3°11'     |



第十二表：一緩和曲線偏角表(續)

| R=350 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 4°55' | 0°11'    | 0°44'    | 1°38'    |          |           |
| 80       | 6°32' | 0°08'    | 0°33'    | 1°14'    | 2°11'    |           |
| 100      | 8°11' | 0°06'    | 0°26'    | 0°58'    | 1°44'    | 2°44'     |

| R=400 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 4°18' | 0°09'    | 0°38'    | 1°26'    |          |           |
| 80       | 5°44' | 0°07'    | 0°29'    | 1°05'    | 1°55'    |           |
| 100      | 7°10' | 0°06'    | 0°23'    | 0°51'    | 1°31'    | 2°23'     |

| R=450 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 3°49' | 0°08'    | 0°34'    | 1°16'    |          |           |
| 80       | 5°06' | 0°06'    | 0°25'    | 0°57'    | 1°42'    |           |
| 100      | 6°22' | 0°05'    | 0°20'    | 0°45'    | 1°20'    | 2°07'     |

| R=500 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 3°26' | 0°08'    | 0°31'    | 1°09'    |          |           |
| 80       | 4°35' | 0°06'    | 0°23'    | 0°52'    | 1°32'    |           |
| 100      | 5°44' | 0°04'    | 0°18'    | 0°41'    | 1°13'    | 1°55'     |

| R=550 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 3°07' | 0°07'    | 0°28'    | 1°02'    |          |           |
| 80       | 4°10' | 0°05'    | 0°21'    | 0°47'    | 1°23'    |           |
| 100      | 5°12' | 0°04'    | 0°16'    | 0°37'    | 1°05'    | 1°44'     |

第十二表：—緩和曲線偏角表(續)

| R=600 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 2°52' | 0°08'    | 0°25'    | 0°57'    |          |           |
| 80       | 3°49' | 0°05'    | 0°19'    | 0°43'    | 1°16'    |           |
| 100      | 4°46' | 0°04'    | 0°15'    | 0°34'    | 1°00'    | 1°35'     |

| R=650 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 2°39' | 0°08'    | 0°24'    | 0°53'    |          |           |
| 80       | 3°31' | 0°04'    | 0°17'    | 0°39'    | 1°10'    |           |
| 100      | 4°24' | 0°03'    | 0°14'    | 0°31'    | 0°56'    | 1°28'     |

| R=700 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 2°27' | 0°05'    | 0°21'    | 0°49'    |          |           |
| 80       | 3°16' | 0°04'    | 0°16'    | 0°36'    | 1°05'    |           |
| 100      | 4°05' | 0°03'    | 0°13'    | 0°29'    | 0°52'    | 1°22'     |

| R=750 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 2°17' | 0°05'    | 0°20'    | 0°46'    |          |           |
| 80       | 3°03' | 0°04'    | 0°15'    | 0°34'    | 1°01'    |           |
| 100      | 3°49' | 0°03'    | 0°12'    | 0°27'    | 0°48'    | 1°16'     |

| R=800 公尺 |       |          |          |          |          |           |
|----------|-------|----------|----------|----------|----------|-----------|
| $l_c$    | $s_c$ | 公尺<br>20 | 公尺<br>40 | 公尺<br>60 | 公尺<br>80 | 公尺<br>100 |
| 公尺<br>60 | 2°09' | 0°05'    | 0°20'    | 0°43'    |          |           |
| 80       | 2°52' | 0°03'    | 0°14'    | 0°31'    | 0°57'    |           |
| 100      | 3°35' | 0°03'    | 0°11'    | 0°25'    | 0°45'    | 1°12'     |

第十三表：一緩和曲綫函數表

| R = 200 公尺 |        |       |      |       |       |
|------------|--------|-------|------|-------|-------|
| $l_c$      | $s_c$  | q     | p    | $y_c$ | $x_c$ |
| 公尺         |        | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 8°36'  | 29.96 | 0.75 | 59.87 | 3.00  |
| 80         | 11°27' | 39.98 | 1.35 | 79.68 | 5.33  |
| 100        | 14°19' | 49.92 | 2.12 | 99.38 | 8.33  |

| R = 230 公尺 |        |       |      |       |       |
|------------|--------|-------|------|-------|-------|
| $l_c$      | $s_c$  | q     | p    | $y_c$ | $x_c$ |
| 公尺         |        | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 7°28'  | 30.01 | 0.66 | 59.90 | 2.61  |
| 80         | 9°58'  | 39.95 | 1.17 | 79.76 | 4.64  |
| 100        | 12°27' | 49.95 | 1.84 | 99.53 | 7.25  |

| R = 250 公尺 |        |       |      |       |       |
|------------|--------|-------|------|-------|-------|
| $l_c$      | $s_c$  | q     | p    | $y_c$ | $x_c$ |
| 公尺         |        | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 6°52'  | 30.02 | 0.61 | 59.91 | 2.40  |
| 80         | 9°10'  | 39.97 | 1.08 | 79.80 | 4.27  |
| 100        | 11°27' | 49.97 | 1.68 | 99.60 | 6.66  |

| R = 280 公尺 |        |       |      |       |       |
|------------|--------|-------|------|-------|-------|
| $l_c$      | $s_c$  | q     | p    | $y_c$ | $x_c$ |
| 公尺         |        | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 6°08'  | 30.02 | 0.54 | 59.93 | 2.14  |
| 80         | 8°11'  | 39.99 | 0.96 | 79.84 | 3.81  |
| 100        | 10°14' | 49.94 | 1.50 | 99.68 | 5.95  |

| R = 300 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 5°44' | 29.97 | 0.50 | 59.94 | 2.00  |
| 80         | 7°38' | 40.01 | 0.90 | 79.86 | 3.56  |
| 100        | 9°33' | 49.95 | 1.39 | 99.72 | 5.55  |

第十三表：一緩和曲綫函數表(續)

| R = 350 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 4°55' | 29.96 | 0.42 | 59.96 | 1.71  |
| 80         | 6°32' | 40.08 | 0.78 | 79.90 | 3.05  |
| 100        | 8°11' | 49.98 | 1.20 | 99.80 | 4.76  |

| R = 400 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 4°18' | 29.93 | 0.38 | 59.97 | 1.50  |
| 80         | 5°44' | 39.96 | 0.67 | 79.92 | 2.67  |
| 100        | 7°10' | 49.94 | 1.05 | 99.84 | 4.17  |

| R = 450 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 3°49' | 30.02 | 0.33 | 59.97 | 1.33  |
| 80         | 5°06' | 39.94 | 0.59 | 79.94 | 2.37  |
| 100        | 6°22' | 49.98 | 0.92 | 99.88 | 2.70  |

| R = 500 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 3°28' | 30.04 | 0.31 | 59.98 | 1.20  |
| 80         | 4°35' | 40.00 | 0.53 | 79.95 | 2.13  |
| 100        | 5°44' | 49.95 | 0.83 | 99.90 | 3.33  |

| R = 550 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 3°07' | 30.08 | 0.28 | 59.98 | 1.09  |
| 80         | 4°10' | 40.00 | 0.49 | 79.96 | 1.94  |
| 100        | 5°12' | 50.07 | 0.76 | 99.92 | 3.03  |

第十三表：一緩和曲綫函數表(續)

| R = 600 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 2°52' | 29.98 | 0.25 | 59.98 | 1.00  |
| 80         | 3°49' | 40.03 | 0.45 | 79.98 | 1.78  |
| 100        | 4°46' | 50.07 | 0.70 | 99.93 | 2.78  |

| R = 650 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 3°39' | 29.94 | 0.23 | 59.99 | 0.92  |
| 80         | 3°31' | 40.10 | 0.42 | 79.97 | 1.64  |
| 100        | 4°24' | 50.07 | 0.64 | 99.94 | 2.56  |

| R = 700 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 2°27' | 30.07 | 0.22 | 59.99 | 0.86  |
| 80         | 3°16' | 40.08 | 0.39 | 79.97 | 1.52  |
| 100        | 4°05' | 50.10 | 0.60 | 99.95 | 2.38  |

| R = 750 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 2°17' | 30.11 | 0.21 | 59.99 | 0.80  |
| 80         | 3°03' | 40.07 | 0.36 | 79.98 | 1.42  |
| 100        | 3°49' | 50.04 | 0.56 | 99.93 | 2.22  |

| R = 800 公尺 |       |       |      |       |       |
|------------|-------|-------|------|-------|-------|
| $l_c$      | $s_c$ | q     | p    | $y_c$ | $x_c$ |
| 公尺         |       | 公尺    | 公尺   | 公尺    | 公尺    |
| 60         | 2°09' | 29.97 | 0.19 | 59.99 | 0.75  |
| 80         | 2°52' | 39.97 | 0.33 | 79.98 | 1.33  |
| 100        | 3°35' | 49.96 | 0.51 | 99.96 | 2.08  |

第十四表：一豎曲綫表 (1)

|       |    | 水平 |    | 0.05% |    | 0.10% |    | 0.15% |    | 0.20% |    | 0.25% |    | 0.30% |    | 0.40% |    | 0.50% |    | 0.60% |    | 0.80% |    | 1.00% |    |
|-------|----|----|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|----|
|       | 坡度 | 長度 | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 |
| 水平    |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.05% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.10% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.15% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.20% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.25% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.30% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.40% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.50% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.60% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 0.80% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |
| 1.00% |    |    |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |       |    |

兩同向坡度縱交角為凸角時之豎曲綫表

表 (2)

| 兩同向坡度綫交角爲凸角時之豎曲綫表 |   | 水平    |    | 0.05% |    | 0.10% |    | 0.15% |    | 0.20% |       | 0.25% |       | 0.30% |       | 0.40% |       | 0.50% |       | 0.60% |       | 0.80% |       | 1.00% |       |       |       |
|-------------------|---|-------|----|-------|----|-------|----|-------|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                   |   | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距 | 長度    | 縱距    | 長度    | 縱距    | 長度    | 縱距    | 長度    | 縱距    | 長度    | 縱距    | 長度    | 縱距    | 長度    | 縱距    | 長度    | 縱距    | 長度    | 縱距    |
| 水平                |   |       |    |       |    |       |    |       |    | 2     | 0.010 | 2     | 0.013 | 2     | 0.015 | 2     | 0.020 | 2     | 0.025 | 4     | 0.015 | 4     | 0.020 | 6     | 0.017 | 6     | 0.067 |
| 0.05%             |   |       |    |       |    |       |    |       |    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 0.10%             |   |       |    |       |    |       |    |       |    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 0.15%             |   |       |    |       |    |       |    |       |    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 0.20%             | 2 | 0.010 |    |       |    |       |    |       |    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 0.25%             | 2 | 0.013 | 2  | 0.010 |    |       |    |       |    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 0.30%             | 2 | 0.015 | 2  | 0.013 | 2  | 0.010 |    |       |    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 0.40%             | 2 | 0.020 | 2  | 0.018 | 2  | 0.015 | 2  | 0.013 | 2  | 0.010 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 0.50%             | 2 | 0.025 | 2  | 0.023 | 2  | 0.020 | 2  | 0.018 | 2  | 0.015 | 2     | 0.013 | 2     | 0.010 |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 0.60%             | 4 | 0.015 | 2  | 0.028 | 2  | 0.025 | 2  | 0.023 | 2  | 0.020 | 2     | 0.018 | 2     | 0.015 | 2     | 0.010 |       |       |       |       |       |       |       |       |       |       |       |
| 0.80%             | 4 | 0.020 | 4  | 0.019 | 4  | 0.018 | 4  | 0.016 | 4  | 0.015 | 4     | 0.015 | 2     | 0.028 | 2     | 0.025 | 2     | 0.020 | 2     | 0.015 | 2     | 0.010 |       |       |       |       |       |
| 1.00%             | 6 | 0.017 | 4  | 0.024 | 4  | 0.023 | 4  | 0.021 | 4  | 0.020 | 4     | 0.019 | 4     | 0.018 | 4     | 0.015 | 2     | 0.025 | 2     | 0.020 | 2     | 0.010 |       |       |       |       |       |
|                   |   | 0.150 |    | 0.095 |    | 0.090 |    | 0.085 |    | 0.080 |       | 0.075 |       | 0.070 |       | 0.060 |       | 0.060 |       | 0.060 |       | 0.060 |       | 0.060 |       | 0.060 |       |

| 兩異同向坡度綫交角爲凹角時之豎曲綫表 |         | 0.05%   | 0.10%   | 0.15%   | 0.20%   | 0.25%   | 0.30%   | 0.40%   | 0.50%   | 0.60%   | 0.80%   | 1.00%   |
|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 水平                 | 縱距      |         |         |         |         |         |         |         |         |         |         |         |
|                    | 長度      |         |         |         |         |         |         |         |         |         |         |         |
| 水平                 | 縱距      |         |         |         |         |         |         |         |         |         |         |         |
|                    | 長度      |         |         |         |         |         |         |         |         |         |         |         |
| 水平                 |         |         |         |         | 2 0.010 | 2 0.013 | 2 0.015 | 2 0.020 | 2 0.025 | 2 0.030 | 2 0.040 | 2 0.050 |
| 0.05%              |         |         |         | 2 0.010 | 2 0.013 | 2 0.015 | 2 0.018 | 2 0.023 | 2 0.028 | 2 0.033 | 2 0.043 | 2 0.053 |
| 0.10%              |         |         | 2 0.010 | 2 0.013 | 2 0.015 | 2 0.018 | 2 0.020 | 2 0.025 | 2 0.030 | 2 0.035 | 2 0.045 | 2 0.055 |
| 0.15%              |         | 2 0.010 | 2 0.013 | 2 0.015 | 2 0.018 | 2 0.020 | 2 0.023 | 2 0.028 | 2 0.033 | 2 0.038 | 2 0.048 | 2 0.058 |
| 0.20%              | 2 0.010 | 2 0.013 | 2 0.015 | 2 0.018 | 2 0.020 | 2 0.023 | 2 0.025 | 2 0.030 | 2 0.035 | 2 0.040 | 2 0.050 | 2 0.060 |
| 0.25%              | 2 0.013 | 2 0.015 | 2 0.018 | 2 0.020 | 2 0.023 | 2 0.025 | 2 0.028 | 2 0.033 | 2 0.038 | 2 0.043 | 2 0.053 | 2 0.063 |
| 0.30%              | 2 0.015 | 2 0.018 | 2 0.020 | 2 0.023 | 2 0.025 | 2 0.028 | 2 0.030 | 2 0.035 | 2 0.040 | 2 0.045 | 2 0.055 | 2 0.065 |
| 0.40%              | 2 0.020 | 2 0.023 | 2 0.025 | 2 0.028 | 2 0.030 | 2 0.033 | 2 0.035 | 2 0.040 | 2 0.045 | 2 0.050 | 2 0.060 | 2 0.070 |
| 0.50%              | 2 0.025 | 2 0.028 | 2 0.030 | 2 0.033 | 2 0.035 | 2 0.038 | 2 0.040 | 2 0.045 | 2 0.050 | 2 0.055 | 2 0.065 | 2 0.075 |
| 0.60%              | 2 0.030 | 2 0.033 | 2 0.035 | 2 0.038 | 2 0.040 | 2 0.043 | 2 0.045 | 2 0.050 | 2 0.055 | 2 0.060 | 2 0.070 | 2 0.080 |
| 0.80%              | 2 0.040 | 2 0.043 | 2 0.045 | 2 0.048 | 2 0.050 | 2 0.053 | 2 0.055 | 2 0.060 | 2 0.065 | 2 0.070 | 2 0.080 | 2 0.090 |
| 1.00%              | 2 0.050 | 2 0.053 | 2 0.055 | 2 0.058 | 2 0.060 | 2 0.063 | 2 0.065 | 2 0.070 | 2 0.075 | 2 0.080 | 2 0.090 | 2 0.100 |



表 (4)

|                    |           | 0.05%     | 0.10%     | 0.15%              | 0.20%              | 0.25%              | 0.30%              | 0.40%              | 0.50%              | 0.60%              | 0.80%              | 1.00%              |
|--------------------|-----------|-----------|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 兩異同向坡度綫交角爲凹角時之豎曲綫表 | 水平        |           |           |                    | 2 0.010 2          | 2 0.013 2          | 2 0.015 2          | 2 0.020 2          | 2 0.025 4          | 0.015 4<br>0.060 4 | 0.020 6<br>0.080 6 | 0.017 6<br>0.150 6 |
|                    | 縱長度       |           |           |                    | 縱長度                | 縱長度                | 縱長度                | 縱長度                | 縱長度                | 縱長度                | 縱長度                | 縱長度                |
| 0.05%              |           |           | 2 0.010 2 | 2 0.013 2          | 2 0.015 2          | 2 0.018 2          | 2 0.023 2          | 2 0.028 4          | 0.016 4<br>0.065 4 | 0.021 4<br>0.085 4 | 0.017 6<br>0.157 6 | 0.017 6<br>0.172 6 |
| 0.10%              |           | 2 0.010 2 | 2 0.013 2 | 2 0.015 2          | 2 0.018 2          | 2 0.020 2          | 2 0.025 4          | 0.015 4<br>0.080 4 | 0.018 4<br>0.070 4 | 0.023 4<br>0.090 4 | 0.018 6<br>0.165 6 | 0.018 6<br>0.172 6 |
| 0.15%              | 2 0.010 2 | 2 0.013 2 | 2 0.015 2 | 2 0.018 2          | 2 0.020 2          | 2 0.023 2          | 2 0.028 4          | 0.016 4<br>0.065 4 | 0.019 4<br>0.075 4 | 0.024 4<br>0.095 4 | 0.019 6<br>0.172 6 | 0.019 6<br>0.172 6 |
| 0.20%              | 2 0.010 2 | 2 0.013 2 | 2 0.015 2 | 2 0.018 2          | 2 0.020 2          | 2 0.023 2          | 2 0.025 4          | 0.015 4<br>0.060 4 | 0.018 4<br>0.070 4 | 0.020 6<br>0.080 6 | 0.017 6<br>0.150 6 | 0.017 6<br>0.150 6 |
| 0.25%              | 2 0.013 2 | 2 0.015 2 | 2 0.018 2 | 2 0.020 2          | 2 0.023 2          | 2 0.025 2          | 2 0.028 4          | 0.016 4<br>0.065 4 | 0.019 4<br>0.075 4 | 0.021 6<br>0.085 6 | 0.017 6<br>0.157 6 | 0.021 6<br>0.188 6 |
| 0.30%              | 2 0.015 2 | 2 0.018 2 | 2 0.020 2 | 2 0.023 2          | 2 0.025 2          | 2 0.028 4          | 0.015 4<br>0.060 4 | 0.018 4<br>0.070 4 | 0.020 4<br>0.080 4 | 0.023 6<br>0.090 6 | 0.018 6<br>0.165 6 | 0.022 6<br>0.195 6 |
| 0.40%              | 2 0.020 2 | 2 0.023 2 | 2 0.025 2 | 0.015 4<br>0.060 4 | 0.016 4<br>0.065 4 | 0.018 4<br>0.070 4 | 0.018 4<br>0.080 4 | 0.023 6<br>0.090 6 | 0.026 6<br>0.100 6 | 0.030 6<br>0.110 6 | 0.023 6<br>0.180 6 | 0.023 6<br>0.210 6 |

|       |   |       |   |       |   |       |   |       |   |       |   |       |   |       |   |       |   |       |   |       |   |       |    |       |    |
|-------|---|-------|---|-------|---|-------|---|-------|---|-------|---|-------|---|-------|---|-------|---|-------|---|-------|---|-------|----|-------|----|
| 0.50% | 2 | 0.025 | 2 | 0.028 | 4 | 0.015 | 4 | 0.016 | 4 | 0.018 | 4 | 0.019 | 4 | 0.020 | 4 | 0.023 | 6 | 0.017 | 6 | 0.018 | 6 | 0.022 | 8  | 0.019 | 8  |
|       |   |       |   |       |   | 0.050 |   | 0.065 |   | 0.070 |   | 0.075 |   | 0.080 |   | 0.090 |   | 0.150 |   | 0.155 |   | 0.195 |    | 0.169 |    |
| 0.60% | 4 | 0.015 | 4 | 0.016 | 4 | 0.018 | 4 | 0.019 | 4 | 0.020 | 4 | 0.021 | 4 | 0.023 | 4 | 0.023 | 6 | 0.017 | 6 | 0.018 | 6 | 0.023 | 8  | 0.020 | 8  |
|       |   |       |   |       |   | 0.070 |   | 0.075 |   | 0.080 |   | 0.085 |   | 0.090 |   | 0.150 |   | 0.165 |   | 0.180 |   | 0.210 |    | 0.180 |    |
| 0.80% | 4 | 0.020 | 4 | 0.021 | 4 | 0.023 | 4 | 0.024 | 6 | 0.017 | 6 | 0.017 | 6 | 0.018 | 6 | 0.020 | 6 | 0.022 | 6 | 0.023 | 6 | 0.023 | 8  | 0.020 | 8  |
|       |   |       |   |       |   | 0.090 |   | 0.095 |   | 0.150 |   | 0.157 |   | 0.165 |   | 0.180 |   | 0.195 |   | 0.210 |   | 0.220 |    | 0.180 |    |
| 1.00% | 6 | 0.017 | 6 | 0.017 | 6 | 0.018 | 6 | 0.019 | 6 | 0.020 | 6 | 0.021 | 6 | 0.022 | 6 | 0.023 | 8 | 0.019 | 8 | 0.020 | 8 | 0.023 | 10 | 0.020 | 10 |
|       |   |       |   |       |   | 0.165 |   | 0.172 |   | 0.180 |   | 0.188 |   | 0.195 |   | 0.210 |   | 0.300 |   | 0.320 |   | 0.360 |    | 0.180 |    |

| N.  | 0      | 1    | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 100 | 000000 | 0434 | 0868  | 1301  | 1734  | 2166  | 2598  | 3029  | 3461  | 3891  | 432   |
| 101 | 4321   | 4751 | 5181  | 5609  | 6038  | 6466  | 6894  | 7321  | 7748  | 8174  | 428   |
| 102 | 8600   | 9026 | 9451  | 9876  | *0300 | *0724 | *1147 | *1570 | *1993 | *2415 | 424   |
| 103 | 012837 | 3259 | 3680  | 4100  | 4521  | 4940  | 5360  | 5779  | 6197  | 6616  | 420   |
| 104 | 7033   | 7451 | 7868  | 8284  | 8700  | 9116  | 9532  | 9947  | *0361 | *0775 | 416   |
| 105 | 021189 | 1603 | 2016  | 2428  | 2841  | 3252  | 3664  | 4075  | 4486  | 4896  | 412   |
| 106 | 5306   | 5715 | 6125  | 6533  | 6942  | 7350  | 7757  | 8164  | *8571 | 8978  | 408   |
| 107 | 9384   | 9789 | *0195 | *0600 | *1004 | *1408 | *1812 | *2216 | *2619 | *3021 | 404   |
| 108 | 033424 | 3826 | 4227  | 4628  | 5029  | 5430  | 5830  | 6230  | 6629  | 7028  | 400   |
| 109 | 7426   | 7825 | 8223  | 8620  | 9017  | 9414  | 9811  | *0207 | *0602 | *0998 | 397   |

| N.  | Diff. | 1  | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |
|-----|-------|----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| 434 | 43    | 87 | 130 | 174 | 217 | 260 | 304 | 347 | 391 | 434 | 434   |
| 433 | 43    | 87 | 130 | 173 | 217 | 260 | 303 | 346 | 390 | 433 | 433   |
| 432 | 43    | 86 | 130 | 173 | 216 | 259 | 302 | 346 | 389 | 432 | 432   |
| 431 | 43    | 86 | 129 | 172 | 216 | 259 | 302 | 345 | 388 | 431 | 431   |
| 430 | 43    | 86 | 129 | 172 | 215 | 258 | 301 | 344 | 387 | 430 | 430   |
| 429 | 43    | 86 | 129 | 172 | 215 | 257 | 300 | 343 | 386 | 429 | 429   |
| 428 | 43    | 86 | 128 | 171 | 214 | 257 | 300 | 342 | 385 | 428 | 428   |
| 427 | 43    | 85 | 128 | 171 | 214 | 256 | 299 | 342 | 384 | 427 | 427   |
| 426 | 43    | 85 | 128 | 170 | 213 | 256 | 298 | 341 | 383 | 426 | 426   |
| 425 | 43    | 85 | 128 | 170 | 213 | 255 | 298 | 340 | 383 | 425 | 425   |
| 424 | 42    | 85 | 127 | 170 | 212 | 254 | 297 | 339 | 382 | 424 | 424   |
| 423 | 42    | 85 | 127 | 169 | 212 | 254 | 296 | 338 | 381 | 423 | 423   |
| 422 | 42    | 84 | 127 | 169 | 211 | 253 | 295 | 338 | 380 | 422 | 422   |
| 421 | 42    | 84 | 126 | 168 | 211 | 253 | 295 | 337 | 379 | 421 | 421   |
| 420 | 42    | 84 | 126 | 168 | 210 | 252 | 294 | 336 | 378 | 420 | 420   |
| 419 | 42    | 84 | 126 | 168 | 210 | 251 | 293 | 335 | 377 | 419 | 419   |
| 418 | 42    | 84 | 125 | 167 | 209 | 251 | 293 | 334 | 376 | 418 | 418   |
| 417 | 42    | 83 | 125 | 167 | 209 | 250 | 292 | 334 | 375 | 417 | 417   |
| 416 | 42    | 83 | 125 | 166 | 208 | 250 | 291 | 333 | 374 | 416 | 416   |
| 415 | 42    | 83 | 125 | 166 | 208 | 249 | 291 | 332 | 374 | 415 | 415   |
| 414 | 41    | 83 | 124 | 166 | 207 | 248 | 290 | 331 | 373 | 414 | 414   |
| 413 | 41    | 83 | 124 | 165 | 207 | 248 | 289 | 330 | 372 | 413 | 413   |
| 412 | 41    | 82 | 124 | 165 | 206 | 247 | 288 | 330 | 371 | 412 | 412   |
| 411 | 41    | 82 | 123 | 164 | 206 | 247 | 288 | 329 | 370 | 411 | 411   |
| 410 | 41    | 82 | 123 | 164 | 205 | 246 | 287 | 328 | 369 | 410 | 410   |
| 409 | 41    | 82 | 123 | 164 | 205 | 245 | 286 | 327 | 368 | 409 | 409   |
| 408 | 41    | 82 | 122 | 163 | 204 | 245 | 286 | 326 | 367 | 408 | 408   |
| 407 | 41    | 81 | 122 | 163 | 204 | 244 | 285 | 326 | 366 | 407 | 407   |
| 406 | 41    | 81 | 122 | 162 | 203 | 244 | 284 | 325 | 365 | 406 | 406   |
| 405 | 41    | 81 | 122 | 162 | 203 | 243 | 284 | 324 | 365 | 405 | 405   |
| 404 | 40    | 81 | 121 | 162 | 202 | 242 | 283 | 323 | 364 | 404 | 404   |
| 403 | 40    | 81 | 121 | 161 | 202 | 242 | 282 | 322 | 363 | 403 | 403   |
| 402 | 40    | 80 | 121 | 161 | 201 | 241 | 281 | 322 | 362 | 402 | 402   |
| 401 | 40    | 80 | 120 | 160 | 201 | 241 | 281 | 321 | 361 | 401 | 401   |
| 400 | 40    | 80 | 120 | 160 | 200 | 240 | 280 | 320 | 360 | 400 | 400   |
| 399 | 40    | 80 | 120 | 160 | 200 | 239 | 279 | 319 | 359 | 399 | 399   |
| 398 | 40    | 80 | 119 | 159 | 199 | 239 | 279 | 318 | 358 | 398 | 398   |
| 397 | 40    | 79 | 119 | 159 | 199 | 238 | 278 | 318 | 357 | 397 | 397   |
| 396 | 40    | 79 | 119 | 158 | 198 | 238 | 277 | 317 | 356 | 396 | 396   |
| 395 | 40    | 79 | 119 | 158 | 198 | 237 | 277 | 316 | 356 | 395 | 395   |
| 394 | 39    | 79 | 118 | 158 | 197 | 236 | 276 | 315 | 355 | 394 | 394   |
| 393 | 39    | 79 | 118 | 157 | 197 | 236 | 275 | 314 | 354 | 393 | 393   |
| 392 | 39    | 78 | 118 | 157 | 196 | 235 | 274 | 314 | 353 | 392 | 392   |
| 391 | 39    | 78 | 117 | 156 | 196 | 235 | 274 | 313 | 352 | 391 | 391   |
| 390 | 39    | 78 | 117 | 156 | 195 | 234 | 273 | 312 | 351 | 390 | 390   |
| 389 | 39    | 78 | 117 | 156 | 195 | 233 | 272 | 311 | 350 | 389 | 389   |
| 388 | 39    | 78 | 116 | 155 | 194 | 233 | 272 | 310 | 349 | 388 | 388   |
|     | Diff. | 1  | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |

| N.  | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 110 | 041393 | 1787  | 2182  | 2576  | 2969  | 3362  | 3755  | 4148  | 4540  | 4932  | 393   |
| 111 | 5323   | 5714  | 6105  | 6495  | 6885  | 7275  | 7664  | 8053  | 8442  | 8830  | 390   |
| 112 | 9218   | 9606  | 9993  | *0380 | *0766 | *1153 | *1538 | *1924 | *2309 | *2694 | 386   |
| 113 | 053078 | 3463  | 3846  | 4230  | 4613  | 4996  | 5378  | 5760  | 6142  | 6524  | 383   |
| 114 | 6905   | 7286  | 7666  | 8046  | 8426  | 8805  | 9185  | 9563  | 9942  | *0320 | 379   |
| 115 | 060698 | 1075  | 1452  | 1829  | 2206  | 2582  | 2958  | 3333  | 3709  | 4083  | 376   |
| 116 | 4458   | 4832  | 5206  | 5580  | 5953  | 6326  | 6699  | 7071  | 7443  | 7815  | 373   |
| 117 | 8186   | 8557  | 8928  | 9298  | 9668  | *0038 | *0407 | *0776 | *1145 | *1514 | 370   |
| 118 | 071882 | 2250  | 2617  | 2985  | 3352  | 3718  | 4085  | 4451  | 4816  | 5182  | 366   |
| 119 | 5547   | 5912  | 6276  | 6640  | 7004  | 7368  | 7731  | 8094  | 8457  | 8819  | 363   |
| 120 | 079181 | 9543  | 9904  | *0266 | *0626 | *0987 | *1347 | *1707 | *2067 | *2426 | 360   |
| 121 | 082785 | 3144  | 3503  | 3861  | 4219  | 4576  | 4934  | 5291  | 5647  | 6004  | 357   |
| 122 | 6360   | 6716  | 7071  | 7426  | 7781  | 8136  | 8490  | 8845  | 9198  | 9552  | 355   |
| 123 | 9905   | *0258 | *0611 | *0963 | *1315 | *1667 | *2018 | *2370 | *2721 | *3071 | 352   |
| 124 | 093422 | 3772  | 4122  | 4471  | 4820  | 5169  | 5518  | 5866  | 6215  | 6562  | 349   |

| N. | Diff. | 1  | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |
|----|-------|----|----|-----|-----|-----|-----|-----|-----|-----|-------|
|    | 387   | 39 | 77 | 116 | 155 | 194 | 232 | 271 | 310 | 348 | 387   |
|    | 386   | 39 | 77 | 116 | 154 | 193 | 232 | 270 | 309 | 347 | 386   |
|    | 385   | 39 | 77 | 116 | 154 | 193 | 231 | 270 | 308 | 347 | 385   |
|    | 384   | 38 | 77 | 115 | 154 | 192 | 230 | 269 | 307 | 346 | 384   |
|    | 383   | 38 | 77 | 115 | 153 | 192 | 230 | 268 | 306 | 345 | 383   |
|    | 382   | 38 | 76 | 115 | 153 | 191 | 229 | 267 | 306 | 344 | 382   |
|    | 381   | 38 | 76 | 114 | 152 | 191 | 229 | 267 | 305 | 343 | 381   |
|    | 380   | 38 | 76 | 114 | 152 | 190 | 228 | 266 | 304 | 342 | 380   |
|    | 379   | 38 | 76 | 114 | 152 | 190 | 227 | 265 | 303 | 341 | 379   |
|    | 378   | 38 | 76 | 113 | 151 | 189 | 227 | 265 | 302 | 340 | 378   |
|    | 377   | 38 | 75 | 113 | 151 | 189 | 226 | 264 | 302 | 339 | 377   |
|    | 376   | 38 | 75 | 113 | 150 | 188 | 226 | 263 | 301 | 338 | 376   |
|    | 375   | 38 | 75 | 113 | 150 | 188 | 225 | 263 | 300 | 338 | 375   |
|    | 374   | 37 | 75 | 112 | 150 | 187 | 224 | 262 | 299 | 337 | 374   |
|    | 373   | 37 | 75 | 112 | 149 | 187 | 224 | 261 | 298 | 336 | 373   |
|    | 372   | 37 | 74 | 112 | 149 | 186 | 223 | 260 | 298 | 335 | 372   |
|    | 371   | 37 | 74 | 111 | 148 | 186 | 223 | 260 | 297 | 334 | 371   |
|    | 370   | 37 | 74 | 111 | 148 | 185 | 222 | 259 | 296 | 333 | 370   |
|    | 369   | 37 | 74 | 111 | 148 | 185 | 221 | 258 | 295 | 332 | 369   |
|    | 368   | 37 | 74 | 110 | 147 | 184 | 221 | 258 | 294 | 331 | 368   |
|    | 367   | 37 | 73 | 110 | 147 | 184 | 220 | 257 | 294 | 330 | 367   |
|    | 366   | 37 | 73 | 110 | 146 | 183 | 220 | 256 | 293 | 329 | 366   |
|    | 365   | 37 | 73 | 110 | 146 | 183 | 219 | 256 | 292 | 329 | 365   |
|    | 364   | 36 | 73 | 109 | 146 | 182 | 218 | 255 | 291 | 328 | 364   |
|    | 363   | 36 | 73 | 109 | 145 | 182 | 218 | 254 | 290 | 327 | 363   |
|    | 362   | 36 | 72 | 109 | 145 | 181 | 217 | 253 | 290 | 326 | 362   |
|    | 361   | 36 | 72 | 108 | 144 | 181 | 217 | 253 | 289 | 325 | 361   |
|    | 360   | 36 | 72 | 108 | 144 | 180 | 216 | 252 | 288 | 324 | 360   |
|    | 359   | 36 | 72 | 108 | 144 | 180 | 215 | 251 | 287 | 323 | 359   |
|    | 358   | 36 | 72 | 107 | 143 | 179 | 215 | 251 | 286 | 322 | 358   |
|    | 357   | 36 | 71 | 107 | 143 | 179 | 214 | 250 | 286 | 321 | 357   |
|    | 356   | 36 | 71 | 107 | 142 | 178 | 214 | 249 | 285 | 320 | 356   |
|    | 355   | 36 | 71 | 107 | 142 | 178 | 213 | 249 | 284 | 320 | 355   |
|    | 354   | 35 | 71 | 106 | 142 | 177 | 212 | 248 | 283 | 319 | 354   |
|    | 353   | 35 | 71 | 106 | 141 | 177 | 212 | 247 | 282 | 318 | 353   |
|    | 352   | 35 | 70 | 106 | 141 | 176 | 211 | 246 | 282 | 317 | 352   |
|    | 351   | 35 | 70 | 105 | 140 | 176 | 211 | 246 | 281 | 316 | 351   |
|    | 350   | 35 | 70 | 105 | 140 | 175 | 210 | 245 | 280 | 315 | 350   |
|    | 349   | 35 | 70 | 105 | 140 | 175 | 209 | 244 | 279 | 314 | 349   |
|    | 348   | 35 | 70 | 104 | 139 | 174 | 209 | 244 | 278 | 313 | 348   |
|    | 347   | 35 | 69 | 104 | 139 | 174 | 208 | 243 | 278 | 312 | 347   |
|    | Diff. | 1  | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |

差率

| N.  | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 125 | 096910 | 7257  | 7604  | 7951  | 8298  | 8644  | 8990  | 9335  | 9681  | *0026 | 346   |
| 126 | 100371 | 0715  | 1059  | 1403  | 1747  | 2091  | 2434  | 2777  | 3119  | 3462  | 343   |
| 127 | 3804   | 4146  | 4487  | 4828  | 5169  | 5510  | 5851  | 6191  | 6531  | 6871  | 341   |
| 128 | 7210   | 7549  | 7888  | 8227  | 8565  | 8903  | 9241  | 9579  | 9916  | *0253 | 338   |
| 129 | 110590 | 0926  | 1263  | 1599  | 1934  | 2270  | 2605  | 2940  | 3275  | 3609  | 335   |
| 130 | 113943 | 4277  | 4611  | 4944  | 5278  | 5611  | 5943  | 6276  | 6608  | 6940  | 333   |
| 131 | 7271   | 7603  | 7934  | 8265  | 8595  | 8926  | 9256  | 9586  | 9915  | *0245 | 330   |
| 132 | 120574 | 0903  | 1231  | 1560  | 1888  | 2216  | 2544  | 2871  | 3198  | 3525  | 328   |
| 133 | 3852   | 4178  | 4504  | 4830  | 5156  | 5481  | 5806  | 6131  | 6456  | 6781  | 325   |
| 134 | 7105   | 7429  | 7753  | 8076  | 8399  | 8722  | 9045  | 9368  | 9690  | *0012 | 323   |
| 135 | 130334 | 0655  | 0977  | 1298  | 1619  | 1939  | 2260  | 2580  | 2900  | 3219  | 321   |
| 136 | 3539   | 3858  | 4177  | 4496  | 4814  | 5133  | 5451  | 5769  | 6086  | 6403  | 318   |
| 137 | 6721   | 7037  | 7354  | 7671  | 7987  | 8303  | 8618  | 8934  | 9249  | 9564  | 316   |
| 138 | 9879   | *0194 | *0508 | *0822 | *1136 | *1450 | *1763 | *2076 | *2389 | *2702 | 314   |
| 139 | 143015 | 3327  | 3639  | 3951  | 4263  | 4574  | 4885  | 5196  | 5507  | 5818  | 311   |

| N. | Diff. | 1  | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |
|----|-------|----|----|-----|-----|-----|-----|-----|-----|-----|-------|
|    | 347   | 35 | 69 | 104 | 139 | 174 | 208 | 243 | 278 | 312 | 347   |
|    | 346   | 35 | 69 | 104 | 138 | 173 | 207 | 242 | 277 | 311 | 346   |
|    | 345   | 35 | 69 | 104 | 138 | 173 | 207 | 242 | 276 | 311 | 345   |
|    | 344   | 34 | 69 | 103 | 138 | 172 | 206 | 241 | 275 | 310 | 344   |
|    | 343   | 34 | 69 | 103 | 137 | 172 | 206 | 240 | 274 | 309 | 343   |
|    | 342   | 34 | 68 | 103 | 137 | 171 | 205 | 239 | 274 | 308 | 342   |
|    | 341   | 34 | 68 | 102 | 136 | 171 | 205 | 239 | 273 | 307 | 341   |
|    | 340   | 34 | 68 | 102 | 136 | 170 | 204 | 238 | 272 | 306 | 340   |
|    | 339   | 34 | 68 | 102 | 136 | 170 | 203 | 237 | 271 | 305 | 339   |
|    | 338   | 34 | 68 | 101 | 135 | 169 | 203 | 237 | 270 | 304 | 338   |
|    | 337   | 34 | 67 | 101 | 135 | 169 | 202 | 236 | 270 | 303 | 337   |
|    | 336   | 34 | 67 | 101 | 134 | 168 | 202 | 235 | 269 | 302 | 336   |
|    | 335   | 34 | 67 | 101 | 134 | 168 | 201 | 235 | 268 | 302 | 335   |
|    | 334   | 33 | 67 | 100 | 134 | 167 | 200 | 234 | 267 | 301 | 334   |
|    | 333   | 33 | 67 | 100 | 133 | 167 | 200 | 233 | 266 | 300 | 333   |
|    | 332   | 33 | 66 | 100 | 133 | 166 | 199 | 232 | 266 | 299 | 332   |
|    | 331   | 33 | 66 | 99  | 132 | 166 | 199 | 232 | 265 | 298 | 331   |
|    | 330   | 33 | 66 | 99  | 132 | 165 | 198 | 231 | 264 | 297 | 330   |
|    | 329   | 33 | 66 | 99  | 132 | 165 | 197 | 230 | 263 | 296 | 329   |
|    | 328   | 33 | 66 | 98  | 131 | 164 | 197 | 230 | 262 | 295 | 328   |
|    | 327   | 33 | 65 | 98  | 131 | 164 | 196 | 229 | 262 | 294 | 327   |
|    | 326   | 33 | 65 | 98  | 130 | 163 | 196 | 228 | 261 | 293 | 326   |
|    | 325   | 33 | 65 | 98  | 130 | 163 | 195 | 228 | 260 | 293 | 325   |
|    | 324   | 32 | 65 | 97  | 130 | 162 | 194 | 227 | 259 | 292 | 324   |
|    | 323   | 32 | 65 | 97  | 129 | 162 | 194 | 226 | 258 | 291 | 323   |
|    | 322   | 32 | 64 | 97  | 129 | 161 | 193 | 225 | 258 | 290 | 322   |
|    | 321   | 32 | 64 | 96  | 128 | 161 | 193 | 225 | 257 | 289 | 321   |
|    | 320   | 32 | 64 | 96  | 128 | 160 | 192 | 224 | 256 | 288 | 320   |
|    | 319   | 32 | 64 | 96  | 128 | 160 | 191 | 223 | 255 | 287 | 319   |
|    | 318   | 32 | 64 | 95  | 127 | 159 | 191 | 223 | 254 | 286 | 318   |
|    | 317   | 32 | 63 | 95  | 127 | 159 | 190 | 222 | 254 | 285 | 317   |
|    | 316   | 32 | 63 | 95  | 126 | 158 | 190 | 221 | 253 | 284 | 316   |
|    | 315   | 32 | 63 | 95  | 126 | 158 | 189 | 221 | 252 | 284 | 315   |
|    | 314   | 31 | 63 | 94  | 126 | 157 | 188 | 220 | 251 | 283 | 314   |
|    | 313   | 31 | 63 | 94  | 125 | 157 | 188 | 219 | 250 | 282 | 313   |
|    | 312   | 31 | 62 | 94  | 125 | 156 | 187 | 218 | 250 | 281 | 312   |
|    | 311   | 31 | 62 | 93  | 124 | 156 | 187 | 218 | 249 | 280 | 311   |
|    | 310   | 31 | 62 | 93  | 124 | 155 | 186 | 217 | 248 | 279 | 310   |
|    | 309   | 31 | 62 | 93  | 124 | 155 | 185 | 216 | 247 | 278 | 309   |
|    | 308   | 31 | 62 | 92  | 123 | 154 | 185 | 216 | 246 | 277 | 308   |
|    | 307   | 31 | 61 | 92  | 123 | 154 | 184 | 215 | 246 | 276 | 307   |
|    | Diff. | 1  | 2  | 3   | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |

| N.  | 0      | 1    | 2    | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 140 | 146128 | 6438 | 6748 | 7058  | 7367  | 7676  | 7985  | 8294  | 8603  | 8911  | 309   |
| 141 | 9219   | 9527 | 9835 | *0142 | *0449 | *0756 | *1063 | *1370 | *1676 | *1982 | 307   |
| 142 | 152288 | 2594 | 2900 | 3205  | 3510  | 3815  | 4120  | 4424  | 4728  | 5032  | 305   |
| 143 | 5336   | 5640 | 5943 | 6246  | 6549  | 6852  | 7154  | 7457  | 7759  | 8061  | 303   |
| 144 | 8362   | 8664 | 8965 | 9266  | 9567  | 9868  | *0168 | *0469 | *0769 | *1068 | 301   |
| 145 | 161368 | 1667 | 1967 | 2266  | 2564  | 2863  | 3161  | 3460  | 3758  | 4055  | 299   |
| 146 | 4353   | 4650 | 4947 | 5244  | 5541  | 5838  | 6134  | 6430  | 6726  | 7022  | 297   |
| 147 | 7317   | 7613 | 7908 | 8203  | 8497  | 8792  | 9086  | 9380  | 9674  | 9968  | 295   |
| 148 | 170262 | 0555 | 0848 | 1141  | 1434  | 1726  | 2019  | 2311  | 2603  | 2895  | 293   |
| 149 | 3186   | 3478 | 3769 | 4060  | 4351  | 4641  | 4932  | 5222  | 5512  | 5802  | 291   |
| 150 | 176091 | 6381 | 6670 | 6959  | 7248  | 7536  | 7825  | 8113  | 8401  | 8689  | 289   |
| 151 | 8977   | 9264 | 9552 | 9839  | *0126 | *0413 | *0699 | *0986 | *1272 | *1558 | 287   |
| 152 | 181844 | 2129 | 2415 | 2700  | 2985  | 3270  | 3555  | 3839  | 4123  | 4407  | 285   |
| 153 | 4691   | 4975 | 5259 | 5542  | 5825  | 6108  | 6391  | 6674  | 6956  | 7239  | 283   |
| 154 | 7521   | 7803 | 8084 | 8366  | 8647  | 8928  | 9209  | 9490  | 9771  | *0051 | 281   |
| 155 | 190332 | 0612 | 0892 | 1171  | 1451  | 1730  | 2010  | 2289  | 2567  | 2846  | 279   |
| 156 | 3125   | 3403 | 3681 | 3959  | 4237  | 4514  | 4792  | 5069  | 5346  | 5623  | 278   |
| 157 | 5900   | 6176 | 6453 | 6729  | 7005  | 7281  | 7556  | 7832  | 8107  | 8382  | 276   |
| 158 | 8657   | 8932 | 9206 | 9481  | 9755  | *0029 | *0303 | *0577 | *0850 | *1124 | 274   |
| 159 | 201397 | 1670 | 1943 | 2216  | 2488  | 2761  | 3033  | 3305  | 3577  | 3848  | 272   |

| N. | Diff. | 1  | 2  | 3  | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |
|----|-------|----|----|----|-----|-----|-----|-----|-----|-----|-------|
|    | 306   | 31 | 61 | 92 | 122 | 153 | 184 | 214 | 245 | 275 | 306   |
|    | 305   | 31 | 61 | 92 | 122 | 153 | 183 | 214 | 244 | 275 | 305   |
|    | 304   | 30 | 61 | 91 | 122 | 152 | 182 | 213 | 243 | 274 | 304   |
|    | 303   | 30 | 61 | 91 | 121 | 152 | 182 | 212 | 242 | 273 | 303   |
|    | 302   | 30 | 60 | 91 | 121 | 151 | 181 | 211 | 242 | 272 | 302   |
|    | 301   | 30 | 60 | 90 | 120 | 151 | 181 | 211 | 241 | 271 | 301   |
|    | 300   | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300   |
|    | 299   | 30 | 60 | 90 | 120 | 150 | 179 | 209 | 239 | 269 | 299   |
|    | 298   | 30 | 60 | 89 | 119 | 149 | 179 | 209 | 238 | 268 | 298   |
|    | 297   | 30 | 59 | 89 | 119 | 149 | 178 | 208 | 238 | 267 | 297   |
|    | 296   | 30 | 59 | 89 | 118 | 148 | 178 | 207 | 237 | 266 | 296   |
|    | 295   | 30 | 59 | 89 | 118 | 148 | 177 | 207 | 236 | 266 | 295   |
|    | 294   | 29 | 59 | 88 | 118 | 147 | 176 | 206 | 235 | 265 | 294   |
|    | 293   | 29 | 59 | 88 | 117 | 147 | 176 | 205 | 234 | 264 | 293   |
|    | 292   | 29 | 58 | 88 | 117 | 146 | 175 | 204 | 234 | 263 | 292   |
|    | 291   | 29 | 58 | 87 | 116 | 146 | 175 | 204 | 233 | 262 | 291   |
|    | 290   | 29 | 58 | 87 | 116 | 145 | 174 | 203 | 232 | 261 | 290   |
|    | 289   | 29 | 58 | 87 | 116 | 145 | 173 | 202 | 231 | 260 | 289   |
|    | 288   | 29 | 58 | 86 | 115 | 144 | 173 | 202 | 230 | 259 | 288   |
|    | 287   | 29 | 57 | 86 | 115 | 144 | 172 | 201 | 230 | 258 | 287   |
|    | 286   | 29 | 57 | 86 | 114 | 143 | 172 | 200 | 229 | 257 | 286   |
|    | 285   | 29 | 57 | 86 | 114 | 143 | 171 | 200 | 228 | 257 | 285   |
|    | 284   | 28 | 57 | 85 | 114 | 142 | 170 | 199 | 227 | 256 | 284   |
|    | 283   | 28 | 57 | 85 | 113 | 142 | 170 | 198 | 226 | 255 | 283   |
|    | 282   | 28 | 56 | 85 | 113 | 141 | 169 | 197 | 226 | 254 | 282   |
|    | 281   | 28 | 56 | 84 | 112 | 141 | 169 | 197 | 225 | 253 | 281   |
|    | 280   | 28 | 56 | 84 | 112 | 140 | 168 | 196 | 224 | 252 | 280   |
|    | 279   | 28 | 56 | 84 | 112 | 140 | 167 | 195 | 223 | 251 | 279   |
|    | 278   | 28 | 56 | 83 | 111 | 139 | 167 | 195 | 222 | 250 | 278   |
|    | 277   | 28 | 55 | 83 | 111 | 139 | 166 | 194 | 222 | 249 | 277   |
|    | 276   | 28 | 55 | 83 | 110 | 138 | 166 | 193 | 221 | 248 | 276   |
|    | 275   | 28 | 55 | 83 | 110 | 138 | 165 | 193 | 220 | 248 | 275   |
|    | 274   | 27 | 55 | 82 | 110 | 137 | 164 | 192 | 219 | 247 | 274   |
|    | 273   | 27 | 55 | 82 | 109 | 137 | 164 | 191 | 218 | 246 | 273   |
|    | 272   | 27 | 54 | 82 | 109 | 136 | 163 | 190 | 218 | 245 | 272   |
|    | 271   | 27 | 54 | 81 | 108 | 136 | 163 | 190 | 217 | 244 | 271   |
|    | Diff. | 1  | 2  | 3  | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |

| N.  | 0      | 1    | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 160 | 204120 | 4391 | 4663  | 4934  | 5204  | 5475  | 5746  | 6016  | 6286  | 6556  | 271   |
| 161 | 6826   | 7096 | 7365  | 7634  | 7904  | 8173  | 8441  | 8710  | 8979  | 9247  | 269   |
| 162 | 9515   | 9783 | *0051 | *0319 | *0586 | *0853 | *1121 | *1388 | *1654 | *1921 | 267   |
| 163 | 212188 | 2454 | 2720  | 2986  | 3252  | 3518  | 3783  | 4049  | 4314  | 4579  | 266   |
| 164 | 4844   | 5109 | 5373  | 5638  | 5902  | 6166  | 6430  | 6694  | 6957  | 7221  | 264   |
| 165 | 217484 | 7747 | 8010  | 8273  | 8536  | 8798  | 9060  | 9323  | 9585  | 9846  | 262   |
| 166 | 220108 | 0370 | 0631  | 0892  | 1153  | 1414  | 1675  | 1936  | 2196  | 2456  | 261   |
| 167 | 2716   | 2976 | 3236  | 3496  | 3755  | 4015  | 4274  | 4533  | 4792  | 5051  | 259   |
| 168 | 5309   | 5568 | 5826  | 6084  | 6342  | 6600  | 6858  | 7115  | 7372  | 7630  | 258   |
| 169 | 7887   | 8144 | 8400  | 8657  | 8913  | 9170  | 9426  | 9682  | 9938  | *0193 | 256   |
| 170 | 230449 | 0704 | 0960  | 1215  | 1470  | 1724  | 1979  | 2234  | 2488  | 2742  | 255   |
| 171 | 2996   | 3250 | 3504  | 3757  | 4011  | 4264  | 4517  | 4770  | 5023  | 5276  | 253   |
| 172 | 5528   | 5781 | 6033  | 6285  | 6537  | 6789  | 7041  | 7292  | 7544  | 7795  | 252   |
| 173 | 8046   | 8297 | 8548  | 8799  | 9049  | 9299  | 9550  | 9800  | *0050 | *0300 | 250   |
| 174 | 240549 | 0799 | 1048  | 1297  | 1546  | 1795  | 2044  | 2293  | 2541  | 2790  | 249   |
| 175 | 243038 | 3286 | 3534  | 3782  | 4030  | 4277  | 4525  | 4772  | 5019  | 5266  | 248   |
| 176 | 5513   | 5759 | 6006  | 6252  | 6499  | 6745  | 6991  | 7237  | 7482  | 7728  | 246   |
| 177 | 7973   | 8219 | 8464  | 8709  | 8954  | 9198  | 9443  | 9687  | 9932  | *0176 | 245   |
| 178 | 280420 | 0664 | 0908  | 1151  | 1395  | 1638  | 1881  | 2125  | 2368  | 2610  | 243   |
| 179 | 2853   | 3096 | 3338  | 3580  | 3822  | 4064  | 4306  | 4548  | 4790  | 5031  | 242   |

| N. | Diff. | 1  | 2  | 3  | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |
|----|-------|----|----|----|-----|-----|-----|-----|-----|-----|-------|
|    | 272   | 27 | 54 | 82 | 109 | 136 | 163 | 190 | 218 | 245 | 272   |
|    | 271   | 27 | 54 | 81 | 108 | 136 | 163 | 190 | 217 | 244 | 271   |
|    | 270   | 27 | 54 | 81 | 108 | 135 | 162 | 189 | 216 | 243 | 270   |
|    | 269   | 27 | 54 | 81 | 108 | 135 | 161 | 188 | 215 | 242 | 269   |
|    | 268   | 27 | 54 | 80 | 107 | 134 | 161 | 188 | 214 | 241 | 268   |
|    | 267   | 27 | 53 | 80 | 107 | 134 | 160 | 187 | 214 | 240 | 267   |
|    | 266   | 27 | 53 | 80 | 106 | 133 | 160 | 186 | 213 | 239 | 266   |
|    | 265   | 27 | 53 | 80 | 106 | 133 | 159 | 186 | 212 | 239 | 265   |
|    | 264   | 26 | 53 | 79 | 106 | 132 | 158 | 185 | 211 | 238 | 264   |
|    | 263   | 26 | 53 | 79 | 105 | 132 | 158 | 184 | 210 | 237 | 263   |
|    | 262   | 26 | 52 | 79 | 105 | 131 | 157 | 183 | 210 | 236 | 262   |
|    | 261   | 26 | 52 | 78 | 104 | 131 | 157 | 183 | 209 | 235 | 261   |
|    | 260   | 26 | 52 | 78 | 104 | 130 | 156 | 182 | 208 | 234 | 260   |
|    | 259   | 26 | 52 | 78 | 104 | 130 | 155 | 181 | 207 | 233 | 259   |
|    | 258   | 26 | 52 | 77 | 103 | 129 | 155 | 181 | 206 | 232 | 258   |
|    | 257   | 26 | 51 | 77 | 103 | 129 | 154 | 180 | 206 | 231 | 257   |
|    | 256   | 26 | 51 | 77 | 102 | 128 | 154 | 179 | 205 | 230 | 256   |
|    | 255   | 26 | 51 | 77 | 102 | 128 | 153 | 179 | 204 | 230 | 255   |
|    | 254   | 25 | 51 | 76 | 102 | 127 | 152 | 178 | 203 | 229 | 254   |
|    | 253   | 25 | 51 | 76 | 101 | 127 | 152 | 177 | 202 | 228 | 253   |
|    | 252   | 25 | 50 | 76 | 101 | 126 | 151 | 176 | 202 | 227 | 252   |
|    | 251   | 25 | 50 | 75 | 100 | 126 | 151 | 176 | 201 | 226 | 251   |
|    | 250   | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250   |
|    | 249   | 25 | 50 | 75 | 100 | 125 | 149 | 174 | 199 | 224 | 249   |
|    | 248   | 25 | 50 | 74 | 99  | 124 | 149 | 174 | 198 | 223 | 248   |
|    | 247   | 25 | 49 | 74 | 99  | 124 | 148 | 173 | 198 | 222 | 247   |
|    | 246   | 25 | 49 | 74 | 98  | 123 | 148 | 172 | 197 | 221 | 246   |
|    | 245   | 25 | 49 | 74 | 98  | 123 | 147 | 172 | 196 | 221 | 245   |
|    | 244   | 24 | 49 | 73 | 98  | 122 | 146 | 171 | 195 | 220 | 244   |
|    | 243   | 24 | 49 | 73 | 97  | 122 | 146 | 170 | 194 | 219 | 243   |
|    | 242   | 24 | 48 | 73 | 97  | 121 | 145 | 169 | 194 | 218 | 242   |
|    | 241   | 24 | 48 | 72 | 96  | 121 | 145 | 169 | 193 | 217 | 241   |
|    | 240   | 24 | 48 | 72 | 96  | 120 | 144 | 168 | 192 | 216 | 240   |
|    | Diff. | 1  | 2  | 3  | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |

差率

| N.  | 0      | 1    | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 180 | 255273 | 5514 | 5755  | 5996  | 6237  | 6477  | 6718  | 6958  | 7198  | 7439  | 241   |
| 181 | 7679   | 7918 | 8158  | 8398  | 8637  | 8877  | 9116  | 9355  | 9594  | 9833  | 239   |
| 182 | 260071 | 0310 | 0548  | 0787  | 1025  | 1263  | 1501  | 1739  | 1976  | 2214  | 238   |
| 183 | 2451   | 2688 | 2925  | 3162  | 3399  | 3636  | 3873  | 4109  | 4346  | 4582  | 237   |
| 184 | 4818   | 5054 | 5290  | 5525  | 5761  | 5996  | 6232  | 6467  | 6702  | 6937  | 235   |
| 185 | 267172 | 7406 | 7641  | 7875  | 8110  | 8344  | 8578  | 8812  | 9046  | 9279  | 234   |
| 186 | 9513   | 9746 | 9980  | *0213 | *0446 | *0679 | *0912 | *1144 | *1377 | *1609 | 233   |
| 187 | 271842 | 2074 | 2306  | 2538  | 2770  | 3001  | 3233  | 3464  | 3696  | 3927  | 232   |
| 188 | 4158   | 4389 | 4620  | 4850  | 5081  | 5311  | 5542  | 5772  | 6002  | 6232  | 230   |
| 189 | 6462   | 6692 | 6921  | 7151  | 7380  | 7609  | 7838  | 8067  | 8296  | 8525  | 229   |
| 190 | 278754 | 8982 | 9211  | 9439  | 9667  | 9895  | *0123 | *0351 | *0578 | *0806 | 228   |
| 191 | 281033 | 1261 | 1488  | 1715  | 1942  | 2169  | 2396  | 2622  | 2849  | 3075  | 227   |
| 192 | 3301   | 3527 | 3753  | 3979  | 4205  | 4431  | 4656  | 4882  | 5107  | 5332  | 226   |
| 193 | 5557   | 5782 | 6007  | 6232  | 6456  | 6681  | 6905  | 7130  | 7354  | 7578  | 225   |
| 194 | 7802   | 8026 | 8249  | 8473  | 8696  | 8920  | 9143  | 9366  | 9589  | 9812  | 223   |
| 195 | 290035 | 0257 | 0480  | 0702  | 0925  | 1147  | 1369  | 1591  | 1813  | 2034  | 222   |
| 196 | 2256   | 2478 | 2699  | 2920  | 3141  | 3363  | 3584  | 3804  | 4025  | 4246  | 221   |
| 197 | 4466   | 4687 | 4907  | 5127  | 5347  | 5567  | 5787  | 6007  | 6226  | 6446  | 220   |
| 198 | 6665   | 6884 | 7104  | 7323  | 7542  | 7761  | 7979  | 8198  | 8416  | 8635  | 219   |
| 199 | 8853   | 9071 | 9289  | 9507  | 9725  | 9943  | *0161 | *0378 | *0595 | *0813 | 218   |
| 200 | 301030 | 1247 | 1464  | 1681  | 1898  | 2114  | 2331  | 2547  | 2764  | 2980  | 217   |
| 201 | 3196   | 3412 | 3628  | 3844  | 4059  | 4275  | 4491  | 4706  | 4921  | 5136  | 216   |
| 202 | 5351   | 5566 | 5781  | 5996  | 6211  | 6425  | 6639  | 6854  | 7068  | 7282  | 215   |
| 203 | 7496   | 7710 | 7924  | 8137  | 8351  | 8564  | 8778  | 8991  | 9204  | 9417  | 213   |
| 204 | 9630   | 9843 | *0056 | *0268 | *0481 | *0693 | *0906 | *1118 | *1330 | *1542 | 212   |

| N.    | Diff. | 1  | 2  | 3  | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |
|-------|-------|----|----|----|-----|-----|-----|-----|-----|-----|-------|
| 219   | 24    | 48 | 72 | 96 | 120 | 143 | 167 | 191 | 215 | 239 | 239   |
| 218   | 24    | 48 | 71 | 95 | 119 | 143 | 167 | 190 | 214 | 238 | 238   |
| 217   | 24    | 47 | 71 | 95 | 119 | 142 | 166 | 190 | 213 | 237 | 237   |
| 216   | 24    | 47 | 71 | 94 | 118 | 142 | 165 | 189 | 212 | 236 | 236   |
| 215   | 24    | 47 | 71 | 94 | 118 | 141 | 165 | 188 | 212 | 235 | 235   |
| 214   | 23    | 47 | 70 | 94 | 117 | 140 | 164 | 187 | 211 | 234 | 234   |
| 213   | 23    | 47 | 70 | 93 | 117 | 140 | 163 | 186 | 210 | 233 | 233   |
| 212   | 23    | 46 | 70 | 93 | 116 | 139 | 162 | 186 | 209 | 232 | 232   |
| 211   | 23    | 46 | 69 | 92 | 116 | 139 | 162 | 185 | 208 | 231 | 231   |
| 210   | 23    | 46 | 69 | 92 | 115 | 138 | 161 | 184 | 207 | 230 | 230   |
| 209   | 23    | 46 | 69 | 92 | 115 | 137 | 160 | 183 | 206 | 229 | 229   |
| 208   | 23    | 46 | 68 | 91 | 114 | 137 | 160 | 182 | 205 | 228 | 228   |
| 207   | 23    | 45 | 68 | 91 | 114 | 136 | 159 | 182 | 204 | 227 | 227   |
| 206   | 23    | 45 | 68 | 90 | 113 | 136 | 158 | 181 | 203 | 226 | 226   |
| 205   | 23    | 45 | 68 | 90 | 113 | 135 | 158 | 180 | 203 | 225 | 225   |
| 204   | 22    | 45 | 67 | 90 | 112 | 134 | 157 | 179 | 202 | 224 | 224   |
| 203   | 22    | 45 | 67 | 89 | 112 | 134 | 156 | 178 | 201 | 223 | 223   |
| 202   | 22    | 44 | 67 | 89 | 111 | 133 | 155 | 178 | 200 | 222 | 222   |
| 201   | 22    | 44 | 66 | 88 | 111 | 133 | 155 | 177 | 199 | 221 | 221   |
| 200   | 22    | 44 | 66 | 88 | 110 | 132 | 154 | 176 | 198 | 220 | 220   |
| 199   | 22    | 44 | 66 | 88 | 110 | 131 | 153 | 175 | 197 | 219 | 219   |
| 198   | 22    | 44 | 65 | 87 | 109 | 131 | 153 | 174 | 196 | 218 | 218   |
| 197   | 22    | 43 | 65 | 87 | 109 | 130 | 152 | 174 | 195 | 217 | 217   |
| 196   | 22    | 43 | 65 | 86 | 108 | 130 | 151 | 173 | 194 | 216 | 216   |
| 195   | 22    | 43 | 65 | 86 | 108 | 129 | 151 | 172 | 194 | 215 | 215   |
| 194   | 21    | 43 | 64 | 86 | 107 | 128 | 150 | 171 | 193 | 214 | 214   |
| 193   | 21    | 43 | 64 | 85 | 107 | 128 | 149 | 170 | 192 | 213 | 213   |
| 192   | 21    | 42 | 64 | 85 | 106 | 127 | 148 | 170 | 191 | 212 | 212   |
| Diff. |       | 1  | 2  | 3  | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |



| N.  | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 205 | 311754 | 1966  | 2177  | 2389  | 2600  | 2812  | 3023  | 3234  | 3445  | 3656  | 211   |
| 206 | 3867   | 4078  | 4289  | 4499  | 4710  | 4920  | 5130  | 5340  | 5551  | 5760  | 210   |
| 207 | 5970   | 6180  | 6390  | 6599  | 6809  | 7018  | 7227  | 7436  | 7646  | 7854  | 209   |
| 208 | 8063   | 8272  | 8481  | 8689  | 8898  | 9106  | 9314  | 9522  | 9730  | 9938  | 208   |
| 209 | 320146 | 0354  | 0562  | 0769  | 0977  | 1184  | 1391  | 1598  | 1805  | 2012  | 207   |
| 210 | 322219 | 2426  | 2633  | 2839  | 3046  | 3252  | 3458  | 3665  | 3871  | 4077  | 206   |
| 211 | 4282   | 4488  | 4694  | 4899  | 5105  | 5310  | 5516  | 5721  | 5926  | 6131  | 205   |
| 212 | 6336   | 6541  | 6745  | 6950  | 7155  | 7359  | 7563  | 7767  | 7972  | 8176  | 204   |
| 213 | 8380   | 8583  | 8787  | 8991  | 9194  | 9398  | 9601  | 9805  | *0008 | *0211 | 203   |
| 214 | 330414 | 0617  | 0819  | 1022  | 1225  | 1427  | 1630  | 1832  | 2034  | 2236  | 202   |
| 215 | 332438 | 2640  | 2842  | 3044  | 3246  | 3447  | 3649  | 3850  | 4051  | 4253  | 202   |
| 216 | 4454   | 4655  | 4856  | 5057  | 5257  | 5458  | 5658  | 5859  | 6059  | 6260  | 201   |
| 217 | 6490   | 6690  | 6890  | 7090  | 7290  | 7489  | 7689  | 7888  | 8088  | 8287  | 200   |
| 218 | 8456   | 8656  | 8855  | 9054  | 9253  | 9451  | 9650  | 9849  | *0047 | *0246 | 199   |
| 219 | 340444 | 0642  | 0841  | 1039  | 1237  | 1435  | 1632  | 1830  | 2028  | 2225  | 198   |
| 220 | 342423 | 2620  | 2817  | 3014  | 3212  | 3409  | 3606  | 3802  | 3999  | 4196  | 197   |
| 221 | 4392   | 4589  | 4785  | 4981  | 5178  | 5374  | 5570  | 5766  | 5962  | 6157  | 196   |
| 222 | 6353   | 6549  | 6744  | 6939  | 7135  | 7330  | 7525  | 7720  | 7915  | 8110  | 195   |
| 223 | 8305   | 8500  | 8694  | 8889  | 9083  | 9278  | 9472  | 9666  | 9860  | *0054 | 194   |
| 224 | 350248 | 0442  | 0636  | 0829  | 1023  | 1216  | 1410  | 1603  | 1796  | 1989  | 193   |
| 225 | 352183 | 2375  | 2568  | 2761  | 2954  | 3147  | 3339  | 3532  | 3724  | 3916  | 193   |
| 226 | 4108   | 4301  | 4493  | 4685  | 4876  | 5068  | 5260  | 5452  | 5643  | 5834  | 192   |
| 227 | 6026   | 6217  | 6408  | 6599  | 6790  | 6981  | 7172  | 7363  | 7554  | 7744  | 191   |
| 228 | 7935   | 8125  | 8316  | 8506  | 8696  | 8886  | 9076  | 9266  | 9456  | 9646  | 190   |
| 229 | 9835   | *0025 | *0215 | *0404 | *0593 | *0783 | *0972 | *1161 | *1350 | *1539 | 189   |
| 230 | 361728 | 1917  | 2105  | 2294  | 2482  | 2671  | 2859  | 3048  | 3236  | 3424  | 188   |
| 231 | 3612   | 3800  | 3988  | 4176  | 4363  | 4551  | 4739  | 4926  | 5113  | 5301  | 188   |
| 232 | 5488   | 5675  | 5862  | 6049  | 6236  | 6423  | 6610  | 6796  | 6983  | 7169  | 187   |
| 233 | 7356   | 7542  | 7729  | 7915  | 8101  | 8287  | 8473  | 8659  | 8845  | 9030  | 186   |
| 234 | 9216   | 9401  | 9587  | 9772  | 9958  | *0143 | *0328 | *0513 | *0698 | *0883 | 185   |

| N.    | Diff. | 1  | 2  | 3  | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |
|-------|-------|----|----|----|-----|-----|-----|-----|-----|-----|-------|
| 212   | 21    | 42 | 64 | 85 | 106 | 127 | 148 | 170 | 191 | 212 | 212   |
| 211   | 21    | 42 | 63 | 84 | 106 | 127 | 148 | 169 | 190 | 211 | 211   |
| 210   | 21    | 42 | 63 | 84 | 105 | 126 | 147 | 168 | 189 | 210 | 210   |
| 209   | 21    | 42 | 63 | 84 | 105 | 125 | 146 | 167 | 188 | 209 | 209   |
| 208   | 21    | 42 | 62 | 83 | 104 | 125 | 146 | 166 | 187 | 208 | 208   |
| 207   | 21    | 41 | 62 | 83 | 104 | 124 | 145 | 166 | 186 | 207 | 207   |
| 206   | 21    | 41 | 62 | 82 | 103 | 124 | 144 | 165 | 185 | 206 | 206   |
| 205   | 21    | 41 | 62 | 82 | 103 | 123 | 144 | 164 | 185 | 205 | 205   |
| 204   | 20    | 41 | 61 | 82 | 102 | 122 | 143 | 163 | 184 | 204 | 204   |
| 203   | 20    | 41 | 61 | 81 | 102 | 122 | 142 | 162 | 183 | 203 | 203   |
| 202   | 20    | 40 | 61 | 81 | 101 | 121 | 141 | 162 | 182 | 202 | 202   |
| 201   | 20    | 40 | 60 | 80 | 101 | 121 | 141 | 161 | 181 | 201 | 201   |
| 200   | 20    | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 200   |
| 199   | 20    | 40 | 60 | 80 | 100 | 119 | 139 | 159 | 179 | 199 | 199   |
| 198   | 20    | 40 | 59 | 79 | 99  | 119 | 139 | 158 | 178 | 198 | 198   |
| 197   | 20    | 39 | 59 | 79 | 99  | 118 | 138 | 158 | 177 | 197 | 197   |
| 196   | 20    | 39 | 59 | 78 | 98  | 118 | 137 | 157 | 176 | 196 | 196   |
| 195   | 20    | 39 | 59 | 78 | 98  | 117 | 137 | 156 | 176 | 195 | 195   |
| 194   | 19    | 39 | 58 | 78 | 97  | 116 | 136 | 155 | 175 | 194 | 194   |
| 193   | 19    | 39 | 58 | 77 | 97  | 116 | 135 | 154 | 174 | 193 | 193   |
| 192   | 19    | 38 | 58 | 77 | 96  | 115 | 134 | 154 | 173 | 192 | 192   |
| 191   | 19    | 38 | 57 | 76 | 96  | 115 | 134 | 153 | 172 | 191 | 191   |
| 190   | 19    | 38 | 57 | 76 | 95  | 114 | 133 | 152 | 171 | 190 | 190   |
| 189   | 19    | 38 | 57 | 76 | 95  | 113 | 132 | 151 | 170 | 189 | 189   |
| 188   | 19    | 38 | 56 | 75 | 94  | 113 | 132 | 150 | 169 | 188 | 188   |
| Diff. |       | 1  | 2  | 3  | 4   | 5   | 6   | 7   | 8   | 9   | Diff. |

| N   | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 235 | 371068 | 1253  | 1437  | 1622  | 1806  | 1991  | 2175  | 2360  | 2544  | 2728  | 184   |
| 236 | 2912   | 3096  | 3280  | 3464  | 3647  | 3831  | 4015  | 4198  | 4382  | 4565  | 184   |
| 237 | 4748   | 4932  | 5115  | 5298  | 5481  | 5664  | 5846  | 6029  | 6212  | 6394  | 183   |
| 238 | 6577   | 6759  | 6942  | 7124  | 7306  | 7488  | 7670  | 7852  | 8034  | 8216  | 182   |
| 239 | 8398   | 8580  | 8761  | 8943  | 9124  | 9306  | 9487  | 9668  | 9849  | *0030 | 181   |
| 240 | 380211 | 0394  | 0573  | 0754  | 0934  | 1115  | 1296  | 1476  | 1656  | 1837  | 181   |
| 241 | 2017   | 2197  | 2377  | 2557  | 2737  | 2917  | 3097  | 3277  | 3456  | 3636  | 180   |
| 242 | 3815   | 3995  | 4174  | 4353  | 4533  | 4712  | 4891  | 5070  | 5249  | 5428  | 179   |
| 243 | 5606   | 5785  | 5964  | 6142  | 6321  | 6499  | 6677  | 6856  | 7034  | 7212  | 178   |
| 244 | 7390   | 7568  | 7746  | 7923  | 8101  | 8279  | 8456  | 8634  | 8811  | 8989  | 178   |
| 245 | 389166 | 9343  | 9520  | 9698  | 9875  | *0051 | *0228 | *0405 | *0582 | *0759 | 177   |
| 246 | 390935 | 1112  | 1288  | 1464  | 1641  | 1817  | 1993  | 2169  | 2345  | 2521  | 177   |
| 247 | 2697   | 2873  | 3048  | 3224  | 3400  | 3575  | 3751  | 3926  | 4101  | 4277  | 176   |
| 248 | 4452   | 4627  | 4802  | 4977  | 5152  | 5326  | 5501  | 5676  | 5850  | 6025  | 175   |
| 249 | 6199   | 6374  | 6548  | 6722  | 6896  | 7071  | 7245  | 7419  | 7592  | 7766  | 174   |
| 250 | 397940 | 8114  | 8287  | 8461  | 8634  | 8808  | 8981  | 9154  | 9328  | 9501  | 173   |
| 251 | 9674   | 9847  | *0020 | *0192 | *0365 | *0538 | *0711 | *0883 | *1056 | *1228 | 173   |
| 252 | 401401 | 1573  | 1745  | 1917  | 2089  | 2261  | 2433  | 2605  | 2777  | 2949  | 172   |
| 253 | 3121   | 3292  | 3464  | 3635  | 3807  | 3978  | 4149  | 4320  | 4492  | 4663  | 171   |
| 254 | 4834   | 5005  | 5176  | 5346  | 5517  | 5688  | 5858  | 6029  | 6199  | 6370  | 171   |
| 255 | *6540  | 6710  | 6881  | 7051  | 7221  | 7391  | 7561  | 7731  | 7901  | 8070  | 170   |
| 256 | 8240   | 8410  | 8579  | 8749  | 8918  | 9087  | 9257  | 9426  | 9595  | 9764  | 169   |
| 257 | 9933   | *0102 | *0271 | *0440 | *0609 | *0777 | *0946 | *1114 | *1283 | *1451 | 169   |
| 258 | 411620 | 1788  | 1956  | 2124  | 2293  | 2461  | 2629  | 2796  | 2964  | 3132  | 168   |
| 259 | 3300   | 3467  | 3635  | 3803  | 3970  | 4137  | 4305  | 4472  | 4639  | 4806  | 167   |
| 260 | 414973 | 5140  | 5307  | 5474  | 5641  | 5808  | 5974  | 6141  | 6308  | 6474  | 167   |
| 261 | 6641   | 6807  | 6973  | 7139  | 7306  | 7472  | 7638  | 7804  | 7970  | 8135  | 166   |
| 262 | 8301   | 8467  | 8633  | 8798  | 8964  | 9129  | 9295  | 9460  | 9625  | 9791  | 165   |
| 263 | 9956   | *0121 | *0286 | *0451 | *0616 | *0781 | *0945 | *1110 | *1275 | *1439 | 165   |
| 264 | 421604 | 1768  | 1933  | 2097  | 2261  | 2426  | 2590  | 2754  | 2918  | 3082  | 164   |

| N. | Diff. | 1  | 2  | 3  | 4  | 5  | 6   | 7   | 8   | 9   | Diff. |
|----|-------|----|----|----|----|----|-----|-----|-----|-----|-------|
|    | 187   | 19 | 37 | 56 | 75 | 94 | 112 | 131 | 150 | 168 | 187   |
|    | 186   | 19 | 37 | 56 | 74 | 93 | 112 | 130 | 149 | 167 | 186   |
|    | 185   | 19 | 37 | 56 | 74 | 93 | 111 | 130 | 148 | 167 | 185   |
|    | 184   | 18 | 37 | 55 | 74 | 92 | 110 | 129 | 147 | 166 | 184   |
|    | 183   | 18 | 37 | 55 | 73 | 92 | 110 | 128 | 146 | 165 | 183   |
|    | 182   | 18 | 36 | 55 | 73 | 91 | 109 | 127 | 146 | 164 | 182   |
|    | 181   | 18 | 36 | 54 | 72 | 91 | 109 | 127 | 145 | 163 | 181   |
|    | 180   | 18 | 36 | 54 | 72 | 90 | 108 | 126 | 144 | 162 | 180   |
|    | 179   | 18 | 36 | 54 | 72 | 90 | 107 | 125 | 143 | 161 | 179   |
|    | 178   | 18 | 36 | 53 | 71 | 89 | 107 | 125 | 142 | 160 | 178   |
|    | 177   | 18 | 35 | 53 | 71 | 89 | 106 | 124 | 142 | 159 | 177   |
|    | 176   | 18 | 35 | 53 | 70 | 88 | 106 | 123 | 141 | 158 | 176   |
|    | 175   | 18 | 35 | 53 | 70 | 88 | 105 | 123 | 140 | 158 | 175   |
|    | 174   | 17 | 35 | 52 | 70 | 87 | 104 | 122 | 139 | 157 | 174   |
|    | 173   | 17 | 35 | 52 | 69 | 87 | 104 | 121 | 138 | 156 | 173   |
|    | 172   | 17 | 34 | 52 | 69 | 86 | 103 | 120 | 138 | 155 | 172   |
|    | 171   | 17 | 34 | 51 | 68 | 86 | 103 | 120 | 137 | 154 | 171   |
|    | 170   | 17 | 34 | 51 | 68 | 85 | 102 | 119 | 136 | 153 | 170   |
|    | 169   | 17 | 34 | 51 | 68 | 85 | 101 | 118 | 135 | 152 | 169   |
|    | 168   | 17 | 34 | 50 | 67 | 84 | 101 | 118 | 134 | 151 | 168   |
|    | 167   | 17 | 33 | 50 | 67 | 84 | 100 | 117 | 134 | 150 | 167   |
|    | 166   | 17 | 33 | 50 | 66 | 83 | 100 | 116 | 133 | 149 | 166   |
|    | 165   | 17 | 33 | 50 | 66 | 83 | 99  | 116 | 132 | 149 | 165   |
|    | 164   | 16 | 33 | 49 | 66 | 82 | 98  | 115 | 131 | 148 | 164   |
|    | Diff. | 1  | 2  | 3  | 4  | 5  | 6   | 7   | 8   | 9   | Diff. |

| N.  | 0      | 1    | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
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| 265 | 423246 | 3410 | 3574  | 3737  | 3901  | 4065  | 4228  | 4392  | 4555  | 4718  | 164   |
| 266 | 4882   | 5045 | 5208  | 5371  | 5534  | 5697  | 5860  | 6023  | 6186  | 6349  | 163   |
| 267 | 6511   | 6674 | 6836  | 6999  | 7161  | 7324  | 7486  | 7648  | 7811  | 7973  | 162   |
| 268 | 8135   | 8297 | 8459  | 8621  | 8783  | 8944  | 9106  | 9268  | 9429  | 9591  | 162   |
| 269 | 9752   | 9914 | *0075 | *0236 | *0398 | *0559 | *0720 | *0881 | *1042 | *1203 | 161   |
| 270 | 431364 | 1525 | 1685  | 1846  | 2007  | 2167  | 2328  | 2488  | 2649  | 2809  | 161   |
| 271 | 2909   | 3130 | 3290  | 3450  | 3610  | 3770  | 3930  | 4090  | 4249  | 4409  | 160   |
| 272 | 4569   | 4729 | 4888  | 5048  | 5207  | 5367  | 5526  | 5685  | 5844  | 6004  | 159   |
| 273 | 6163   | 6322 | 6481  | 6640  | 6799  | 6957  | 7116  | 7275  | 7433  | 7592  | 159   |
| 274 | 7751   | 7909 | 8067  | 8226  | 8384  | 8542  | 8701  | 8859  | 9017  | 9175  | 158   |
| 275 | 439333 | 9491 | 9648  | 9806  | 9964  | *0122 | *0279 | *0437 | *0594 | *0752 | 158   |
| 276 | 440909 | 1066 | 1224  | 1381  | 1538  | 1695  | 1852  | 2009  | 2166  | 2323  | 157   |
| 277 | 2480   | 2637 | 2793  | 2950  | 3106  | 3263  | 3419  | 3576  | 3732  | 3889  | 157   |
| 278 | 4045   | 4201 | 4357  | 4513  | 4669  | 4825  | 4981  | 5137  | 5293  | 5449  | 156   |
| 279 | 5604   | 5760 | 5915  | 6071  | 6226  | 6382  | 6537  | 6692  | 6848  | 7003  | 155   |
| 280 | 447158 | 7313 | 7468  | 7623  | 7778  | 7933  | 8088  | 8242  | 8397  | 8552  | 155   |
| 281 | 8706   | 8861 | 9015  | 9170  | 9324  | 9478  | 9633  | 9787  | 9941  | *0095 | 154   |
| 282 | 450249 | 0403 | 0557  | 0711  | 0865  | 1018  | 1172  | 1326  | 1479  | 1633  | 154   |
| 283 | 1786   | 1940 | 2093  | 2247  | 2400  | 2553  | 2706  | 2859  | 3012  | 3165  | 153   |
| 284 | 3318   | 3471 | 3624  | 3777  | 3930  | 4082  | 4235  | 4387  | 4540  | 4692  | 153   |
| 285 | 454845 | 4997 | 5150  | 5302  | 5454  | 5606  | 5758  | 5910  | 6062  | 6214  | 152   |
| 286 | 6366   | 6518 | 6670  | 6821  | 6973  | 7125  | 7276  | 7428  | 7579  | 7731  | 152   |
| 287 | 7882   | 8033 | 8184  | 8336  | 8487  | 8638  | 8789  | 8940  | 9091  | 9242  | 151   |
| 288 | 9392   | 9543 | 9694  | 9845  | 9995  | *0146 | *0296 | *0447 | *0597 | *0748 | 151   |
| 289 | 460898 | 1048 | 1198  | 1348  | 1499  | 1649  | 1799  | 1948  | 2098  | 2248  | 150   |
| 290 | 462398 | 2548 | 2697  | 2847  | 2997  | 3146  | 3296  | 3445  | 3594  | 3744  | 150   |
| 291 | 3993   | 4042 | 4191  | 4340  | 4490  | 4639  | 4788  | 4936  | 5085  | 5234  | 149   |
| 292 | 5583   | 5532 | 5680  | 5829  | 5977  | 6126  | 6274  | 6423  | 6571  | 6719  | 149   |
| 293 | 6668   | 7016 | 7164  | 7312  | 7460  | 7608  | 7756  | 7904  | 8052  | 8200  | 148   |
| 294 | 8347   | 8495 | 8643  | 8790  | 8938  | 9085  | 9233  | 9380  | 9527  | 9675  | 148   |
| 295 | 469822 | 9969 | *0116 | *0263 | *0410 | *0557 | *0704 | *0851 | *0998 | *1145 | 147   |
| 296 | 471292 | 1438 | 1585  | 1732  | 1878  | 2025  | 2171  | 2318  | 2464  | 2610  | 146   |
| 297 | 2756   | 2903 | 3049  | 3195  | 3341  | 3487  | 3633  | 3779  | 3925  | 4071  | 146   |
| 298 | 4216   | 4362 | 4508  | 4653  | 4799  | 4944  | 5090  | 5235  | 5381  | 5526  | 146   |
| 299 | 5671   | 5816 | 5962  | 6107  | 6252  | 6397  | 6542  | 6687  | 6832  | 6976  | 145   |

| N. | Diff. | 1  | 2  | 3  | 4  | 5  | 6  | 7   | 8   | 9   | Diff. |
|----|-------|----|----|----|----|----|----|-----|-----|-----|-------|
|    | 164   | 16 | 33 | 49 | 66 | 82 | 98 | 115 | 131 | 148 | 164   |
|    | 163   | 16 | 33 | 49 | 65 | 82 | 98 | 114 | 130 | 147 | 163   |
|    | 162   | 16 | 32 | 49 | 65 | 81 | 97 | 113 | 130 | 146 | 162   |
|    | 161   | 16 | 32 | 48 | 64 | 81 | 97 | 113 | 129 | 145 | 161   |
|    | 160   | 16 | 32 | 48 | 64 | 80 | 96 | 112 | 128 | 144 | 160   |
|    | 159   | 16 | 32 | 48 | 64 | 80 | 95 | 111 | 127 | 143 | 159   |
|    | 158   | 16 | 32 | 47 | 63 | 79 | 95 | 111 | 126 | 142 | 158   |
|    | 157   | 16 | 31 | 47 | 63 | 79 | 94 | 110 | 126 | 141 | 157   |
|    | 156   | 16 | 31 | 47 | 62 | 78 | 94 | 109 | 125 | 140 | 156   |
|    | 155   | 16 | 31 | 47 | 62 | 78 | 93 | 109 | 124 | 140 | 155   |
|    | 154   | 15 | 31 | 46 | 62 | 77 | 92 | 108 | 123 | 139 | 154   |
|    | 153   | 15 | 31 | 46 | 61 | 77 | 92 | 107 | 122 | 138 | 153   |
|    | 152   | 15 | 30 | 46 | 61 | 76 | 91 | 106 | 122 | 137 | 152   |
|    | 151   | 15 | 30 | 45 | 60 | 76 | 91 | 106 | 121 | 136 | 151   |
|    | 150   | 15 | 30 | 45 | 60 | 75 | 90 | 105 | 120 | 135 | 150   |
|    | 149   | 15 | 30 | 45 | 60 | 75 | 89 | 104 | 119 | 134 | 149   |
|    | 148   | 15 | 30 | 44 | 59 | 74 | 89 | 104 | 118 | 133 | 148   |
|    | 147   | 15 | 29 | 44 | 59 | 74 | 88 | 103 | 118 | 132 | 147   |
|    | 146   | 15 | 29 | 44 | 58 | 73 | 88 | 102 | 117 | 131 | 146   |
|    | 145   | 15 | 29 | 44 | 58 | 73 | 87 | 102 | 116 | 131 | 145   |
|    | 144   | 14 | 29 | 43 | 58 | 72 | 85 | 101 | 115 | 130 | 144   |
|    | 143   | 14 | 29 | 43 | 57 | 72 | 85 | 100 | 114 | 129 | 143   |
|    | Diff. | 1  | 2  | 3  | 4  | 5  | 6  | 7   | 8   | 9   | Diff. |

| N.  | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
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| 301 | 8566   | 8711  | 8855  | 8999  | 9143  | 9287  | 9431  | 9575  | 9719  | 9863  | 144   |
| 302 | 480007 | 0151  | 0294  | 0438  | 0582  | 0725  | 0869  | 1012  | 1156  | 1299  | 144   |
| 303 | 1443   | 1586  | 1729  | 1872  | 2016  | 2159  | 2302  | 2445  | 2588  | 2731  | 143   |
| 304 | 2874   | 3016  | 3159  | 3302  | 3445  | 3587  | 3730  | 3872  | 4015  | 4157  | 143   |
| 305 | 484300 | 4442  | 4585  | 4727  | 4869  | 5011  | 5153  | 5295  | 5437  | 5579  | 142   |
| 306 | 5721   | 5863  | 6005  | 6147  | 6289  | 6430  | 6572  | 6714  | 6855  | 6997  | 142   |
| 307 | 7138   | 7280  | 7421  | 7563  | 7704  | 7845  | 7986  | 8127  | 8269  | 8410  | 141   |
| 308 | 8551   | 8692  | 8833  | 8974  | 9114  | 9255  | 9396  | 9537  | 9677  | 9818  | 141   |
| 309 | 9958   | *0099 | *0239 | *0380 | *0520 | *0661 | *0801 | *0941 | *1081 | *1222 | 140   |
| 310 | 491362 | 1502  | 1642  | 1782  | 1922  | 2062  | 2201  | 2341  | 2481  | 2621  | 140   |
| 311 | 2760   | 2900  | 3040  | 3179  | 3319  | 3458  | 3597  | 3737  | 3876  | 4015  | 139   |
| 312 | 4155   | 4294  | 4433  | 4572  | 4711  | 4850  | 4989  | 5128  | 5267  | 5406  | 139   |
| 313 | 5544   | 5683  | 5822  | 5960  | 6099  | 6238  | 6376  | 6515  | 6653  | 6791  | 139   |
| 314 | 6930   | 7068  | 7206  | 7344  | 7483  | 7621  | 7759  | 7897  | 8035  | 8173  | 138   |
| 315 | 498111 | 8448  | 8586  | 8724  | 8862  | 8999  | 9137  | 9275  | 9412  | 9550  | 138   |
| 316 | 9687   | 9824  | 9962  | *0099 | *0236 | *0374 | *0511 | *0648 | *0785 | *0922 | 137   |
| 317 | 501059 | 1196  | 1333  | 1470  | 1607  | 1744  | 1880  | 2017  | 2154  | 2291  | 137   |
| 318 | 2427   | 2564  | 2700  | 2837  | 2973  | 3109  | 3245  | 3382  | 3518  | 3655  | 136   |
| 319 | 3791   | 3927  | 4063  | 4199  | 4335  | 4471  | 4607  | 4743  | 4878  | 5014  | 136   |
| 320 | 505150 | 5286  | 5421  | 5557  | 5693  | 5828  | 5964  | 6099  | 6234  | 6370  | 136   |
| 321 | 6505   | 6640  | 6776  | 6911  | 7046  | 7181  | 7316  | 7451  | 7586  | 7721  | 135   |
| 322 | 7856   | 7991  | 8126  | 8260  | 8395  | 8530  | 8664  | 8799  | 8934  | 9068  | 135   |
| 323 | 9203   | 9337  | 9471  | 9606  | 9740  | 9874  | *0009 | *0143 | *0277 | *0411 | 134   |
| 324 | 510545 | 0679  | 0813  | 0947  | 1081  | 1215  | 1349  | 1482  | 1616  | 1750  | 134   |
| 325 | 511883 | 2017  | 2151  | 2284  | 2418  | 2551  | 2684  | 2818  | 2951  | 3084  | 133   |
| 326 | 3218   | 3351  | 3484  | 3617  | 3750  | 3883  | 4016  | 4149  | 4282  | 4415  | 133   |
| 327 | 4548   | 4681  | 4813  | 4946  | 5079  | 5211  | 5344  | 5476  | 5609  | 5741  | 133   |
| 328 | 5874   | 6006  | 6139  | 6271  | 6403  | 6535  | 6668  | 6800  | 6932  | 7064  | 132   |
| 329 | 7196   | 7328  | 7460  | 7592  | 7724  | 7855  | 7987  | 8119  | 8251  | 8382  | 132   |
| 330 | 518514 | 8646  | 8777  | 8909  | 9040  | 9171  | 9303  | 9434  | 9566  | 9697  | 131   |
| 331 | 9828   | 9959  | *0090 | *0221 | *0353 | *0484 | *0615 | *0745 | *0876 | *1007 | 131   |
| 332 | 521138 | 1269  | 1400  | 1530  | 1661  | 1792  | 1922  | 2053  | 2183  | 2314  | 131   |
| 333 | 2444   | 2575  | 2705  | 2835  | 2966  | 3096  | 3226  | 3356  | 3486  | 3616  | 130   |
| 334 | 3746   | 3876  | 4006  | 4136  | 4266  | 4396  | 4526  | 4656  | 4785  | 4915  | 130   |
| 335 | 525045 | 5174  | 5304  | 5434  | 5563  | 5693  | 5822  | 5951  | 6081  | 6210  | 129   |
| 336 | 6339   | 6469  | 6598  | 6727  | 6856  | 6985  | 7114  | 7243  | 7372  | 7501  | 129   |
| 337 | 7630   | 7759  | 7888  | 8016  | 8145  | 8274  | 8402  | 8531  | 8660  | 8788  | 128   |
| 338 | 8917   | 9045  | 9174  | 9302  | 9430  | 9559  | 9687  | 9815  | 9943  | *0072 | 128   |
| 339 | 530200 | 0328  | 0456  | 0584  | 0712  | 0840  | 0968  | 1096  | 1223  | 1351  | 128   |

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|-------|-------|----|----|----|----|----|----|-----|-----|-----|-------|
|       | 142   | 14 | 28 | 43 | 57 | 71 | 85 | 99  | 114 | 128 | 142   |
|       | 141   | 14 | 28 | 42 | 56 | 71 | 85 | 99  | 113 | 127 | 141   |
|       | 140   | 14 | 28 | 42 | 56 | 70 | 84 | 98  | 112 | 126 | 140   |
| 差     | 139   | 14 | 28 | 42 | 56 | 70 | 83 | 97  | 111 | 125 | 139   |
|       | 138   | 14 | 28 | 41 | 55 | 69 | 83 | 97  | 110 | 124 | 138   |
|       | 137   | 14 | 27 | 41 | 55 | 69 | 82 | 96  | 110 | 123 | 137   |
|       | 136   | 14 | 27 | 41 | 54 | 68 | 82 | 95  | 109 | 122 | 136   |
|       | 135   | 14 | 27 | 41 | 54 | 68 | 81 | 95  | 108 | 122 | 135   |
|       | 134   | 13 | 27 | 40 | 54 | 67 | 80 | 94  | 107 | 121 | 134   |
|       | 133   | 13 | 27 | 40 | 53 | 67 | 80 | 93  | 106 | 120 | 133   |
|       | 132   | 13 | 26 | 40 | 53 | 66 | 79 | 92  | 106 | 119 | 132   |
|       | 131   | 13 | 26 | 39 | 52 | 66 | 79 | 92  | 105 | 118 | 131   |
|       | 130   | 13 | 26 | 39 | 52 | 65 | 78 | 91  | 104 | 117 | 130   |
|       | 129   | 13 | 26 | 39 | 52 | 65 | 77 | 90  | 103 | 116 | 129   |
|       | 128   | 13 | 26 | 38 | 51 | 64 | 77 | 90  | 102 | 115 | 128   |
| 127   | 13    | 25 | 38 | 51 | 64 | 76 | 89 | 102 | 114 | 127 |       |
| Diff. |       | 1  | 2  | 3  | 4  | 5  | 6  | 7   | 8   | 9   | Diff. |

| N.    | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 340   | 531479 | 1607  | 1734  | 1862  | 1990  | 2117  | 2245  | 2372  | 2500  | 2627  | 128   |
| 341   | 2754   | 2882  | 3009  | 3136  | 3264  | 3391  | 3518  | 3645  | 3772  | 3899  | 127   |
| 342   | 4026   | 4153  | 4280  | 4407  | 4534  | 4661  | 4787  | 4914  | 5041  | 5167  | 127   |
| 343   | 5294   | 5421  | 5547  | 5674  | 5800  | 5927  | 6053  | 6180  | 6306  | 6432  | 126   |
| 344   | 6558   | 6685  | 6811  | 6937  | 7063  | 7189  | 7315  | 7441  | 7567  | 7693  | 126   |
| 345   | 537819 | 7945  | 8071  | 8197  | 8322  | 8448  | 8574  | 8699  | 8825  | 8951  | 126   |
| 346   | 9076   | 9202  | 9327  | 9452  | 9578  | 9703  | 9829  | 9954  | *0079 | *0204 | 125   |
| 347   | 540329 | 0455  | 0580  | 0705  | 0830  | 0955  | 1080  | 1205  | 1330  | 1454  | 125   |
| 348   | 1579   | 1704  | 1829  | 1953  | 2078  | 2203  | 2327  | 2452  | 2576  | 2701  | 125   |
| 349   | 2825   | 2950  | 3074  | 3199  | 3323  | 3447  | 3571  | 3696  | 3820  | 3944  | 124   |
| 350   | 544068 | 4192  | 4316  | 4440  | 4564  | 4688  | 4812  | 4936  | 5060  | 5183  | 124   |
| 351   | 5307   | 5431  | 5555  | 5678  | 5802  | 5925  | 6049  | 6172  | 6296  | 6419  | 124   |
| 352   | 6543   | 6666  | 6789  | 6913  | 7036  | 7159  | 7282  | 7405  | 7529  | 7652  | 123   |
| 353   | 7775   | 7898  | 8021  | 8144  | 8267  | 8389  | 8512  | 8635  | 8758  | 8881  | 123   |
| 354   | 9003   | 9126  | 9249  | 9371  | 9494  | 9616  | 9739  | 9861  | 9984  | *0106 | 123   |
| 355   | 550228 | 0351  | 0473  | 0595  | 0717  | 0840  | 0962  | 1084  | 1206  | 1328  | 122   |
| 356   | 1450   | 1572  | 1694  | 1816  | 1938  | 2060  | 2181  | 2303  | 2425  | 2547  | 122   |
| 357   | 2668   | 2790  | 2911  | 3033  | 3155  | 3276  | 3398  | 3519  | 3640  | 3762  | 121   |
| 358   | 3883   | 4004  | 4126  | 4247  | 4368  | 4489  | 4610  | 4731  | 4852  | 4973  | 121   |
| 359   | 5094   | 5215  | 5336  | 5457  | 5578  | 5699  | 5820  | 5940  | 6061  | 6182  | 121   |
| 360   | 556303 | 6423  | 6544  | 6664  | 6785  | 6905  | 7026  | 7146  | 7267  | 7387  | 120   |
| 361   | 7507   | 7627  | 7748  | 7868  | 7988  | 8108  | 8228  | 8349  | 8469  | 8589  | 120   |
| 362   | 8709   | 8829  | 8948  | 9068  | 9188  | 9308  | 9428  | 9548  | 9667  | 9787  | 120   |
| 363   | 9907   | *0026 | *0146 | *0265 | *0385 | *0504 | *0624 | *0743 | *0863 | *0982 | 119   |
| 364   | 561101 | 1221  | 1340  | 1459  | 1578  | 1698  | 1817  | 1936  | 2055  | 2174  | 119   |
| 365   | 562293 | 2412  | 2531  | 2650  | 2769  | 2887  | 3006  | 3125  | 3244  | 3362  | 119   |
| 366   | 3481   | 3600  | 3718  | 3837  | 3955  | 4074  | 4192  | 4311  | 4429  | 4548  | 119   |
| 367   | 4666   | 4784  | 4903  | 5021  | 5139  | 5257  | 5376  | 5494  | 5612  | 5730  | 118   |
| 368   | 5848   | 5966  | 6084  | 6202  | 6320  | 6437  | 6555  | 6673  | 6791  | 6909  | 118   |
| 369   | 7026   | 7144  | 7262  | 7379  | 7497  | 7614  | 7732  | 7849  | 7967  | 8084  | 118   |
| 370   | 568202 | 8319  | 8436  | 8554  | 8671  | 8788  | 8905  | 9023  | 9140  | 9257  | 117   |
| 371   | 9374   | 9491  | 9608  | 9725  | 9842  | 9959  | *0076 | *0193 | *0309 | *0426 | 117   |
| 372   | 570543 | 0600  | 0716  | 0833  | 1010  | 1126  | 1243  | 1359  | 1476  | 1592  | 117   |
| 373   | 1709   | 1825  | 1942  | 2058  | 2174  | 2291  | 2407  | 2523  | 2639  | 2755  | 116   |
| 374   | 2872   | 2988  | 3104  | 3220  | 3336  | 3452  | 3568  | 3684  | 3800  | 3915  | 116   |
| 375   | 574031 | 4147  | 4263  | 4379  | 4494  | 4610  | 4726  | 4841  | 4957  | 5072  | 116   |
| 376   | 5188   | 5303  | 5419  | 5534  | 5650  | 5765  | 5880  | 5996  | 6111  | 6226  | 115   |
| 377   | 6341   | 6457  | 6572  | 6687  | 6802  | 6917  | 7032  | 7147  | 7262  | 7377  | 115   |
| 378   | 7492   | 7607  | 7722  | 7836  | 7951  | 8066  | 8181  | 8295  | 8410  | 8525  | 115   |
| 379   | 8639   | 8754  | 8868  | 8983  | 9097  | 9212  | 9326  | 9441  | 9555  | 9669  | 114   |
| N.    | Diff.  | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
| 率     | 128    | 13    | 26    | 38    | 51    | 64    | 77    | 90    | 102   | 115   | 128   |
|       | 127    | 13    | 25    | 38    | 51    | 64    | 76    | 89    | 102   | 114   | 127   |
|       | 126    | 13    | 25    | 38    | 50    | 63    | 76    | 88    | 101   | 113   | 126   |
|       | 125    | 13    | 25    | 38    | 50    | 63    | 75    | 88    | 100   | 113   | 125   |
|       | 124    | 12    | 25    | 37    | 50    | 62    | 74    | 87    | 99    | 112   | 124   |
|       | 123    | 12    | 25    | 37    | 49    | 62    | 74    | 86    | 98    | 111   | 123   |
|       | 122    | 12    | 24    | 37    | 49    | 61    | 73    | 85    | 98    | 110   | 122   |
|       | 121    | 12    | 24    | 36    | 48    | 61    | 73    | 85    | 97    | 109   | 121   |
|       | 120    | 12    | 24    | 36    | 48    | 60    | 72    | 84    | 96    | 108   | 120   |
|       | 119    | 12    | 24    | 36    | 48    | 60    | 71    | 83    | 95    | 107   | 119   |
| 118   | 12     | 24    | 35    | 47    | 59    | 71    | 83    | 94    | 106   | 118   |       |
| 117   | 12     | 23    | 35    | 47    | 59    | 70    | 82    | 94    | 105   | 117   |       |
| 116   | 12     | 23    | 35    | 46    | 58    | 70    | 81    | 93    | 104   | 116   |       |
| Diff. | 1      | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |       |

| N.  | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 380 | 579784 | 9898  | *0012 | *0126 | *0241 | *0355 | *0469 | *0583 | *0697 | *0811 | 114   |
| 381 | 580925 | 1039  | 1153  | 1267  | 1381  | 1495  | 1608  | 1722  | 1836  | 1950  | 114   |
| 382 | 2063   | 2177  | 2291  | 2404  | 2518  | 2631  | 2745  | 2858  | 2972  | 3085  | 114   |
| 383 | 3199   | 3312  | 3426  | 3539  | 3652  | 3765  | 3879  | 3992  | 4105  | 4218  | 113   |
| 384 | 4331   | 4444  | 4557  | 4670  | 4783  | 4896  | 5009  | 5122  | 5235  | 5348  | 113   |
| 385 | 58561  | 5574  | 5686  | 5799  | 5912  | 6024  | 6137  | 6250  | 6362  | 6475  | 113   |
| 386 | 6587   | 6700  | 6812  | 6925  | 7037  | 7149  | 7262  | 7374  | 7486  | 7599  | 112   |
| 387 | 7711   | 7823  | 7935  | 8047  | 8160  | 8272  | 8384  | 8496  | 8608  | 8720  | 112   |
| 388 | 8832   | 8944  | 9056  | 9167  | 9279  | 9391  | 9503  | 9615  | 9726  | 9838  | 112   |
| 389 | 9950   | *0061 | *0173 | *0284 | *0396 | *0507 | *0619 | *0730 | *0842 | *0953 | 112   |
| 390 | 591065 | 1176  | 1287  | 1399  | 1510  | 1621  | 1732  | 1843  | 1955  | 2066  | 111   |
| 391 | 2177   | 2288  | 2399  | 2510  | 2621  | 2732  | 2843  | 2954  | 3064  | 3175  | 111   |
| 392 | 3286   | 3397  | 3508  | 3618  | 3729  | 3840  | 3950  | 4061  | 4171  | 4282  | 111   |
| 393 | 4393   | 4503  | 4614  | 4724  | 4834  | 4945  | 5055  | 5165  | 5276  | 5386  | 110   |
| 394 | 5496   | 5606  | 5717  | 5827  | 5937  | 6047  | 6157  | 6267  | 6377  | 6487  | 110   |
| 395 | 59697  | 6707  | 6817  | 6927  | 7037  | 7146  | 7256  | 7366  | 7476  | 7586  | 110   |
| 396 | 7695   | 7805  | 7914  | 8024  | 8134  | 8243  | 8353  | 8462  | 8572  | 8681  | 110   |
| 397 | 8791   | 8900  | 9009  | 9119  | 9228  | 9337  | 9446  | 9556  | 9665  | 9774  | 109   |
| 398 | 9883   | 9992  | *0101 | *0210 | *0319 | *0428 | *0537 | *0646 | *0755 | *0864 | 109   |
| 399 | 600973 | 1082  | 1191  | 1299  | 1408  | 1517  | 1625  | 1734  | 1843  | 1951  | 109   |
| 400 | 602060 | 2169  | 2277  | 2386  | 2494  | 2603  | 2711  | 2819  | 2928  | 3036  | 108   |
| 401 | 3144   | 3253  | 3361  | 3469  | 3577  | 3686  | 3794  | 3902  | 4010  | 4118  | 108   |
| 402 | 4226   | 4334  | 4442  | 4550  | 4658  | 4766  | 4874  | 4982  | 5089  | 5197  | 108   |
| 403 | 5305   | 5413  | 5521  | 5628  | 5736  | 5844  | 5951  | 6059  | 6166  | 6274  | 108   |
| 404 | 6381   | 6489  | 6596  | 6704  | 6811  | 6919  | 7026  | 7133  | 7241  | 7348  | 107   |
| 405 | 67455  | 7562  | 7669  | 7777  | 7884  | 7991  | 8098  | 8205  | 8312  | 8419  | 107   |
| 406 | 8526   | 8633  | 8740  | 8847  | 8954  | 9061  | 9167  | 9274  | 9381  | 9488  | 107   |
| 407 | 9594   | 9701  | 9808  | 9914  | *0021 | *0128 | *0234 | *0341 | *0447 | *0554 | 107   |
| 408 | 610660 | 0767  | 0873  | 0979  | 1086  | 1192  | 1298  | 1405  | 1511  | 1617  | 106   |
| 409 | 1723   | 1829  | 1936  | 2042  | 2148  | 2254  | 2360  | 2466  | 2572  | 2678  | 106   |
| 410 | 612784 | 2890  | 2996  | 3102  | 3207  | 3313  | 3419  | 3525  | 3630  | 3736  | 106   |
| 411 | 3842   | 3947  | 4053  | 4159  | 4264  | 4370  | 4475  | 4581  | 4686  | 4792  | 106   |
| 412 | 4897   | 5003  | 5108  | 5213  | 5319  | 5424  | 5529  | 5634  | 5740  | 5845  | 105   |
| 413 | 5950   | 6055  | 6160  | 6265  | 6370  | 6476  | 6581  | 6686  | 6790  | 6895  | 105   |
| 414 | 7000   | 7105  | 7210  | 7315  | 7420  | 7525  | 7629  | 7734  | 7839  | 7943  | 105   |
| 415 | 618048 | 8153  | 8257  | 8362  | 8466  | 8571  | 8676  | 8780  | 8884  | 8989  | 105   |
| 416 | 9093   | 9198  | 9302  | 9406  | 9511  | 9615  | 9719  | 9824  | 9928  | *0032 | 104   |
| 417 | 620136 | 0240  | 0344  | 0448  | 0552  | 0656  | 0760  | 0864  | 0968  | 1072  | 104   |
| 418 | 1176   | 1280  | 1384  | 1488  | 1592  | 1695  | 1799  | 1903  | 2007  | 2110  | 104   |
| 419 | 2214   | 2318  | 2421  | 2525  | 2628  | 2732  | 2835  | 2939  | 3042  | 3146  | 104   |
| N.  | Diff.  | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
| 率   | 115    | 12    | 23    | 35    | 46    | 58    | 69    | 81    | 92    | 104   | 115   |
|     | 114    | 11    | 23    | 34    | 46    | 57    | 68    | 80    | 91    | 103   | 114   |
|     | 113    | 11    | 23    | 34    | 45    | 57    | 68    | 79    | 90    | 102   | 113   |
|     | 112    | 11    | 22    | 34    | 45    | 56    | 67    | 78    | 90    | 101   | 112   |
|     | 111    | 11    | 22    | 33    | 44    | 56    | 67    | 78    | 89    | 100   | 111   |
|     | 110    | 11    | 22    | 33    | 44    | 55    | 66    | 77    | 88    | 99    | 110   |
|     | 109    | 11    | 22    | 33    | 44    | 55    | 65    | 76    | 87    | 98    | 109   |
|     | 108    | 11    | 22    | 32    | 43    | 54    | 65    | 76    | 86    | 97    | 108   |
|     | 107    | 11    | 21    | 32    | 43    | 54    | 64    | 75    | 86    | 96    | 107   |
|     | 106    | 11    | 21    | 32    | 42    | 53    | 64    | 74    | 85    | 95    | 106   |
| 差   | 105    | 11    | 21    | 32    | 42    | 53    | 63    | 74    | 84    | 95    | 105   |
|     | 104    | 10    | 21    | 31    | 42    | 52    | 62    | 73    | 83    | 94    | 104   |
|     | 103    | 10    | 21    | 31    | 41    | 52    | 62    | 72    | 82    | 93    | 103   |
|     | Diff.  | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |

| N   | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Dif. |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| 420 | 623249 | 3353  | 3456  | 3559  | 3663  | 3766  | 3869  | 3973  | 4076  | 4179  | 103  |
| 421 | 4282   | 4385  | 4488  | 4591  | 4695  | 4798  | 4901  | 5004  | 5107  | 5210  | 103  |
| 422 | 5312   | 5415  | 5518  | 5621  | 5724  | 5827  | 5929  | 6032  | 6135  | 6238  | 103  |
| 423 | 6340   | 6443  | 6546  | 6648  | 6751  | 6853  | 6956  | 7058  | 7161  | 7263  | 103  |
| 424 | 7366   | 7468  | 7571  | 7673  | 7775  | 7878  | 7980  | 8082  | 8185  | 8287  | 102  |
| 425 | 628389 | 8491  | 8593  | 8695  | 8797  | 8900  | 9002  | 9104  | 9206  | 9308  | 102  |
| 426 | 9410   | 9512  | 9613  | 9715  | 9817  | 9919  | *0021 | *0123 | *0224 | *0326 | 102  |
| 427 | 630428 | 0530  | 0631  | 0733  | 0835  | 0936  | 1038  | 1139  | 1241  | 1342  | 102  |
| 428 | 1444   | 1545  | 1647  | 1748  | 1849  | 1951  | 2052  | 2153  | 2255  | 2356  | 101  |
| 429 | 2457   | 2559  | 2660  | 2761  | 2862  | 2963  | 3064  | 3165  | 3266  | 3367  | 101  |
| 430 | 633468 | 3569  | 3670  | 3771  | 3872  | 3973  | 4074  | 4175  | 4276  | 4376  | 101  |
| 431 | 4477   | 4578  | 4679  | 4779  | 4880  | 4981  | 5081  | 5182  | 5283  | 5383  | 101  |
| 432 | 5484   | 5584  | 5685  | 5785  | 5886  | 5986  | 6087  | 6187  | 6287  | 6388  | 100  |
| 433 | 6488   | 6588  | 6688  | 6789  | 6889  | 6989  | 7089  | 7189  | 7290  | 7390  | 100  |
| 434 | 7490   | 7590  | 7690  | 7790  | 7890  | 7990  | 8090  | 8190  | 8290  | 8389  | 100  |
| 435 | 638489 | 8589  | 8689  | 8789  | 8888  | 8988  | 9088  | 9188  | 9287  | 9387  | 100  |
| 436 | 9486   | 9586  | 9686  | 9785  | 9885  | 9984  | *0084 | *0183 | *0283 | *0382 | 99   |
| 437 | 640481 | 0581  | 0680  | 0779  | 0879  | 0978  | 1077  | 1177  | 1276  | 1375  | 99   |
| 438 | 1474   | 1573  | 1672  | 1771  | 1871  | 1970  | 2069  | 2168  | 2267  | 2366  | 99   |
| 439 | 2465   | 2563  | 2662  | 2761  | 2860  | 2959  | 3058  | 3156  | 3255  | 3354  | 99   |
| 440 | 643453 | 3551  | 3650  | 3749  | 3847  | 3946  | 4044  | 4143  | 4242  | 4340  | 98   |
| 441 | 4439   | 4537  | 4636  | 4734  | 4832  | 4931  | 5029  | 5127  | 5226  | 5324  | 98   |
| 442 | 5422   | 5521  | 5619  | 5717  | 5815  | 5913  | 6011  | 6110  | 6208  | 6306  | 98   |
| 443 | 6404   | 6502  | 6600  | 6698  | 6796  | 6894  | 6992  | 7089  | 7187  | 7285  | 98   |
| 444 | 7383   | 7481  | 7579  | 7676  | 7774  | 7872  | 7969  | 8067  | 8165  | 8262  | 98   |
| 445 | 648360 | 8458  | 8555  | 8653  | 8750  | 8848  | 8945  | 9043  | 9140  | 9237  | 97   |
| 446 | 9335   | 9432  | 9530  | 9627  | 9724  | 9821  | 9919  | *0016 | *0113 | *0210 | 97   |
| 447 | 650308 | 0405  | 0502  | 0599  | 0696  | 0793  | 0890  | 0987  | 1084  | 1181  | 97   |
| 448 | 1278   | 1375  | 1472  | 1569  | 1666  | 1762  | 1859  | 1956  | 2053  | 2150  | 97   |
| 449 | 2246   | 2343  | 2440  | 2536  | 2633  | 2730  | 2826  | 2923  | 3019  | 3116  | 97   |
| 450 | 653213 | 3309  | 3405  | 3502  | 3598  | 3695  | 3791  | 3888  | 3984  | 4080  | 96   |
| 451 | 4177   | 4273  | 4369  | 4465  | 4562  | 4658  | 4754  | 4850  | 4946  | 5042  | 96   |
| 452 | 5138   | 5235  | 5331  | 5427  | 5523  | 5619  | 5715  | 5810  | 5906  | 6002  | 96   |
| 453 | 6098   | 6194  | 6290  | 6386  | 6482  | 6577  | 6673  | 6769  | 6864  | 6960  | 96   |
| 454 | 7056   | 7152  | 7247  | 7343  | 7438  | 7534  | 7629  | 7725  | 7820  | 7916  | 96   |
| 455 | 658011 | 8107  | 8202  | 8298  | 8393  | 8488  | 8584  | 8679  | 8774  | 8870  | 95   |
| 456 | 8965   | 9060  | 9155  | 9250  | 9346  | 9441  | 9536  | 9631  | 9726  | 9821  | 95   |
| 457 | 9916   | *0011 | *0106 | *0201 | *0296 | *0391 | *0486 | *0581 | *0676 | *0771 | 95   |
| 458 | 666865 | 0960  | 1055  | 1150  | 1245  | 1339  | 1434  | 1529  | 1623  | 1718  | 95   |
| 459 | 1813   | 1907  | 2002  | 2096  | 2191  | 2286  | 2380  | 2475  | 2569  | 2663  | 95   |
| 460 | 662758 | 2852  | 2947  | 3041  | 3135  | 3230  | 3324  | 3418  | 3512  | 3607  | 94   |
| 461 | 3701   | 3795  | 3889  | 3983  | 4078  | 4172  | 4266  | 4360  | 4454  | 4548  | 94   |
| 462 | 4642   | 4736  | 4830  | 4924  | 5018  | 5112  | 5206  | 5299  | 5393  | 5487  | 94   |
| 463 | 5581   | 5675  | 5769  | 5862  | 5956  | 6050  | 6143  | 6237  | 6331  | 6424  | 94   |
| 464 | 6518   | 6612  | 6705  | 6799  | 6892  | 6986  | 7079  | 7173  | 7266  | 7360  | 94   |

| N    | Dif. | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Dif. |
|------|------|----|----|----|----|----|----|----|----|----|------|
| 率    | 104  | 10 | 21 | 31 | 42 | 52 | 62 | 73 | 83 | 94 | 104  |
|      | 103  | 10 | 21 | 31 | 41 | 52 | 62 | 72 | 82 | 93 | 103  |
|      | 102  | 10 | 20 | 31 | 41 | 51 | 61 | 71 | 82 | 92 | 102  |
|      | 101  | 10 | 20 | 30 | 40 | 51 | 61 | 71 | 81 | 91 | 101  |
|      | 100  | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100  |
| 差    | 99   | 10 | 20 | 30 | 40 | 50 | 59 | 69 | 79 | 89 | 99   |
|      | 98   | 10 | 20 | 29 | 39 | 49 | 59 | 69 | 78 | 88 | 98   |
|      | 97   | 10 | 19 | 29 | 39 | 49 | 58 | 68 | 78 | 87 | 97   |
|      | 96   | 10 | 19 | 29 | 38 | 48 | 58 | 67 | 77 | 86 | 96   |
|      | 95   | 10 | 19 | 29 | 38 | 48 | 57 | 67 | 76 | 86 | 95   |
| Dif. |      | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Dif. |

| N.    | 0      | 1    | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-------|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 465   | 667453 | 7546 | 7640  | 7733  | 7826  | 7920  | 8013  | 8106  | 8199  | 8293  | 93    |
| 466   | 8386   | 8479 | 8572  | 8665  | 8759  | 8852  | 8945  | 9038  | 9131  | 9224  | 93    |
| 467   | 9317   | 9410 | 9503  | 9596  | 9689  | 9782  | 9875  | 9967  | *0060 | *0153 | 93    |
| 468   | 670246 | 0339 | 0431  | 0524  | 0617  | 0710  | 0802  | 0895  | 0988  | 1080  | 93    |
| 469   | 1173   | 1265 | 1358  | 1451  | 1543  | 1636  | 1728  | 1821  | 1913  | 2005  | 93    |
| 470   | 672098 | 2190 | 2283  | 2375  | 2467  | 2560  | 2652  | 2744  | 2836  | 2929  | 92    |
| 471   | 3021   | 3113 | 3205  | 3297  | 3390  | 3482  | 3574  | 3666  | 3758  | 3850  | 92    |
| 472   | 3942   | 4034 | 4126  | 4218  | 4310  | 4402  | 4494  | 4586  | 4677  | 4769  | 92    |
| 473   | 4861   | 4953 | 5045  | 5137  | 5228  | 5320  | 5412  | 5503  | 5595  | 5687  | 92    |
| 474   | 5778   | 5870 | 5962  | 6053  | 6145  | 6236  | 6328  | 6419  | 6511  | 6602  | 92    |
| 475   | 676694 | 6785 | 6876  | 6968  | 7059  | 7151  | 7242  | 7333  | 7424  | 7516  | 91    |
| 476   | 7607   | 7698 | 7789  | 7881  | 7972  | 8063  | 8154  | 8245  | 8336  | 8427  | 91    |
| 477   | 8518   | 8609 | 8700  | 8791  | 8882  | 8973  | 9064  | 9155  | 9246  | 9337  | 91    |
| 478   | 9428   | 9519 | 9610  | 9700  | 9791  | 9882  | 9973  | *0063 | *0154 | *0245 | 91    |
| 479   | 680336 | 0426 | 0517  | 0607  | 0698  | 0789  | 0879  | 0970  | 1060  | 1151  | 91    |
| 480   | 681241 | 1332 | 1422  | 1513  | 1603  | 1693  | 1784  | 1874  | 1964  | 2055  | 90    |
| 481   | 2145   | 2235 | 2326  | 2416  | 2506  | 2596  | 2686  | 2777  | 2867  | 2957  | 90    |
| 482   | 3047   | 3137 | 3227  | 3317  | 3407  | 3497  | 3587  | 3677  | 3767  | 3857  | 90    |
| 483   | 3947   | 4037 | 4127  | 4217  | 4307  | 4396  | 4486  | 4576  | 4666  | 4756  | 90    |
| 484   | 4845   | 4935 | 5025  | 5114  | 5204  | 5294  | 5383  | 5473  | 5563  | 5652  | 90    |
| 485   | 685742 | 5831 | 5921  | 6010  | 6100  | 6189  | 6279  | 6368  | 6458  | 6547  | 89    |
| 486   | 6636   | 6726 | 6815  | 6904  | 6994  | 7083  | 7172  | 7261  | 7351  | 7440  | 89    |
| 487   | 7529   | 7618 | 7707  | 7796  | 7886  | 7975  | 8064  | 8153  | 8242  | 8331  | 89    |
| 488   | 8420   | 8509 | 8598  | 8687  | 8776  | 8865  | 8953  | 9042  | 9131  | 9220  | 89    |
| 489   | 9309   | 9398 | 9486  | 9575  | 9664  | 9753  | 9841  | 9930  | *0019 | *0107 | 89    |
| 490   | 690196 | 0285 | 0373  | 0462  | 0550  | 0639  | 0728  | 0816  | 0905  | 0993  | 89    |
| 491   | 1081   | 1170 | 1258  | 1347  | 1435  | 1524  | 1612  | 1700  | 1789  | 1877  | 88    |
| 492   | 1965   | 2053 | 2142  | 2230  | 2318  | 2406  | 2494  | 2583  | 2671  | 2759  | 88    |
| 493   | 2847   | 2935 | 3023  | 3111  | 3199  | 3287  | 3375  | 3463  | 3551  | 3639  | 88    |
| 494   | 3727   | 3815 | 3903  | 3991  | 4078  | 4166  | 4254  | 4342  | 4430  | 4517  | 88    |
| 495   | 694605 | 4693 | 4781  | 4868  | 4956  | 5044  | 5131  | 5219  | 5307  | 5394  | 88    |
| 496   | 5482   | 5569 | 5657  | 5744  | 5832  | 5919  | 6007  | 6094  | 6182  | 6269  | 87    |
| 497   | 6356   | 6444 | 6531  | 6618  | 6706  | 6793  | 6880  | 6968  | 7055  | 7142  | 87    |
| 498   | 7229   | 7317 | 7404  | 7491  | 7578  | 7665  | 7752  | 7839  | 7926  | 8014  | 87    |
| 499   | 8101   | 8188 | 8275  | 8362  | 8449  | 8535  | 8622  | 8709  | 8796  | 8883  | 87    |
| 500   | 698970 | 9057 | 9144  | 9231  | 9317  | 9404  | 9491  | 9578  | 9664  | 9751  | 87    |
| 501   | 9838   | 9924 | *0011 | *0098 | *0184 | *0271 | *0358 | *0444 | *0531 | *0617 | 87    |
| 502   | 700704 | 0790 | 0877  | 0963  | 1050  | 1136  | 1222  | 1309  | 1395  | 1482  | 86    |
| 503   | 1568   | 1654 | 1741  | 1827  | 1913  | 1999  | 2086  | 2172  | 2258  | 2344  | 86    |
| 504   | 2431   | 2517 | 2603  | 2689  | 2775  | 2861  | 2947  | 3033  | 3119  | 3205  | 86    |
| 505   | 703291 | 3377 | 3463  | 3549  | 3635  | 3721  | 3807  | 3893  | 3979  | 4065  | 86    |
| 506   | 4151   | 4236 | 4322  | 4408  | 4494  | 4579  | 4665  | 4751  | 4837  | 4922  | 86    |
| 507   | 5008   | 5094 | 5179  | 5265  | 5350  | 5436  | 5522  | 5607  | 5693  | 5778  | 86    |
| 508   | 5864   | 5949 | 6035  | 6120  | 6206  | 6291  | 6376  | 6462  | 6547  | 6632  | 85    |
| 509   | 6718   | 6803 | 6888  | 6974  | 7059  | 7144  | 7229  | 7315  | 7400  | 7485  | 85    |
| N.    | Diff.  | 1    | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
| 率     | 94     | 9    | 19    | 28    | 38    | 47    | 56    | 66    | 75    | 85    | 94    |
|       | 93     | 9    | 19    | 28    | 37    | 47    | 56    | 65    | 74    | 84    | 93    |
|       | 92     | 9    | 18    | 28    | 37    | 46    | 55    | 64    | 74    | 83    | 92    |
|       | 91     | 9    | 18    | 27    | 36    | 46    | 55    | 64    | 73    | 82    | 91    |
|       | 90     | 9    | 18    | 27    | 36    | 45    | 54    | 63    | 72    | 81    | 90    |
| 差     | 89     | 9    | 18    | 27    | 36    | 45    | 53    | 62    | 71    | 80    | 89    |
|       | 88     | 9    | 18    | 26    | 35    | 44    | 53    | 62    | 70    | 79    | 88    |
|       | 87     | 9    | 17    | 26    | 35    | 44    | 52    | 61    | 70    | 78    | 87    |
|       | 86     | 9    | 17    | 26    | 34    | 43    | 52    | 60    | 69    | 77    | 86    |
|       | 85     | 9    | 17    | 26    | 34    | 43    | 51    | 60    | 68    | 77    | 85    |
| Diff. | 1      | 2    | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |       |



| N.    | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 510   | 707570 | 7655  | 7740  | 7826  | 7911  | 7996  | 8081  | 8166  | 8251  | 8336  | 85    |
| 511   | 8421   | 8506  | 8591  | 8676  | 8761  | 8846  | 8931  | 9015  | 9100  | 9185  | 85    |
| 512   | 9270   | 9355  | 9440  | 9524  | 9609  | 9694  | 9779  | 9863  | 9948  | *0033 | 85    |
| 513   | 710117 | 0202  | 0287  | 0371  | 0456  | 0540  | 0625  | 0710  | 0794  | 0879  | 85    |
| 514   | 0663   | 1048  | 1132  | 1217  | 1301  | 1385  | 1470  | 1554  | 1639  | 1723  | 84    |
| 515   | 711807 | 1892  | 1976  | 2060  | 2144  | 2229  | 2313  | 2397  | 2481  | 2566  | 84    |
| 516   | 2650   | 2734  | 2818  | 2902  | 2986  | 3070  | 3154  | 3238  | 3323  | 3407  | 84    |
| 517   | 3491   | 3575  | 3659  | 3742  | 3826  | 3910  | 3994  | 4078  | 4162  | 4246  | 84    |
| 518   | 4330   | 4414  | 4497  | 4581  | 4665  | 4749  | 4833  | 4916  | 5000  | 5084  | 84    |
| 519   | 5167   | 5251  | 5335  | 5418  | 5502  | 5586  | 5669  | 5753  | 5836  | 5920  | 84    |
| 520   | 716003 | 6087  | 6170  | 6254  | 6337  | 6421  | 6504  | 6588  | 6671  | 6754  | 83    |
| 521   | 6838   | 6921  | 7004  | 7088  | 7171  | 7254  | 7338  | 7421  | 7504  | 7587  | 83    |
| 522   | 7671   | 7754  | 7837  | 7920  | 8003  | 8086  | 8169  | 8253  | 8336  | 8419  | 83    |
| 523   | 8502   | 8585  | 8668  | 8751  | 8834  | 8917  | 9000  | 9083  | 9165  | 9248  | 83    |
| 524   | 9331   | 9414  | 9497  | 9580  | 9663  | 9745  | 9828  | 9911  | 9994  | *0077 | 83    |
| 525   | 720159 | 0242  | 0325  | 0407  | 0490  | 0573  | 0655  | 0738  | 0821  | 0903  | 83    |
| 526   | 0986   | 1068  | 1151  | 1233  | 1316  | 1398  | 1481  | 1563  | 1646  | 1728  | 82    |
| 527   | 1811   | 1893  | 1975  | 2058  | 2140  | 2222  | 2305  | 2387  | 2469  | 2552  | 82    |
| 528   | 2634   | 2716  | 2798  | 2881  | 2963  | 3045  | 3127  | 3209  | 3291  | 3374  | 82    |
| 529   | 3456   | 3538  | 3620  | 3702  | 3784  | 3866  | 3948  | 4030  | 4112  | 4194  | 82    |
| 530   | 724276 | 4358  | 4440  | 4522  | 4604  | 4685  | 4767  | 4849  | 4931  | 5013  | 82    |
| 531   | 5095   | 5176  | 5258  | 5340  | 5422  | 5503  | 5585  | 5667  | 5748  | 5830  | 82    |
| 532   | 5912   | 5993  | 6075  | 6156  | 6238  | 6320  | 6401  | 6483  | 6564  | 6646  | 82    |
| 533   | 6727   | 6809  | 6890  | 6972  | 7053  | 7134  | 7216  | 7297  | 7379  | 7460  | 81    |
| 534   | 7541   | 7623  | 7704  | 7785  | 7866  | 7948  | 8029  | 8110  | 8191  | 8273  | 81    |
| 535   | 728354 | 8435  | 8516  | 8597  | 8678  | 8759  | 8841  | 8922  | 9003  | 9084  | 81    |
| 536   | 9165   | 9246  | 9327  | 9408  | 9489  | 9570  | 9651  | 9732  | 9813  | 9893  | 81    |
| 537   | 9974   | *0055 | *0136 | *0217 | *0298 | *0378 | *0459 | *0540 | *0621 | *0702 | 81    |
| 538   | 730782 | 0863  | 0944  | 1024  | 1105  | 1186  | 1266  | 1347  | 1428  | 1508  | 81    |
| 539   | 1589   | 1669  | 1750  | 1830  | 1911  | 1991  | 2072  | 2152  | 2233  | 2313  | 81    |
| 540   | 723294 | 2474  | 2555  | 2635  | 2715  | 2796  | 2876  | 2956  | 3037  | 3117  | 80    |
| 541   | 3197   | 3278  | 3358  | 3438  | 3518  | 3598  | 3679  | 3759  | 3839  | 3919  | 80    |
| 542   | 3999   | 4079  | 4160  | 4240  | 4320  | 4400  | 4480  | 4560  | 4640  | 4720  | 80    |
| 543   | 4800   | 4880  | 4960  | 5040  | 5120  | 5200  | 5279  | 5359  | 5439  | 5519  | 80    |
| 544   | 5599   | 5679  | 5759  | 5838  | 5918  | 5998  | 6078  | 6157  | 6237  | 6317  | 80    |
| 545   | 736397 | 6476  | 6556  | 6635  | 6715  | 6795  | 6874  | 6954  | 7034  | 7113  | 80    |
| 546   | 7193   | 7272  | 7352  | 7431  | 7511  | 7590  | 7670  | 7749  | 7829  | 7908  | 79    |
| 547   | 7987   | 8067  | 8146  | 8225  | 8305  | 8384  | 8463  | 8543  | 8622  | 8701  | 79    |
| 548   | 8781   | 8860  | 8939  | 9018  | 9097  | 9177  | 9256  | 9335  | 9414  | 9493  | 79    |
| 549   | 9572   | 9651  | 9731  | 9810  | 9889  | 9968  | *0047 | *0126 | *0205 | *0284 | 79    |
| 550   | 740363 | 0442  | 0521  | 0600  | 0678  | 0757  | 0836  | 0915  | 0994  | 1073  | 79    |
| 551   | 1152   | 1230  | 1309  | 1388  | 1467  | 1546  | 1624  | 1703  | 1782  | 1860  | 79    |
| 552   | 1939   | 2018  | 2096  | 2175  | 2254  | 2332  | 2411  | 2489  | 2568  | 2647  | 79    |
| 553   | 2725   | 2804  | 2882  | 2961  | 3039  | 3118  | 3196  | 3275  | 3353  | 3431  | 78    |
| 554   | 3510   | 3588  | 3667  | 3745  | 3823  | 3902  | 3980  | 4058  | 4136  | 4215  | 78    |
| N.    | Diff.  | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
| 率     | 85     | 9     | 17    | 26    | 34    | 43    | 52    | 60    | 69    | 77    | 86    |
|       | 85     | 9     | 17    | 26    | 34    | 43    | 51    | 60    | 68    | 77    | 85    |
|       | 84     | 8     | 17    | 25    | 34    | 42    | 50    | 59    | 67    | 76    | 84    |
|       | 83     | 8     | 17    | 25    | 33    | 42    | 50    | 58    | 66    | 75    | 83    |
|       | 82     | 8     | 16    | 25    | 33    | 41    | 49    | 57    | 66    | 74    | 82    |
|       | 81     | 8     | 16    | 24    | 32    | 41    | 49    | 57    | 65    | 73    | 81    |
| 差     | 80     | 8     | 16    | 24    | 32    | 40    | 48    | 56    | 64    | 72    | 80    |
|       | 79     | 8     | 16    | 24    | 32    | 40    | 47    | 55    | 63    | 71    | 79    |
| Diff. | 1      | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |       |

| N.  | 0      | 1    | 2    | 3    | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 555 | 744293 | 4371 | 4449 | 4528 | 4606  | 4684  | 4762  | 4840  | 4919  | 4997  | 78    |
| 556 | 5075   | 5153 | 5231 | 5309 | 5387  | 5465  | 5543  | 5621  | 5699  | 5777  | 78    |
| 557 | 5855   | 5933 | 6011 | 6089 | 6167  | 6245  | 6323  | 6401  | 6479  | 6556  | 78    |
| 558 | 6634   | 6712 | 6790 | 6868 | 6945  | 7023  | 7101  | 7179  | 7256  | 7334  | 78    |
| 559 | 7412   | 7489 | 7567 | 7645 | 7722  | 7800  | 7878  | 7955  | 8033  | 8110  | 78    |
| 560 | 748188 | 8266 | 8343 | 8421 | 8498  | 8576  | 8653  | 8731  | 8808  | 8885  | 77    |
| 561 | 8963   | 9040 | 9118 | 9195 | 9272  | 9350  | 9427  | 9504  | 9582  | 9659  | 77    |
| 562 | 9736   | 9814 | 9891 | 9968 | *0045 | *0123 | *0200 | *0277 | *0354 | *0431 | 77    |
| 563 | 750508 | 0586 | 0663 | 0740 | 0817  | 0894  | 0971  | 1048  | 1125  | 1202  | 77    |
| 564 | 1279   | 1356 | 1433 | 1510 | 1587  | 1664  | 1741  | 1818  | 1895  | 1972  | 77    |
| 565 | 752048 | 2125 | 2202 | 2279 | 2356  | 2433  | 2509  | 2586  | 2663  | 2740  | 77    |
| 566 | 2816   | 2893 | 2970 | 3047 | 3123  | 3200  | 3277  | 3353  | 3430  | 3506  | 77    |
| 567 | 3583   | 3660 | 3736 | 3813 | 3889  | 3966  | 4042  | 4119  | 4195  | 4272  | 77    |
| 568 | 4348   | 4425 | 4501 | 4578 | 4654  | 4730  | 4807  | 4883  | 4960  | 5036  | 76    |
| 569 | 5112   | 5189 | 5265 | 5341 | 5417  | 5494  | 5570  | 5646  | 5722  | 5799  | 76    |
| 570 | 755875 | 5951 | 6027 | 6103 | 6180  | 6256  | 6332  | 6408  | 6484  | 6560  | 76    |
| 571 | 6636   | 6712 | 6788 | 6864 | 6940  | 7016  | 7092  | 7168  | 7244  | 7320  | 76    |
| 572 | 7396   | 7472 | 7548 | 7624 | 7700  | 7775  | 7851  | 7927  | 8003  | 8079  | 76    |
| 573 | 8155   | 8230 | 8306 | 8382 | 8458  | 8533  | 8609  | 8685  | 8761  | 8836  | 76    |
| 574 | 8912   | 8988 | 9063 | 9139 | 9214  | 9290  | 9366  | 9441  | 9517  | 9592  | 76    |
| 575 | 759668 | 9743 | 9819 | 9894 | 9970  | *0045 | *0121 | *0196 | *0272 | *0347 | 75    |
| 576 | 760422 | 0498 | 0573 | 0649 | 0724  | 0799  | 0875  | 0950  | 1025  | 1101  | 75    |
| 577 | 1176   | 1251 | 1326 | 1402 | 1477  | 1552  | 1627  | 1702  | 1778  | 1853  | 75    |
| 578 | 1928   | 2003 | 2078 | 2153 | 2228  | 2303  | 2378  | 2453  | 2529  | 2604  | 75    |
| 579 | 2679   | 2754 | 2829 | 2904 | 2978  | 3053  | 3128  | 3203  | 3278  | 3353  | 75    |
| 580 | 763428 | 3503 | 3578 | 3653 | 3727  | 3802  | 3877  | 3952  | 4027  | 4101  | 75    |
| 581 | 4176   | 4251 | 4326 | 4400 | 4475  | 4550  | 4624  | 4699  | 4774  | 4848  | 75    |
| 582 | 4923   | 4998 | 5072 | 5147 | 5221  | 5296  | 5370  | 5445  | 5520  | 5594  | 75    |
| 583 | 5669   | 5743 | 5818 | 5892 | 5966  | 6041  | 6115  | 6190  | 6264  | 6338  | 74    |
| 584 | 6413   | 6487 | 6562 | 6636 | 6710  | 6785  | 6859  | 6933  | 7007  | 7082  | 74    |
| 585 | 767156 | 7230 | 7304 | 7379 | 7453  | 7527  | 7601  | 7675  | 7749  | 7823  | 74    |
| 586 | 7898   | 7972 | 8046 | 8120 | 8194  | 8268  | 8342  | 8416  | 8490  | 8564  | 74    |
| 587 | 8638   | 8712 | 8786 | 8860 | 8934  | 9008  | 9082  | 9156  | 9230  | 9303  | 74    |
| 588 | 9377   | 9451 | 9525 | 9599 | 9673  | 9746  | 9820  | 9894  | 9968  | *0042 | 74    |
| 589 | 770115 | 0189 | 0263 | 0336 | 0410  | 0484  | 0557  | 0631  | 0705  | 0778  | 74    |
| 590 | 770852 | 0926 | 0999 | 1073 | 1146  | 1220  | 1293  | 1367  | 1440  | 1514  | 74    |
| 591 | 1587   | 1661 | 1734 | 1808 | 1881  | 1955  | 2028  | 2102  | 2175  | 2248  | 73    |
| 592 | 2322   | 2395 | 2468 | 2542 | 2615  | 2688  | 2762  | 2835  | 2908  | 2981  | 73    |
| 593 | 3055   | 3128 | 3201 | 3274 | 3348  | 3421  | 3494  | 3567  | 3640  | 3713  | 73    |
| 594 | 3786   | 3860 | 3933 | 4006 | 4079  | 4152  | 4225  | 4298  | 4371  | 4444  | 73    |
| 595 | 774517 | 4590 | 4663 | 4736 | 4809  | 4882  | 4955  | 5028  | 5100  | 5173  | 73    |
| 596 | 5246   | 5319 | 5392 | 5465 | 5538  | 5610  | 5683  | 5756  | 5829  | 5902  | 73    |
| 597 | 5974   | 6047 | 6120 | 6193 | 6265  | 6338  | 6411  | 6483  | 6556  | 6629  | 73    |
| 598 | 6701   | 6774 | 6846 | 6919 | 6992  | 7064  | 7137  | 7209  | 7282  | 7354  | 73    |
| 599 | 7427   | 7499 | 7572 | 7644 | 7717  | 7789  | 7862  | 7934  | 8006  | 8079  | 72    |

| N. | Diff. | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |
|----|-------|---|----|----|----|----|----|----|----|----|-------|
| 率  | 78    | 8 | 16 | 23 | 31 | 39 | 47 | 55 | 62 | 70 | 78    |
|    | 77    | 8 | 15 | 23 | 31 | 39 | 46 | 54 | 62 | 69 | 77    |
|    | 75    | 8 | 15 | 23 | 30 | 38 | 46 | 53 | 61 | 68 | 76    |
|    | 74    | 7 | 15 | 22 | 30 | 38 | 45 | 53 | 60 | 68 | 75    |
|    | 73    | 7 | 15 | 22 | 30 | 37 | 44 | 52 | 59 | 67 | 74    |
|    | 72    | 7 | 14 | 22 | 29 | 37 | 44 | 51 | 58 | 66 | 73    |
|    |       |   |    |    | 29 | 36 | 43 | 50 | 58 | 65 | 72    |
|    | Diff. | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |

| N.  | 0      | 1    | 2    | 3    | 4    | 5    | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|------|------|------|------|------|-------|-------|-------|-------|-------|
| 600 | 778151 | 8224 | 8396 | 8568 | 8441 | 8513 | 8585  | 8658  | 8730  | 8802  | 72    |
| 601 | 8874   | 8947 | 9019 | 9091 | 9163 | 9236 | 9308  | 9380  | 9452  | 9524  | 72    |
| 602 | 9599   | 9669 | 9741 | 9813 | 9885 | 9957 | *0029 | *0101 | *0173 | *0245 | 72    |
| 603 | 780317 | 0389 | 0461 | 0533 | 0605 | 0677 | 0749  | 0821  | 0893  | 0965  | 72    |
| 604 | 1037   | 1109 | 1181 | 1253 | 1324 | 1396 | 1468  | 1540  | 1612  | 1684  | 72    |
| 605 | 781755 | 1827 | 1899 | 1971 | 2042 | 2114 | 2186  | 2258  | 2329  | 2401  | 72    |
| 606 | 2473   | 2544 | 2616 | 2688 | 2759 | 2831 | 2902  | 2974  | 3046  | 3117  | 72    |
| 607 | 3189   | 3260 | 3332 | 3403 | 3475 | 3546 | 3618  | 3689  | 3761  | 3832  | 71    |
| 608 | 3994   | 3975 | 4046 | 4118 | 4189 | 4261 | 4332  | 4403  | 4475  | 4546  | 71    |
| 609 | 4617   | 4689 | 4760 | 4831 | 4902 | 4974 | 5045  | 5116  | 5187  | 5259  | 71    |
| 610 | 785330 | 5401 | 5472 | 5543 | 5615 | 5686 | 5757  | 5828  | 5899  | 5970  | 71    |
| 611 | 6041   | 6112 | 6183 | 6254 | 6325 | 6396 | 6467  | 6538  | 6609  | 6680  | 71    |
| 612 | 6751   | 6822 | 6893 | 6964 | 7035 | 7106 | 7177  | 7248  | 7319  | 7390  | 71    |
| 613 | 7460   | 7531 | 7602 | 7673 | 7744 | 7815 | 7885  | 7956  | 8027  | 8098  | 71    |
| 614 | 8168   | 8239 | 8310 | 8381 | 8451 | 8522 | 8593  | 8663  | 8734  | 8804  | 71    |
| 615 | 788875 | 8946 | 9016 | 9087 | 9157 | 9228 | 9299  | 9369  | 9440  | 9510  | 71    |
| 616 | 9581   | 9651 | 9722 | 9792 | 9863 | 9933 | *0004 | *0074 | *0144 | *0215 | 70    |
| 617 | 790285 | 0356 | 0426 | 0496 | 0567 | 0637 | 0707  | 0778  | 0848  | 0918  | 70    |
| 618 | 0938   | 1059 | 1129 | 1199 | 1269 | 1340 | 1410  | 1480  | 1550  | 1620  | 70    |
| 619 | 1691   | 1761 | 1831 | 1901 | 1971 | 2041 | 2111  | 2181  | 2252  | 2322  | 70    |
| 620 | 792392 | 2462 | 2532 | 2602 | 2672 | 2742 | 2812  | 2882  | 2952  | 3022  | 70    |
| 621 | 3092   | 3162 | 3231 | 3301 | 3371 | 3441 | 3511  | 3581  | 3651  | 3721  | 70    |
| 622 | 3790   | 3860 | 3930 | 4000 | 4070 | 4139 | 4209  | 4279  | 4349  | 4418  | 70    |
| 623 | 4488   | 4558 | 4627 | 4697 | 4767 | 4836 | 4906  | 4976  | 5045  | 5115  | 70    |
| 624 | 5185   | 5254 | 5324 | 5393 | 5463 | 5532 | 5602  | 5672  | 5741  | 5811  | 70    |
| 625 | 795880 | 5949 | 6019 | 6088 | 6158 | 6227 | 6297  | 6366  | 6436  | 6505  | 69    |
| 626 | 6574   | 6644 | 6713 | 6782 | 6852 | 6921 | 6990  | 7060  | 7129  | 7198  | 69    |
| 627 | 7268   | 7337 | 7406 | 7475 | 7545 | 7614 | 7683  | 7752  | 7821  | 7890  | 69    |
| 628 | 7960   | 8029 | 8098 | 8167 | 8236 | 8305 | 8374  | 8443  | 8512  | 8582  | 69    |
| 629 | 8651   | 8720 | 8789 | 8858 | 8927 | 8996 | 9065  | 9134  | 9203  | 9272  | 69    |
| 630 | 799341 | 9409 | 9478 | 9547 | 9616 | 9685 | 9754  | 9823  | 9892  | 9961  | 69    |
| 631 | 800029 | 0098 | 0167 | 0236 | 0305 | 0373 | 0442  | 0511  | 0580  | 0648  | 69    |
| 632 | 0717   | 0786 | 0854 | 0923 | 0992 | 1061 | 1129  | 1198  | 1266  | 1335  | 69    |
| 633 | 1404   | 1472 | 1541 | 1609 | 1678 | 1747 | 1815  | 1884  | 1952  | 2021  | 69    |
| 634 | 2089   | 2158 | 2226 | 2295 | 2363 | 2432 | 2500  | 2568  | 2637  | 2705  | 68    |
| 635 | 802774 | 2842 | 2910 | 2979 | 3047 | 3116 | 3184  | 3252  | 3321  | 3389  | 68    |
| 636 | 3457   | 3525 | 3594 | 3662 | 3730 | 3798 | 3867  | 3935  | 4003  | 4071  | 68    |
| 637 | 4139   | 4208 | 4276 | 4344 | 4412 | 4480 | 4548  | 4616  | 4685  | 4753  | 68    |
| 638 | 4821   | 4889 | 4957 | 5025 | 5093 | 5161 | 5229  | 5297  | 5365  | 5433  | 68    |
| 639 | 5501   | 5569 | 5637 | 5705 | 5773 | 5841 | 5908  | 5976  | 6044  | 6112  | 68    |
| 640 | 806180 | 6248 | 6316 | 6384 | 6451 | 6519 | 6587  | 6655  | 6723  | 6790  | 68    |
| 641 | 6858   | 6926 | 6994 | 7061 | 7129 | 7197 | 7264  | 7332  | 7400  | 7467  | 68    |
| 642 | 7535   | 7603 | 7670 | 7738 | 7806 | 7873 | 7941  | 8008  | 8076  | 8143  | 68    |
| 643 | 8211   | 8279 | 8346 | 8414 | 8481 | 8549 | 8616  | 8684  | 8751  | 8818  | 67    |
| 644 | 8886   | 8953 | 9021 | 9088 | 9156 | 9223 | 9290  | 9358  | 9425  | 9492  | 67    |
| 645 | 809560 | 9627 | 9694 | 9762 | 9829 | 9896 | 9964  | *0031 | *0098 | *0165 | 67    |
| 646 | 810233 | 0300 | 0367 | 0434 | 0501 | 0569 | 0636  | 0703  | 0770  | 0837  | 67    |
| 647 | 0904   | 0971 | 1039 | 1106 | 1173 | 1240 | 1307  | 1374  | 1441  | 1508  | 67    |
| 648 | 1575   | 1642 | 1709 | 1776 | 1843 | 1910 | 1977  | 2044  | 2111  | 2178  | 67    |
| 649 | 2245   | 2312 | 2379 | 2445 | 2512 | 2579 | 2646  | 2713  | 2780  | 2847  | 67    |
| N.  | Diff.  | 1    | 2    | 3    | 4    | 5    | 6     | 7     | 8     | 9     | Diff. |
| 率   | 73     | 7    | 15   | 22   | 29   | 37   | 44    | 51    | 58    | 66    | 73    |
|     | 72     | 7    | 14   | 22   | 29   | 36   | 43    | 50    | 58    | 65    | 72    |
|     | 71     | 7    | 14   | 21   | 28   | 36   | 43    | 50    | 57    | 64    | 71    |
|     | 70     | 7    | 14   | 21   | 28   | 35   | 42    | 49    | 56    | 63    | 70    |
| 差   | 69     | 7    | 14   | 21   | 28   | 35   | 41    | 48    | 55    | 62    | 69    |
|     | 68     | 7    | 14   | 20   | 27   | 34   | 41    | 48    | 54    | 61    | 68    |
| N.  | Diff.  | 1    | 2    | 3    | 4    | 5    | 6     | 7     | 8     | 9     | Diff. |

| N.  | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 650 | 812913 | 2980  | 3047  | 3114  | 3181  | 3247  | 3314  | 3381  | 3448  | 3514  | 67    |
| 651 | 3581   | 3648  | 3714  | 3781  | 3848  | 3914  | 3981  | 4048  | 4114  | 4181  | 67    |
| 652 | 4248   | 4314  | 4381  | 4447  | 4514  | 4581  | 4647  | 4714  | 4780  | 4847  | 67    |
| 653 | 4913   | 4980  | 5046  | 5113  | 5179  | 5246  | 5312  | 5378  | 5445  | 5511  | 66    |
| 654 | 5578   | 5644  | 5711  | 5777  | 5843  | 5910  | 5976  | 6042  | 6109  | 6175  | 66    |
| 655 | 816241 | 6308  | 6374  | 6440  | 6506  | 6573  | 6639  | 6705  | 6771  | 6838  | 66    |
| 656 | 6904   | 6970  | 7036  | 7102  | 7169  | 7235  | 7301  | 7367  | 7433  | 7499  | 66    |
| 657 | 7565   | 7631  | 7698  | 7764  | 7830  | 7896  | 7962  | 8028  | 8094  | 8160  | 66    |
| 658 | 8226   | 8292  | 8358  | 8424  | 8490  | 8556  | 8622  | 8688  | 8754  | 8820  | 66    |
| 659 | 8885   | 8951  | 9017  | 9083  | 9149  | 9215  | 9281  | 9346  | 9412  | 9478  | 66    |
| 660 | 819544 | 9610  | 9676  | 9741  | 9807  | 9873  | 9939  | *0004 | *0070 | *0136 | 66    |
| 661 | 820201 | 0267  | 0333  | 0399  | 0464  | 0530  | 0595  | 0661  | 0727  | 0792  | 66    |
| 662 | 0858   | 0924  | 0989  | 1055  | 1120  | 1186  | 1251  | 1317  | 1382  | 1448  | 66    |
| 663 | 1514   | 1579  | 1645  | 1710  | 1775  | 1841  | 1906  | 1972  | 2037  | 2103  | 65    |
| 664 | 2168   | 2233  | 2299  | 2364  | 2430  | 2495  | 2560  | 2626  | 2691  | 2756  | 65    |
| 665 | 822822 | 2887  | 2952  | 3018  | 3083  | 3148  | 3213  | 3279  | 3344  | 3409  | 65    |
| 666 | 3474   | 3539  | 3605  | 3670  | 3735  | 3800  | 3865  | 3930  | 3996  | 4061  | 65    |
| 667 | 4126   | 4191  | 4256  | 4321  | 4386  | 4451  | 4516  | 4581  | 4646  | 4711  | 65    |
| 668 | 4776   | 4841  | 4906  | 4971  | 5036  | 5101  | 5166  | 5231  | 5296  | 5361  | 65    |
| 669 | 5426   | 5491  | 5556  | 5621  | 5686  | 5751  | 5815  | 5880  | 5945  | 6010  | 65    |
| 670 | 826075 | 6140  | 6204  | 6269  | 6334  | 6399  | 6464  | 6528  | 6593  | 6658  | 65    |
| 671 | 6723   | 6787  | 6852  | 6917  | 6981  | 7046  | 7111  | 7175  | 7240  | 7305  | 65    |
| 672 | 7369   | 7434  | 7499  | 7563  | 7628  | 7692  | 7757  | 7821  | 7886  | 7951  | 65    |
| 673 | 8015   | 8080  | 8144  | 8209  | 8273  | 8338  | 8402  | 8467  | 8531  | 8595  | 64    |
| 674 | 8660   | 8724  | 8789  | 8853  | 8918  | 8982  | 9046  | 9111  | 9175  | 9239  | 64    |
| 675 | 829304 | 9368  | 9432  | 9497  | 9561  | 9625  | 9690  | 9754  | 9818  | 9882  | 64    |
| 676 | 9947   | *0011 | *0075 | *0139 | *0204 | *0268 | *0332 | *0396 | *0460 | *0525 | 64    |
| 677 | 830589 | 0653  | 0717  | 0781  | 0845  | 0909  | 0973  | 1037  | 1102  | 1166  | 64    |
| 678 | 1230   | 1294  | 1358  | 1422  | 1486  | 1550  | 1614  | 1678  | 1742  | 1806  | 64    |
| 679 | 1870   | 1934  | 1998  | 2062  | 2126  | 2189  | 2253  | 2317  | 2381  | 2445  | 64    |
| 680 | 832509 | 2573  | 2637  | 2700  | 2764  | 2828  | 2892  | 2956  | 3020  | 3083  | 64    |
| 681 | 3147   | 3211  | 3275  | 3338  | 3402  | 3466  | 3530  | 3593  | 3657  | 3721  | 64    |
| 682 | 3784   | 3848  | 3912  | 3975  | 4039  | 4103  | 4166  | 4230  | 4294  | 4357  | 64    |
| 683 | 4421   | 4484  | 4548  | 4611  | 4675  | 4739  | 4802  | 4866  | 4929  | 4993  | 64    |
| 684 | 5056   | 5120  | 5183  | 5247  | 5310  | 5373  | 5437  | 5500  | 5564  | 5627  | 63    |
| 685 | 835691 | 5754  | 5817  | 5881  | 5944  | 6007  | 6071  | 6134  | 6197  | 6261  | 63    |
| 686 | 6324   | 6387  | 6451  | 6514  | 6577  | 6641  | 6704  | 6767  | 6830  | 6894  | 63    |
| 687 | 6957   | 7020  | 7083  | 7146  | 7210  | 7273  | 7336  | 7399  | 7462  | 7525  | 63    |
| 688 | 7588   | 7652  | 7715  | 7778  | 7841  | 7904  | 7967  | 8030  | 8093  | 8156  | 63    |
| 689 | 8219   | 8282  | 8345  | 8408  | 8471  | 8534  | 8597  | 8660  | 8723  | 8786  | 63    |
| 690 | 838849 | 8912  | 8975  | 9038  | 9101  | 9164  | 9227  | 9289  | 9352  | 9415  | 63    |
| 691 | 9478   | 9541  | 9604  | 9667  | 9729  | 9792  | 9855  | 9918  | 9981  | *0043 | 63    |
| 692 | 840106 | 0169  | 0232  | 0294  | 0357  | 0420  | 0482  | 0545  | 0608  | 0671  | 63    |
| 693 | 0733   | 0796  | 0859  | 0921  | 0984  | 1046  | 1109  | 1172  | 1234  | 1297  | 63    |
| 694 | 1359   | 1422  | 1485  | 1547  | 1610  | 1672  | 1735  | 1797  | 1860  | 1922  | 63    |
| 695 | 841985 | 2047  | 2110  | 2172  | 2235  | 2297  | 2360  | 2422  | 2484  | 2547  | 62    |
| 696 | 2609   | 2672  | 2734  | 2796  | 2859  | 2921  | 2983  | 3046  | 3108  | 3170  | 62    |
| 697 | 3233   | 3295  | 3357  | 3420  | 3482  | 3544  | 3606  | 3669  | 3731  | 3793  | 62    |
| 698 | 3855   | 3918  | 3980  | 4042  | 4104  | 4166  | 4229  | 4291  | 4353  | 4415  | 62    |
| 699 | 4477   | 4539  | 4601  | 4664  | 4726  | 4788  | 4850  | 4912  | 4974  | 5036  | 62    |

| N.    | Diff. | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |
|-------|-------|----|----|----|----|----|----|----|----|----|-------|
| 差     | 67    | 7  | 13 | 20 | 27 | 34 | 40 | 47 | 54 | 60 | 67    |
|       | 66    | 7  | 13 | 20 | 26 | 33 | 40 | 46 | 53 | 59 | 66    |
|       | 65    | 7  | 13 | 20 | 26 | 33 | 39 | 46 | 52 | 59 | 65    |
|       | 64    | 6  | 13 | 19 | 26 | 32 | 38 | 45 | 51 | 57 | 64    |
|       | 63    | 6  | 13 | 19 | 25 | 32 | 38 | 44 | 50 | 56 | 63    |
| 62    | 6     | 12 | 19 | 25 | 31 | 37 | 43 | 50 | 56 | 62 |       |
| Diff. |       | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |

| N.  | 0      | 1    | 2    | 3    | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 700 | 845098 | 5160 | 5222 | 5284 | 5346  | 5408  | 5470  | 5532  | 5594  | 5656  | 62    |
| 701 | 5718   | 5780 | 5842 | 5904 | 5966  | 6028  | 6090  | 6151  | 6213  | 6275  | 62    |
| 702 | 6337   | 6399 | 6461 | 6523 | 6585  | 6646  | 6708  | 6770  | 6832  | 6894  | 62    |
| 703 | 6955   | 7017 | 7079 | 7141 | 7202  | 7264  | 7326  | 7388  | 7449  | 7511  | 62    |
| 704 | 7573   | 7634 | 7696 | 7758 | 7819  | 7881  | 7943  | 8004  | 8066  | 8128  | 62    |
| 705 | 848189 | 8251 | 8312 | 8374 | 8435  | 8497  | 8559  | 8620  | 8682  | 8743  | 62    |
| 706 | 8805   | 8866 | 8928 | 8989 | 9051  | 9112  | 9174  | 9235  | 9297  | 9358  | 61    |
| 707 | 9419   | 9481 | 9542 | 9604 | 9665  | 9726  | 9788  | 9849  | 9911  | 9972  | 61    |
| 708 | 850033 | 0095 | 0156 | 0217 | 0279  | 0340  | 0401  | 0462  | 0524  | 0585  | 61    |
| 709 | 0646   | 0707 | 0769 | 0830 | 0891  | 0952  | 1014  | 1075  | 1136  | 1197  | 61    |
| 710 | 851258 | 1320 | 1381 | 1442 | 1503  | 1564  | 1625  | 1686  | 1747  | 1809  | 61    |
| 711 | 1870   | 1931 | 1992 | 2053 | 2114  | 2175  | 2236  | 2297  | 2358  | 2419  | 61    |
| 712 | 2480   | 2541 | 2602 | 2663 | 2724  | 2785  | 2846  | 2907  | 2968  | 3029  | 61    |
| 713 | 3090   | 3150 | 3211 | 3272 | 3333  | 3394  | 3455  | 3516  | 3577  | 3637  | 61    |
| 714 | 3698   | 3759 | 3820 | 3881 | 3941  | 4002  | 4063  | 4124  | 4185  | 4245  | 61    |
| 715 | 854306 | 4367 | 4428 | 4488 | 4549  | 4610  | 4670  | 4731  | 4792  | 4852  | 61    |
| 716 | 4913   | 4974 | 5034 | 5095 | 5156  | 5216  | 5277  | 5337  | 5398  | 5459  | 61    |
| 717 | 5519   | 5580 | 5640 | 5701 | 5761  | 5822  | 5882  | 5943  | 6003  | 6064  | 61    |
| 718 | 6124   | 6185 | 6245 | 6306 | 6366  | 6427  | 6487  | 6548  | 6608  | 6668  | 60    |
| 719 | 6729   | 6789 | 6850 | 6910 | 6970  | 7031  | 7091  | 7152  | 7212  | 7272  | 60    |
| 720 | 857332 | 7393 | 7453 | 7513 | 7574  | 7634  | 7694  | 7755  | 7815  | 7875  | 60    |
| 721 | 7935   | 7995 | 8056 | 8116 | 8176  | 8236  | 8297  | 8357  | 8417  | 8477  | 60    |
| 722 | 8537   | 8597 | 8657 | 8718 | 8778  | 8838  | 8898  | 8958  | 9018  | 9078  | 60    |
| 723 | 9138   | 9198 | 9258 | 9318 | 9379  | 9439  | 9499  | 9559  | 9619  | 9679  | 60    |
| 724 | 9739   | 9799 | 9859 | 9919 | 9978  | *0038 | *0098 | *0158 | *0218 | *0278 | 60    |
| 725 | 860338 | 0398 | 0458 | 0518 | 0578  | 0637  | 0697  | 0757  | 0817  | 0877  | 60    |
| 726 | 0937   | 0996 | 1056 | 1116 | 1176  | 1236  | 1295  | 1355  | 1415  | 1475  | 60    |
| 727 | 1534   | 1594 | 1654 | 1714 | 1773  | 1833  | 1893  | 1952  | 2012  | 2072  | 60    |
| 728 | 2131   | 2191 | 2251 | 2310 | 2370  | 2430  | 2489  | 2549  | 2608  | 2668  | 60    |
| 729 | 2728   | 2787 | 2847 | 2906 | 2966  | 3025  | 3085  | 3144  | 3204  | 3263  | 60    |
| 730 | 863323 | 3382 | 3442 | 3501 | 3561  | 3620  | 3680  | 3739  | 3799  | 3858  | 59    |
| 731 | 3917   | 3977 | 4036 | 4096 | 4155  | 4214  | 4274  | 4333  | 4392  | 4452  | 59    |
| 732 | 4511   | 4570 | 4630 | 4689 | 4748  | 4808  | 4867  | 4926  | 4985  | 5045  | 59    |
| 733 | 5104   | 5163 | 5222 | 5282 | 5341  | 5400  | 5459  | 5519  | 5578  | 5637  | 59    |
| 734 | 5696   | 5755 | 5814 | 5874 | 5933  | 5992  | 6051  | 6110  | 6169  | 6228  | 59    |
| 735 | 866287 | 6346 | 6405 | 6465 | 6524  | 6583  | 6642  | 6701  | 6760  | 6819  | 59    |
| 736 | 6878   | 6937 | 6996 | 7055 | 7114  | 7173  | 7232  | 7291  | 7350  | 7409  | 59    |
| 737 | 7467   | 7526 | 7585 | 7644 | 7703  | 7762  | 7821  | 7880  | 7939  | 7998  | 59    |
| 738 | 8056   | 8115 | 8174 | 8233 | 8292  | 8350  | 8409  | 8468  | 8527  | 8586  | 59    |
| 739 | 8644   | 8703 | 8762 | 8821 | 8879  | 8938  | 8997  | 9056  | 9114  | 9173  | 59    |
| 740 | 869232 | 9290 | 9349 | 9408 | 9466  | 9525  | 9584  | 9642  | 9701  | 9760  | 59    |
| 741 | 9818   | 9877 | 9935 | 9994 | *0053 | *0111 | *0170 | *0228 | *0287 | *0345 | 59    |
| 742 | 870404 | 0462 | 0521 | 0579 | 0638  | 0696  | 0755  | 0813  | 0872  | 0930  | 58    |
| 743 | 0989   | 1047 | 1106 | 1164 | 1223  | 1281  | 1339  | 1398  | 1456  | 1515  | 58    |
| 744 | 1573   | 1631 | 1690 | 1748 | 1806  | 1865  | 1923  | 1981  | 2040  | 2098  | 58    |
| 745 | 872156 | 2215 | 2273 | 2331 | 2389  | 2448  | 2506  | 2564  | 2622  | 2681  | 58    |
| 746 | 2739   | 2797 | 2855 | 2913 | 2972  | 3030  | 3088  | 3146  | 3204  | 3262  | 58    |
| 747 | 3321   | 3379 | 3437 | 3495 | 3553  | 3611  | 3669  | 3727  | 3785  | 3844  | 58    |
| 748 | 3902   | 3960 | 4018 | 4076 | 4134  | 4192  | 4250  | 4308  | 4366  | 4424  | 58    |
| 749 | 4482   | 4540 | 4598 | 4656 | 4714  | 4772  | 4830  | 4888  | 4945  | 5003  | 58    |

| N.    | Diff. | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |
|-------|-------|---|----|----|----|----|----|----|----|----|-------|
| 率     | 62    | 6 | 12 | 19 | 25 | 31 | 37 | 43 | 50 | 56 | 62    |
|       | 61    | 6 | 12 | 18 | 24 | 31 | 37 | 43 | 49 | 55 | 61    |
|       | 60    | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60    |
| 差     | 59    | 6 | 12 | 18 | 24 | 30 | 35 | 41 | 47 | 53 | 59    |
|       | 58    | 6 | 12 | 17 | 23 | 29 | 35 | 41 | 46 | 52 | 58    |
| Diff. |       | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |

| N.    | 0      | 1    | 2    | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-------|--------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 750   | 875061 | 5119 | 5177 | 5235  | 5293  | 5351  | 5409  | 5466  | 5524  | 5582  | 58    |
| 751   | 5640   | 5698 | 5756 | 5813  | 5871  | 5929  | 5987  | 6045  | 6102  | 6160  | 58    |
| 752   | 6218   | 6276 | 6333 | 6391  | 6449  | 6507  | 6564  | 6622  | 6680  | 6737  | 58    |
| 753   | 6795   | 6853 | 6910 | 6968  | 7026  | 7083  | 7141  | 7199  | 7256  | 7314  | 58    |
| 754   | 7371   | 7429 | 7487 | 7544  | 7602  | 7659  | 7717  | 7774  | 7832  | 7889  | 58    |
| 755   | 87947  | 8004 | 8062 | 8119  | 8177  | 8234  | 8292  | 8349  | 8407  | 8464  | 57    |
| 756   | 8522   | 8579 | 8637 | 8694  | 8752  | 8809  | 8866  | 8924  | 8981  | 9039  | 57    |
| 757   | 9096   | 9153 | 9211 | 9268  | 9325  | 9383  | 9440  | 9497  | 9555  | 9612  | 57    |
| 758   | 9669   | 9726 | 9784 | 9841  | 9898  | 9955  | *0013 | *0070 | *0127 | *0185 | 57    |
| 759   | 880242 | 0299 | 0356 | 0413  | 0471  | 0528  | 0585  | 0642  | 0699  | 0756  | 57    |
| 760   | 880814 | 0871 | 0928 | 0985  | 1042  | 1099  | 1156  | 1213  | 1271  | 1328  | 57    |
| 761   | 1385   | 1442 | 1499 | 1556  | 1613  | 1670  | 1727  | 1784  | 1841  | 1898  | 57    |
| 762   | 1955   | 2012 | 2069 | 2126  | 2183  | 2240  | 2297  | 2354  | 2411  | 2468  | 57    |
| 763   | 2525   | 2581 | 2638 | 2695  | 2752  | 2809  | 2866  | 2923  | 2980  | 3037  | 57    |
| 764   | 3093   | 3150 | 3207 | 3264  | 3321  | 3377  | 3434  | 3491  | 3548  | 3605  | 57    |
| 765   | 883661 | 3718 | 3775 | 3832  | 3888  | 3945  | 4002  | 4059  | 4115  | 4172  | 57    |
| 766   | 4229   | 4285 | 4342 | 4399  | 4455  | 4512  | 4569  | 4625  | 4682  | 4737  | 57    |
| 767   | 4795   | 4852 | 4909 | 4965  | 5022  | 5078  | 5135  | 5192  | 5248  | 5305  | 57    |
| 768   | 5361   | 5418 | 5474 | 5531  | 5587  | 5644  | 5700  | 5757  | 5813  | 5870  | 57    |
| 769   | 5926   | 5983 | 6039 | 6096  | 6152  | 6209  | 6265  | 6321  | 6378  | 6434  | 56    |
| 770   | 886491 | 6547 | 6604 | 6660  | 6716  | 6773  | 6829  | 6885  | 6942  | 6998  | 56    |
| 771   | 7054   | 7111 | 7167 | 7223  | 7280  | 7336  | 7392  | 7449  | 7505  | 7561  | 56    |
| 772   | 7617   | 7674 | 7730 | 7786  | 7842  | 7898  | 7955  | 8011  | 8067  | 8123  | 56    |
| 773   | 8179   | 8236 | 8292 | 8348  | 8404  | 8460  | 8516  | 8573  | 8629  | 8685  | 56    |
| 774   | 8741   | 8797 | 8853 | 8909  | 8965  | 9021  | 9077  | 9134  | 9190  | 9246  | 56    |
| 775   | 889302 | 9358 | 9414 | 9470  | 9526  | 9582  | 9638  | 9694  | 9750  | 9806  | 56    |
| 776   | 9862   | 9918 | 9974 | *0030 | *0086 | *0141 | *0197 | *0253 | *0309 | *0365 | 56    |
| 777   | 890421 | 0477 | 0533 | 0589  | 0645  | 0700  | 0756  | 0812  | 0868  | 0924  | 56    |
| 778   | 0980   | 1035 | 1091 | 1147  | 1203  | 1259  | 1314  | 1370  | 1426  | 1482  | 56    |
| 779   | 1537   | 1593 | 1649 | 1705  | 1760  | 1816  | 1872  | 1928  | 1983  | 2039  | 56    |
| 780   | 892095 | 2150 | 2206 | 2262  | 2317  | 2373  | 2429  | 2484  | 2540  | 2595  | 56    |
| 781   | 2651   | 2707 | 2762 | 2818  | 2873  | 2929  | 2985  | 3040  | 3096  | 3151  | 56    |
| 782   | 3207   | 3262 | 3318 | 3373  | 3429  | 3484  | 3540  | 3595  | 3651  | 3706  | 56    |
| 783   | 3762   | 3817 | 3873 | 3928  | 3984  | 4039  | 4094  | 4150  | 4205  | 4261  | 55    |
| 784   | 4316   | 4371 | 4427 | 4482  | 4538  | 4593  | 4648  | 4704  | 4759  | 4814  | 55    |
| 785   | 894870 | 4925 | 4980 | 5036  | 5091  | 5146  | 5201  | 5257  | 5312  | 5367  | 55    |
| 786   | 5423   | 5478 | 5533 | 5588  | 5644  | 5699  | 5754  | 5809  | 5864  | 5920  | 55    |
| 787   | 5975   | 6030 | 6085 | 6140  | 6195  | 6251  | 6306  | 6361  | 6416  | 6471  | 55    |
| 788   | 6526   | 6581 | 6636 | 6692  | 6747  | 6802  | 6857  | 6912  | 6967  | 7022  | 55    |
| 789   | 7077   | 7132 | 7187 | 7242  | 7297  | 7352  | 7407  | 7462  | 7517  | 7572  | 55    |
| 790   | 897627 | 7682 | 7737 | 7792  | 7847  | 7902  | 7957  | 8012  | 8067  | 8122  | 55    |
| 791   | 8176   | 8231 | 8286 | 8341  | 8396  | 8451  | 8506  | 8561  | 8616  | 8670  | 55    |
| 792   | 8725   | 8780 | 8835 | 8890  | 8944  | 8999  | 9054  | 9109  | 9164  | 9218  | 55    |
| 793   | 9273   | 9328 | 9383 | 9437  | 9492  | 9547  | 9602  | 9656  | 9711  | 9766  | 55    |
| 794   | 9821   | 9875 | 9930 | 9985  | *0039 | *0094 | *0149 | *0203 | *0258 | *0312 | 55    |
| 795   | 900367 | 0422 | 0476 | 0531  | 0586  | 0640  | 0695  | 0749  | 0804  | 0859  | 55    |
| 796   | 0913   | 0968 | 1022 | 1077  | 1131  | 1186  | 1240  | 1295  | 1349  | 1404  | 55    |
| 797   | 1458   | 1513 | 1567 | 1622  | 1676  | 1731  | 1785  | 1840  | 1894  | 1948  | 54    |
| 798   | 2003   | 2057 | 2112 | 2166  | 2221  | 2275  | 2329  | 2384  | 2438  | 2492  | 54    |
| 799   | 2547   | 2601 | 2655 | 2710  | 2764  | 2818  | 2873  | 2927  | 2981  | 3036  | 54    |
| N.    | Diff.  | 1    | 2    | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
| 差率    | 57     | 6    | 11   | 17    | 23    | 29    | 34    | 40    | 46    | 51    | 57    |
|       | 56     | 6    | 11   | 17    | 22    | 28    | 34    | 39    | 45    | 50    | 56    |
|       | 55     | 6    | 11   | 17    | 22    | 28    | 33    | 39    | 44    | 50    | 55    |
|       | 54     | 5    | 11   | 16    | 22    | 27    | 32    | 38    | 43    | 49    | 54    |
| Diff. | 1      | 2    | 3    | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |       |

| N.    | 0      | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8     | 9     | Diff. |
|-------|--------|------|------|------|------|------|------|------|-------|-------|-------|
| 800   | 903090 | 3144 | 3199 | 3253 | 3307 | 3361 | 3416 | 3470 | 3524  | 3578  | 54    |
| 801   | 3633   | 3687 | 3741 | 3795 | 3849 | 3904 | 3958 | 4012 | 4066  | 4120  | 54    |
| 802   | 4174   | 4229 | 4283 | 4337 | 4391 | 4445 | 4499 | 4553 | 4607  | 4661  | 54    |
| 803   | 4716   | 4770 | 4824 | 4878 | 4932 | 4986 | 5040 | 5094 | 5148  | 5202  | 54    |
| 804   | 5256   | 5310 | 5364 | 5418 | 5472 | 5526 | 5580 | 5634 | 5688  | 5742  | 54    |
| 805   | 905796 | 5850 | 5904 | 5958 | 6012 | 6066 | 6119 | 6173 | 6227  | 6281  | 54    |
| 806   | 6335   | 6389 | 6443 | 6497 | 6551 | 6604 | 6658 | 6712 | 6766  | 6820  | 54    |
| 807   | 6874   | 6927 | 6981 | 7035 | 7089 | 7143 | 7196 | 7250 | 7304  | 7358  | 54    |
| 808   | 7411   | 7465 | 7519 | 7573 | 7626 | 7680 | 7734 | 7787 | 7841  | 7895  | 54    |
| 809   | 7949   | 8002 | 8056 | 8110 | 8163 | 8217 | 8270 | 8324 | 8378  | 8431  | 54    |
| 810   | 908485 | 8539 | 8592 | 8646 | 8699 | 8753 | 8807 | 8860 | 8914  | 8967  | 54    |
| 811   | 9021   | 9074 | 9128 | 9181 | 9235 | 9289 | 9342 | 9396 | 9449  | 9503  | 54    |
| 812   | 9556   | 9610 | 9663 | 9716 | 9770 | 9823 | 9877 | 9930 | 9984  | *0037 | 53    |
| 813   | 910091 | 0144 | 0197 | 0251 | 0304 | 0358 | 0411 | 0464 | 0518  | 0571  | 53    |
| 814   | 0624   | 0678 | 0731 | 0784 | 0838 | 0891 | 0944 | 0998 | 1051  | 1104  | 53    |
| 815   | 911158 | 1211 | 1264 | 1317 | 1371 | 1424 | 1477 | 1530 | 1584  | 1637  | 53    |
| 816   | 1690   | 1743 | 1797 | 1850 | 1903 | 1956 | 2009 | 2063 | 2116  | 2169  | 53    |
| 817   | 2222   | 2275 | 2328 | 2381 | 2435 | 2488 | 2541 | 2594 | 2647  | 2700  | 53    |
| 818   | 2753   | 2806 | 2859 | 2913 | 2966 | 3019 | 3072 | 3125 | 3178  | 3231  | 53    |
| 819   | 3284   | 3337 | 3390 | 3443 | 3496 | 3549 | 3602 | 3655 | 3708  | 3761  | 53    |
| 820   | 913814 | 3867 | 3920 | 3973 | 4026 | 4079 | 4132 | 4184 | 4237  | 4290  | 53    |
| 821   | 4343   | 4396 | 4449 | 4502 | 4555 | 4608 | 4660 | 4713 | 4766  | 4819  | 53    |
| 822   | 4872   | 4925 | 4977 | 5030 | 5083 | 5136 | 5189 | 5241 | 5294  | 5347  | 53    |
| 823   | 5400   | 5453 | 5505 | 5558 | 5611 | 5664 | 5716 | 5769 | 5822  | 5875  | 53    |
| 824   | 5927   | 5980 | 6033 | 6085 | 6138 | 6191 | 6243 | 6296 | 6349  | 6401  | 53    |
| 825   | 916454 | 6507 | 6559 | 6612 | 6664 | 6717 | 6770 | 6822 | 6875  | 6927  | 53    |
| 826   | 6980   | 7033 | 7085 | 7138 | 7190 | 7243 | 7295 | 7348 | 7400  | 7453  | 53    |
| 827   | 7566   | 7558 | 7611 | 7663 | 7716 | 7768 | 7820 | 7873 | 7925  | 7978  | 52    |
| 828   | 8030   | 8083 | 8135 | 8188 | 8240 | 8293 | 8345 | 8397 | 8450  | 8502  | 52    |
| 829   | 8555   | 8607 | 8659 | 8712 | 8764 | 8816 | 8869 | 8921 | 8973  | 9026  | 52    |
| 830   | 919078 | 9130 | 9183 | 9235 | 9287 | 9340 | 9392 | 9444 | 9496  | 9549  | 52    |
| 831   | 9601   | 9653 | 9706 | 9758 | 9810 | 9862 | 9914 | 9967 | *0019 | *0071 | 52    |
| 832   | 920123 | 0176 | 0228 | 0280 | 0332 | 0384 | 0436 | 0489 | 0541  | 0593  | 52    |
| 833   | 0645   | 0697 | 0749 | 0801 | 0853 | 0906 | 0958 | 1010 | 1062  | 1114  | 52    |
| 834   | 1166   | 1218 | 1270 | 1322 | 1374 | 1426 | 1478 | 1530 | 1582  | 1634  | 52    |
| 835   | 921686 | 1738 | 1790 | 1842 | 1894 | 1946 | 1998 | 2050 | 2102  | 2154  | 52    |
| 836   | 2206   | 2258 | 2310 | 2362 | 2414 | 2466 | 2518 | 2570 | 2622  | 2674  | 52    |
| 837   | 2725   | 2777 | 2829 | 2881 | 2933 | 2985 | 3037 | 3089 | 3140  | 3192  | 52    |
| 838   | 3244   | 3296 | 3348 | 3399 | 3451 | 3503 | 3555 | 3607 | 3658  | 3710  | 52    |
| 839   | 3762   | 3814 | 3865 | 3917 | 3969 | 4021 | 4072 | 4124 | 4176  | 4228  | 52    |
| 840   | 924279 | 4331 | 4383 | 4434 | 4486 | 4538 | 4589 | 4641 | 4693  | 4744  | 52    |
| 841   | 4796   | 4848 | 4899 | 4951 | 5003 | 5054 | 5106 | 5157 | 5209  | 5261  | 52    |
| 842   | 5312   | 5364 | 5415 | 5467 | 5518 | 5570 | 5621 | 5673 | 5725  | 5776  | 52    |
| 843   | 5828   | 5879 | 5931 | 5982 | 6034 | 6085 | 6137 | 6188 | 6240  | 6291  | 51    |
| 844   | 6342   | 6394 | 6445 | 6497 | 6548 | 6600 | 6651 | 6702 | 6754  | 6805  | 51    |
| 845   | 926857 | 6908 | 6959 | 7011 | 7062 | 7114 | 7165 | 7216 | 7268  | 7319  | 51    |
| 846   | 7370   | 7422 | 7473 | 7524 | 7576 | 7627 | 7678 | 7730 | 7781  | 7832  | 51    |
| 847   | 7883   | 7935 | 7986 | 8037 | 8088 | 8140 | 8191 | 8242 | 8293  | 8345  | 51    |
| 848   | 8396   | 8447 | 8498 | 8549 | 8601 | 8652 | 8703 | 8754 | 8805  | 8857  | 51    |
| 849   | 8908   | 8959 | 9010 | 9061 | 9112 | 9163 | 9215 | 9266 | 9317  | 9368  | 51    |
| N.    | Diff.  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8     | 9     | Diff. |
| 差     | 55     | 6    | 11   | 17   | 22   | 28   | 33   | 39   | 44    | 50    | 55    |
|       | 54     | 5    | 11   | 16   | 22   | 27   | 32   | 38   | 43    | 49    | 54    |
|       | 53     | 5    | 11   | 16   | 21   | 27   | 32   | 37   | 42    | 48    | 53    |
|       | 52     | 5    | 10   | 16   | 21   | 26   | 31   | 36   | 42    | 47    | 52    |
| Diff. | 1      | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9     | Diff. |       |

| N.  | 0      | 1    | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
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| 851 | 9930   | 9981 | *0032 | *0083 | *0134 | *0185 | *0236 | *0287 | *0338 | *0389 | 51    |
| 852 | 930440 | 0491 | 0542  | 0592  | 0643  | 0694  | 0745  | 0796  | 0847  | 0898  | 51    |
| 853 | 0949   | 1000 | 1051  | 1102  | 1153  | 1204  | 1254  | 1305  | 1356  | 1407  | 51    |
| 854 | 1458   | 1509 | 1560  | 1610  | 1661  | 1712  | 1763  | 1814  | 1865  | 1915  | 51    |
| 855 | 931966 | 2017 | 2068  | 2118  | 2169  | 2220  | 2271  | 2322  | 2372  | 2423  | 51    |
| 856 | 2474   | 2524 | 2575  | 2626  | 2677  | 2727  | 2778  | 2829  | 2879  | 2930  | 51    |
| 857 | 2981   | 3031 | 3082  | 3133  | 3183  | 3234  | 3285  | 3335  | 3386  | 3437  | 51    |
| 858 | 3487   | 3538 | 3589  | 3639  | 3690  | 3740  | 3791  | 3841  | 3892  | 3943  | 51    |
| 859 | 3993   | 4044 | 4094  | 4145  | 4195  | 4246  | 4296  | 4347  | 4397  | 4448  | 51    |
| 860 | 934498 | 4549 | 4599  | 4650  | 4700  | 4751  | 4801  | 4852  | 4902  | 4953  | 50    |
| 861 | 5003   | 5054 | 5104  | 5154  | 5205  | 5255  | 5306  | 5356  | 5406  | 5457  | 50    |
| 862 | 5507   | 5558 | 5608  | 5658  | 5709  | 5759  | 5809  | 5860  | 5910  | 5960  | 50    |
| 863 | 6011   | 6061 | 6111  | 6162  | 6212  | 6262  | 6313  | 6363  | 6413  | 6463  | 50    |
| 864 | 6514   | 6564 | 6614  | 6665  | 6715  | 6765  | 6815  | 6865  | 6916  | 6966  | 50    |
| 865 | 937016 | 7066 | 7117  | 7167  | 7217  | 7267  | 7317  | 7367  | 7418  | 7468  | 50    |
| 866 | 7518   | 7568 | 7618  | 7668  | 7718  | 7769  | 7819  | 7869  | 7919  | 7969  | 50    |
| 867 | 8019   | 8069 | 8119  | 8169  | 8219  | 8269  | 8320  | 8370  | 8420  | 8470  | 50    |
| 868 | 8520   | 8570 | 8620  | 8670  | 8720  | 8770  | 8820  | 8870  | 8920  | 8970  | 50    |
| 869 | 9020   | 9070 | 9120  | 9170  | 9220  | 9270  | 9320  | 9369  | 9419  | 9469  | 50    |
| 870 | 939519 | 9569 | 9619  | 9669  | 9719  | 9769  | 9819  | 9869  | 9918  | 9968  | 50    |
| 871 | 940018 | 0068 | 0118  | 0168  | 0218  | 0267  | 0317  | 0367  | 0417  | 0467  | 50    |
| 872 | 0516   | 0566 | 0616  | 0666  | 0716  | 0765  | 0815  | 0865  | 0915  | 0964  | 50    |
| 873 | 1014   | 1064 | 1114  | 1163  | 1213  | 1263  | 1313  | 1362  | 1412  | 1462  | 50    |
| 874 | 1511   | 1561 | 1611  | 1660  | 1710  | 1760  | 1809  | 1859  | 1909  | 1958  | 50    |
| 875 | 942008 | 2058 | 2107  | 2157  | 2207  | 2256  | 2306  | 2355  | 2405  | 2455  | 50    |
| 876 | 2504   | 2554 | 2603  | 2653  | 2702  | 2752  | 2801  | 2851  | 2901  | 2950  | 50    |
| 877 | 3000   | 3049 | 3099  | 3148  | 3198  | 3247  | 3297  | 3346  | 3396  | 3445  | 49    |
| 878 | 3495   | 3544 | 3593  | 3643  | 3692  | 3742  | 3791  | 3841  | 3890  | 3939  | 49    |
| 879 | 3989   | 4038 | 4088  | 4137  | 4186  | 4236  | 4285  | 4335  | 4384  | 4433  | 49    |
| 880 | 944483 | 4532 | 4581  | 4631  | 4680  | 4729  | 4779  | 4828  | 4877  | 4927  | 49    |
| 881 | 4976   | 5025 | 5074  | 5124  | 5173  | 5222  | 5272  | 5321  | 5370  | 5419  | 49    |
| 882 | 5469   | 5518 | 5567  | 5616  | 5665  | 5715  | 5764  | 5813  | 5862  | 5912  | 49    |
| 883 | 5961   | 6010 | 6059  | 6108  | 6157  | 6207  | 6256  | 6305  | 6354  | 6403  | 49    |
| 884 | 6452   | 6501 | 6551  | 6600  | 6649  | 6698  | 6747  | 6796  | 6845  | 6894  | 49    |
| 885 | 946943 | 6992 | 7041  | 7090  | 7140  | 7189  | 7238  | 7287  | 7336  | 7385  | 49    |
| 886 | 7434   | 7483 | 7532  | 7581  | 7630  | 7679  | 7728  | 7777  | 7826  | 7875  | 49    |
| 887 | 7924   | 7973 | 8022  | 8070  | 8119  | 8168  | 8217  | 8266  | 8315  | 8364  | 49    |
| 888 | 8413   | 8462 | 8511  | 8560  | 8609  | 8657  | 8706  | 8755  | 8804  | 8853  | 49    |
| 889 | 8902   | 8951 | 8999  | 9048  | 9097  | 9146  | 9195  | 9244  | 9292  | 9341  | 49    |
| 890 | 949390 | 9439 | 9488  | 9536  | 9585  | 9634  | 9683  | 9731  | 9780  | 9829  | 49    |
| 891 | 9878   | 9926 | 9975  | *0024 | *0073 | *0121 | *0170 | *0219 | *0267 | *0316 | 49    |
| 892 | 950365 | 0414 | 0462  | 0511  | 0560  | 0608  | 0657  | 0706  | 0754  | 0803  | 49    |
| 893 | 0851   | 0900 | 0949  | 0997  | 1046  | 1095  | 1143  | 1192  | 1240  | 1289  | 49    |
| 894 | 1338   | 1386 | 1435  | 1483  | 1532  | 1580  | 1629  | 1677  | 1726  | 1775  | 49    |
| 895 | 951823 | 1872 | 1920  | 1969  | 2017  | 2066  | 2114  | 2163  | 2211  | 2260  | 48    |
| 896 | 2308   | 2356 | 2405  | 2453  | 2502  | 2550  | 2599  | 2647  | 2696  | 2744  | 48    |
| 897 | 2792   | 2841 | 2889  | 2938  | 2986  | 3034  | 3083  | 3131  | 3180  | 3228  | 48    |
| 898 | 3276   | 3325 | 3373  | 3421  | 3470  | 3518  | 3566  | 3615  | 3663  | 3711  | 48    |
| 899 | 3760   | 3808 | 3856  | 3905  | 3953  | 4001  | 4049  | 4098  | 4146  | 4194  | 48    |

| N. | Diff. | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |
|----|-------|---|----|----|----|----|----|----|----|----|-------|
| 率  | 51    | 5 | 10 | 15 | 20 | 26 | 31 | 36 | 41 | 46 | 51    |
|    | 50    | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50    |
| 差  | 49    | 5 | 10 | 15 | 20 | 25 | 29 | 34 | 39 | 44 | 49    |
|    | 48    | 5 | 10 | 14 | 19 | 24 | 29 | 34 | 38 | 43 | 48    |
|    | Diff. | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |



| N.     | 0      | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 900    | 954243 | 4291  | 4339  | 4387  | 4435  | 4484  | 4532  | 4580  | 4628  | 4677  | 48    |
| 901    | 4725   | 4773  | 4821  | 4869  | 4918  | 4966  | 5014  | 5062  | 5110  | 5158  | 48    |
| 902    | 5207   | 5255  | 5303  | 5351  | 5399  | 5447  | 5495  | 5543  | 5592  | 5640  | 48    |
| 903    | 5688   | 5736  | 5784  | 5832  | 5880  | 5928  | 5976  | 6024  | 6072  | 6120  | 48    |
| 904    | 6168   | 6216  | 6265  | 6313  | 6361  | 6409  | 6457  | 6505  | 6553  | 6601  | 48    |
| 905    | 956649 | 6697  | 6745  | 6793  | 6840  | 6888  | 6936  | 6984  | 7032  | 7080  | 48    |
| 906    | 7128   | 7176  | 7224  | 7272  | 7320  | 7368  | 7416  | 7464  | 7512  | 7559  | 48    |
| 907    | 7607   | 7655  | 7703  | 7751  | 7799  | 7847  | 7894  | 7942  | 7990  | 8038  | 48    |
| 908    | 8086   | 8134  | 8181  | 8229  | 8277  | 8325  | 8373  | 8421  | 8468  | 8516  | 48    |
| 909    | 8564   | 8612  | 8659  | 8707  | 8755  | 8803  | 8850  | 8898  | 8946  | 8994  | 48    |
| 910    | 959041 | 9089  | 9137  | 9185  | 9232  | 9280  | 9328  | 9375  | 9423  | 9471  | 48    |
| 911    | 9518   | 9566  | 9614  | 9661  | 9709  | 9757  | 9804  | 9852  | 9900  | 9947  | 48    |
| 912    | 9995   | *0042 | *0090 | *0138 | *0185 | *0233 | *0280 | *0328 | *0376 | *0423 | 48    |
| 913    | 960471 | 0518  | 0566  | 0613  | 0661  | 0709  | 0756  | 0804  | 0851  | 0899  | 48    |
| 914    | 0946   | 0994  | 1041  | 1089  | 1136  | 1184  | 1231  | 1279  | 1326  | 1374  | 48    |
| 915    | 961421 | 1469  | 1516  | 1563  | 1611  | 1658  | 1706  | 1753  | 1801  | 1848  | 47    |
| 916    | 1895   | 1943  | 1990  | 2038  | 2085  | 2132  | 2180  | 2227  | 2275  | 2322  | 47    |
| 917    | 2369   | 2417  | 2464  | 2511  | 2559  | 2606  | 2653  | 2701  | 2748  | 2795  | 47    |
| 918    | 2843   | 2890  | 2937  | 2985  | 3032  | 3079  | 3126  | 3174  | 3221  | 3268  | 47    |
| 919    | 3316   | 3363  | 3410  | 3457  | 3504  | 3552  | 3599  | 3646  | 3693  | 3741  | 47    |
| 920    | 963788 | 3835  | 3882  | 3929  | 3977  | 4024  | 4071  | 4118  | 4165  | 4212  | 47    |
| 921    | 4260   | 4307  | 4354  | 4401  | 4448  | 4495  | 4542  | 4590  | 4637  | 4684  | 47    |
| 922    | 4731   | 4778  | 4825  | 4872  | 4919  | 4966  | 5013  | 5061  | 5108  | 5155  | 47    |
| 923    | 5202   | 5249  | 5296  | 5343  | 5390  | 5437  | 5484  | 5531  | 5578  | 5625  | 47    |
| 924    | 5672   | 5719  | 5766  | 5813  | 5860  | 5907  | 5954  | 6001  | 6048  | 6095  | 47    |
| 925    | 966142 | 6189  | 6236  | 6283  | 6329  | 6376  | 6423  | 6470  | 6517  | 6564  | 47    |
| 926    | 6611   | 6658  | 6705  | 6752  | 6799  | 6845  | 6892  | 6939  | 6986  | 7033  | 47    |
| 927    | 7080   | 7127  | 7174  | 7220  | 7267  | 7314  | 7361  | 7408  | 7454  | 7501  | 47    |
| 928    | 7548   | 7595  | 7642  | 7688  | 7735  | 7782  | 7829  | 7875  | 7922  | 7969  | 47    |
| 929    | 8016   | 8062  | 8109  | 8156  | 8203  | 8249  | 8296  | 8343  | 8390  | 8436  | 47    |
| 930    | 968483 | 8530  | 8576  | 8623  | 8670  | 8716  | 8763  | 8810  | 8856  | 8903  | 47    |
| 931    | 8950   | 8996  | 9043  | 9090  | 9136  | 9183  | 9229  | 9276  | 9323  | 9369  | 47    |
| 932    | 9416   | 9463  | 9509  | 9556  | 9602  | 9649  | 9695  | 9742  | 9789  | 9835  | 47    |
| 933    | 9882   | 9928  | 9975  | *0021 | *0068 | *0114 | *0161 | *0207 | *0254 | *0300 | 47    |
| 934    | 970347 | 0393  | 0440  | 0486  | 0533  | 0579  | 0626  | 0672  | 0719  | 0765  | 46    |
| 935    | 970812 | 0858  | 0904  | 0951  | 0997  | 1044  | 1090  | 1137  | 1183  | 1229  | 46    |
| 936    | 1276   | 1322  | 1369  | 1415  | 1461  | 1508  | 1554  | 1601  | 1647  | 1693  | 46    |
| 937    | 1740   | 1786  | 1832  | 1879  | 1925  | 1971  | 2018  | 2064  | 2110  | 2157  | 46    |
| 938    | 2203   | 2249  | 2295  | 2342  | 2388  | 2434  | 2481  | 2527  | 2573  | 2619  | 46    |
| 939    | 2666   | 2712  | 2758  | 2804  | 2851  | 2897  | 2943  | 2989  | 3035  | 3082  | 46    |
| 940    | 973128 | 3174  | 3220  | 3266  | 3313  | 3359  | 3405  | 3451  | 3497  | 3543  | 46    |
| 941    | 3590   | 3636  | 3682  | 3728  | 3774  | 3820  | 3866  | 3913  | 3959  | 4005  | 46    |
| 942    | 4051   | 4097  | 4143  | 4189  | 4235  | 4281  | 4327  | 4374  | 4420  | 4466  | 46    |
| 943    | 4512   | 4558  | 4604  | 4650  | 4696  | 4742  | 4788  | 4834  | 4880  | 4926  | 46    |
| 944    | 4972   | 5018  | 5064  | 5110  | 5156  | 5202  | 5248  | 5294  | 5340  | 5386  | 46    |
| 945    | 975432 | 5478  | 5524  | 5570  | 5616  | 5662  | 5707  | 5753  | 5799  | 5845  | 46    |
| 946    | 5891   | 5937  | 5983  | 6029  | 6075  | 6121  | 6167  | 6212  | 6258  | 6304  | 46    |
| 947    | 6350   | 6396  | 6442  | 6488  | 6533  | 6579  | 6625  | 6671  | 6717  | 6763  | 46    |
| 948    | 6808   | 6854  | 6900  | 6946  | 6992  | 7037  | 7083  | 7129  | 7175  | 7220  | 46    |
| 949    | 7266   | 7312  | 7358  | 7403  | 7449  | 7495  | 7541  | 7586  | 7632  | 7678  | 46    |
| N.     | Diff.  | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
| 率<br>差 | 49     | 5     | 10    | 15    | 20    | 25    | 29    | 34    | 39    | 44    | 49    |
|        | 48     | 5     | 10    | 14    | 19    | 24    | 29    | 34    | 38    | 43    | 48    |
|        | 47     | 5     | 9     | 14    | 19    | 24    | 28    | 33    | 38    | 42    | 47    |
|        | 46     | 5     | 9     | 14    | 18    | 23    | 28    | 32    | 37    | 41    | 46    |
| Diff.  | 1      | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |       |

| N.  | 0      | 1    | 2    | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|-----|--------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 950 | 977724 | 7769 | 7815 | 7861  | 7906  | 7952  | 7998  | 8043  | 8089  | 8135  | 46    |
| 951 | 8181   | 8226 | 8272 | 8317  | 8363  | 8409  | 8454  | 8500  | 8546  | 8591  | 46    |
| 952 | 8637   | 8683 | 8728 | 8774  | 8819  | 8865  | 8911  | 8956  | 9002  | 9047  | 46    |
| 953 | 9093   | 9138 | 9184 | 9230  | 9275  | 9321  | 9366  | 9412  | 9457  | 9503  | 46    |
| 954 | 9543   | 9594 | 9639 | 9685  | 9730  | 9776  | 9821  | 9867  | 9912  | 9958  | 46    |
| 955 | 9800   | 0049 | 0094 | 0140  | 0185  | 0231  | 0276  | 0322  | 0367  | 0412  | 46    |
| 956 | 0458   | 0503 | 0549 | 0594  | 0640  | 0685  | 0730  | 0776  | 0821  | 0867  | 45    |
| 957 | 0912   | 0957 | 1003 | 1048  | 1093  | 1139  | 1184  | 1229  | 1275  | 1320  | 45    |
| 958 | 1366   | 1411 | 1456 | 1501  | 1547  | 1592  | 1637  | 1683  | 1728  | 1773  | 45    |
| 959 | 1819   | 1864 | 1909 | 1954  | 2000  | 2045  | 2090  | 2135  | 2181  | 2226  | 45    |
| 960 | 982271 | 2316 | 2362 | 2407  | 2452  | 2497  | 2543  | 2588  | 2633  | 2678  | 45    |
| 961 | 2723   | 2769 | 2814 | 2859  | 2904  | 2949  | 2994  | 3040  | 3085  | 3130  | 45    |
| 962 | 3175   | 3220 | 3265 | 3310  | 3356  | 3401  | 3446  | 3491  | 3536  | 3581  | 45    |
| 963 | 3626   | 3671 | 3716 | 3762  | 3807  | 3852  | 3897  | 3942  | 3987  | 4032  | 45    |
| 964 | 4077   | 4122 | 4167 | 4212  | 4257  | 4302  | 4347  | 4392  | 4437  | 4482  | 45    |
| 965 | 984527 | 4572 | 4617 | 4662  | 4707  | 4752  | 4797  | 4842  | 4887  | 4932  | 45    |
| 966 | 4977   | 5022 | 5067 | 5112  | 5157  | 5202  | 5247  | 5292  | 5337  | 5382  | 45    |
| 967 | 5426   | 5471 | 5516 | 5561  | 5606  | 5651  | 5696  | 5741  | 5786  | 5830  | 45    |
| 968 | 5875   | 5920 | 5965 | 6010  | 6055  | 6100  | 6144  | 6189  | 6234  | 6279  | 45    |
| 969 | 6324   | 6369 | 6413 | 6458  | 6503  | 6548  | 6593  | 6637  | 6682  | 6727  | 45    |
| 970 | 986772 | 6817 | 6861 | 6906  | 6951  | 6996  | 7040  | 7085  | 7130  | 7175  | 45    |
| 971 | 7219   | 7264 | 7309 | 7353  | 7398  | 7443  | 7488  | 7532  | 7577  | 7622  | 45    |
| 972 | 7666   | 7711 | 7756 | 7800  | 7845  | 7890  | 7934  | 7979  | 8024  | 8068  | 45    |
| 973 | 8113   | 8157 | 8202 | 8247  | 8291  | 8336  | 8381  | 8425  | 8470  | 8514  | 45    |
| 974 | 8559   | 8604 | 8648 | 8693  | 8737  | 8782  | 8826  | 8871  | 8916  | 8960  | 45    |
| 975 | 989005 | 9049 | 9094 | 9138  | 9183  | 9227  | 9272  | 9316  | 9361  | 9405  | 45    |
| 976 | 9455   | 9494 | 9539 | 9583  | 9628  | 9672  | 9717  | 9761  | 9806  | 9850  | 44    |
| 977 | 9895   | 9939 | 9983 | *0028 | *0072 | *0117 | *0161 | *0206 | *0250 | *0294 | 44    |
| 978 | 990339 | 0383 | 0428 | 0472  | 0516  | 0561  | 0605  | 0650  | 0694  | 0738  | 44    |
| 979 | 0789   | 0827 | 0871 | 0916  | 0960  | 1004  | 1049  | 1093  | 1137  | 1182  | 44    |
| 980 | 991226 | 1270 | 1315 | 1359  | 1403  | 1448  | 1492  | 1536  | 1580  | 1625  | 44    |
| 981 | 1669   | 1713 | 1758 | 1802  | 1846  | 1890  | 1935  | 1979  | 2023  | 2067  | 44    |
| 982 | 2111   | 2156 | 2200 | 2244  | 2288  | 2333  | 2377  | 2421  | 2465  | 2509  | 44    |
| 983 | 2554   | 2598 | 2642 | 2686  | 2730  | 2774  | 2819  | 2863  | 2907  | 2951  | 44    |
| 984 | 2995   | 3039 | 3083 | 3127  | 3172  | 3216  | 3260  | 3304  | 3348  | 3392  | 44    |
| 985 | 993436 | 3480 | 3524 | 3568  | 3613  | 3657  | 3701  | 3745  | 3789  | 3833  | 44    |
| 986 | 3877   | 3921 | 3965 | 4009  | 4053  | 4097  | 4141  | 4185  | 4229  | 4273  | 44    |
| 987 | 4317   | 4361 | 4405 | 4449  | 4493  | 4537  | 4581  | 4625  | 4669  | 4713  | 44    |
| 988 | 4757   | 4801 | 4845 | 4889  | 4933  | 4977  | 5021  | 5065  | 5108  | 5152  | 44    |
| 989 | 5196   | 5240 | 5284 | 5328  | 5372  | 5416  | 5460  | 5504  | 5547  | 5591  | 44    |
| 990 | 995635 | 5679 | 5723 | 5767  | 5811  | 5854  | 5898  | 5942  | 5986  | 6030  | 44    |
| 991 | 6074   | 6117 | 6161 | 6205  | 6249  | 6293  | 6337  | 6380  | 6424  | 6468  | 44    |
| 992 | 6512   | 6555 | 6599 | 6643  | 6687  | 6731  | 6774  | 6818  | 6862  | 6906  | 44    |
| 993 | 6949   | 6993 | 7037 | 7080  | 7124  | 7168  | 7212  | 7255  | 7299  | 7343  | 44    |
| 994 | 7386   | 7430 | 7474 | 7517  | 7561  | 7605  | 7648  | 7692  | 7736  | 7779  | 44    |
| 995 | 997823 | 7867 | 7910 | 7954  | 7998  | 8041  | 8085  | 8129  | 8172  | 8216  | 44    |
| 996 | 8259   | 8303 | 8347 | 8390  | 8434  | 8477  | 8521  | 8564  | 8608  | 8652  | 44    |
| 997 | 8695   | 8739 | 8782 | 8826  | 8869  | 8913  | 8956  | 9000  | 9043  | 9087  | 44    |
| 998 | 9131   | 9174 | 9218 | 9261  | 9305  | 9348  | 9392  | 9435  | 9479  | 9522  | 44    |
| 999 | 9505   | 9609 | 9652 | 9696  | 9739  | 9783  | 9826  | 9870  | 9913  | 9957  | 43    |

| N.    | Diff. | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |
|-------|-------|---|----|----|----|----|----|----|----|----|-------|
| 46    | 5     | 9 | 14 | 18 | 23 | 28 | 32 | 37 | 41 | 46 | 46    |
| 45    | 5     | 9 | 14 | 18 | 23 | 27 | 32 | 36 | 41 | 45 | 45    |
| 44    | 4     | 9 | 13 | 18 | 22 | 26 | 31 | 35 | 40 | 44 | 44    |
| 43    | 4     | 9 | 13 | 17 | 22 | 26 | 30 | 34 | 39 | 43 | 43    |
| Diff. |       | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |

| N.   | 0      | 1    | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Diff. |
|------|--------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1000 | 000000 | 0043 | 0087  | 0130  | 0174  | 0217  | 0260  | 0304  | 0347  | 0391  | 43    |
| 1001 | 0434   | 0477 | 0521  | 0564  | 0608  | 0651  | 0694  | 0738  | 0781  | 0824  | 43    |
| 1002 | 0868   | 0911 | 0954  | 0998  | 1041  | 1084  | 1128  | 1171  | 1214  | 1258  | 43    |
| 1003 | 1301   | 1344 | 1388  | 1431  | 1474  | 1517  | 1561  | 1604  | 1647  | 1690  | 43    |
| 1004 | 1734   | 1777 | 1820  | 1863  | 1907  | 1950  | 1993  | 2036  | 2080  | 2123  | 43    |
| 1005 | 002166 | 2209 | 2252  | 2296  | 2339  | 2382  | 2425  | 2468  | 2512  | 2555  | 43    |
| 1006 | 2598   | 2641 | 2684  | 2727  | 2771  | 2814  | 2857  | 2900  | 2943  | 2986  | 43    |
| 1007 | 3029   | 3073 | 3116  | 3159  | 3202  | 3245  | 3288  | 3331  | 3374  | 3417  | 43    |
| 1008 | 3461   | 3504 | 3547  | 3590  | 3633  | 3676  | 3719  | 3762  | 3805  | 3848  | 43    |
| 1009 | 3891   | 3934 | 3977  | 4020  | 4063  | 4106  | 4149  | 4192  | 4235  | 4278  | 43    |
| 1010 | 004321 | 4364 | 4407  | 4450  | 4493  | 4536  | 4579  | 4622  | 4665  | 4708  | 43    |
| 1011 | 4751   | 4794 | 4837  | 4880  | 4923  | 4966  | 5009  | 5052  | 5095  | 5138  | 43    |
| 1012 | 5181   | 5223 | 5266  | 5309  | 5352  | 5395  | 5438  | 5481  | 5524  | 5567  | 43    |
| 1013 | 5609   | 5652 | 5695  | 5738  | 5781  | 5824  | 5867  | 5909  | 5952  | 5995  | 43    |
| 1014 | 6038   | 6081 | 6124  | 6166  | 6209  | 6252  | 6295  | 6338  | 6380  | 6423  | 43    |
| 1015 | 006466 | 6509 | 6552  | 6594  | 6637  | 6680  | 6723  | 6765  | 6808  | 6851  | 43    |
| 1016 | 6894   | 6936 | 6979  | 7022  | 7065  | 7107  | 7150  | 7193  | 7236  | 7278  | 43    |
| 1017 | 7321   | 7364 | 7406  | 7449  | 7492  | 7534  | 7577  | 7620  | 7662  | 7705  | 43    |
| 1018 | 7748   | 7790 | 7833  | 7876  | 7918  | 7961  | 8004  | 8046  | 8089  | 8132  | 43    |
| 1019 | 8174   | 8217 | 8259  | 8302  | 8345  | 8387  | 8430  | 8472  | 8515  | 8558  | 43    |
| 1020 | 008600 | 8643 | 8685  | 8728  | 8770  | 8813  | 8856  | 8898  | 8941  | 8983  | 43    |
| 1021 | 9026   | 9068 | 9111  | 9153  | 9196  | 9238  | 9281  | 9323  | 9366  | 9408  | 42    |
| 1022 | 9451   | 9493 | 9536  | 9578  | 9621  | 9663  | 9706  | 9748  | 9791  | 9833  | 42    |
| 1023 | 9876   | 9918 | 9961  | *0003 | *0045 | *0088 | *0130 | *0173 | *0215 | *0258 | 42    |
| 1024 | 010300 | 0342 | 0385  | 0427  | 0470  | 0512  | 0554  | 0597  | 0639  | 0681  | 42    |
| 1025 | 010724 | 0766 | 0809  | 0851  | 0893  | 0936  | 0978  | 1020  | 1063  | 1105  | 42    |
| 1026 | 1147   | 1190 | 1232  | 1274  | 1317  | 1359  | 1401  | 1444  | 1486  | 1528  | 42    |
| 1027 | 1570   | 1613 | 1655  | 1697  | 1740  | 1782  | 1824  | 1866  | 1909  | 1951  | 42    |
| 1028 | 1993   | 2035 | 2078  | 2120  | 2162  | 2204  | 2247  | 2289  | 2331  | 2373  | 42    |
| 1029 | 2415   | 2458 | 2500  | 2542  | 2584  | 2626  | 2669  | 2711  | 2753  | 2795  | 42    |
| 1030 | 012837 | 2879 | 2922  | 2964  | 3006  | 3048  | 3090  | 3132  | 3174  | 3217  | 42    |
| 1031 | 3259   | 3301 | 3343  | 3385  | 3427  | 3469  | 3511  | 3553  | 3596  | 3638  | 42    |
| 1032 | 3680   | 3722 | 3764  | 3806  | 3848  | 3890  | 3932  | 3974  | 4016  | 4058  | 42    |
| 1033 | 4100   | 4142 | 4184  | 4226  | 4268  | 4310  | 4353  | 4395  | 4437  | 4479  | 42    |
| 1034 | 4521   | 4563 | 4605  | 4647  | 4689  | 4730  | 4772  | 4814  | 4856  | 4898  | 42    |
| 1035 | 014940 | 4982 | 5024  | 5066  | 5108  | 5150  | 5192  | 5234  | 5276  | 5318  | 42    |
| 1036 | 5360   | 5402 | 5444  | 5485  | 5527  | 5569  | 5611  | 5653  | 5695  | 5737  | 42    |
| 1037 | 5779   | 5821 | 5863  | 5904  | 5946  | 5988  | 6030  | 6072  | 6114  | 6156  | 42    |
| 1038 | 6197   | 6239 | 6281  | 6323  | 6365  | 6407  | 6448  | 6490  | 6532  | 6574  | 42    |
| 1039 | 6616   | 6657 | 6699  | 6741  | 6783  | 6824  | 6866  | 6908  | 6950  | 6992  | 42    |
| 1040 | 017033 | 7075 | 7117  | 7159  | 7200  | 7242  | 7284  | 7326  | 7367  | 7409  | 42    |
| 1041 | 7451   | 7492 | 7534  | 7576  | 7618  | 7659  | 7701  | 7743  | 7784  | 7826  | 42    |
| 1042 | 7868   | 7909 | 7951  | 7993  | 8034  | 8076  | 8118  | 8159  | 8201  | 8243  | 42    |
| 1043 | 8284   | 8326 | 8368  | 8409  | 8451  | 8492  | 8534  | 8576  | 8617  | 8659  | 42    |
| 1044 | 8700   | 8742 | 8784  | 8825  | 8867  | 8908  | 8950  | 8992  | 9033  | 9075  | 42    |
| 1045 | 019116 | 9158 | 9199  | 9241  | 9282  | 9324  | 9366  | 9407  | 9449  | 9490  | 42    |
| 1046 | 9532   | 9573 | 9615  | 9656  | 9698  | 9739  | 9781  | 9822  | 9864  | 9905  | 41    |
| 1047 | 9947   | 9988 | *0030 | *0071 | *0113 | *0154 | *0195 | *0237 | *0278 | *0320 | 41    |
| 1048 | 020361 | 0403 | 0444  | 0486  | 0527  | 0568  | 0610  | 0651  | 0693  | 0734  | 41    |
| 1049 | 0775   | 0817 | 0858  | 0900  | 0941  | 0982  | 1024  | 1065  | 1107  | 1148  | 41    |
| 1050 | 021189 | 1231 | 1272  | 1313  | 1355  | 1396  | 1437  | 1479  | 1520  | 1561  | 41    |

| N.     | Diff. | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |
|--------|-------|---|---|----|----|----|----|----|----|----|-------|
| 差<br>差 | 44    | 4 | 9 | 13 | 18 | 22 | 26 | 31 | 35 | 40 | 44    |
|        | 43    | 4 | 9 | 13 | 17 | 22 | 26 | 30 | 34 | 39 | 43    |
|        | 42    | 4 | 8 | 13 | 17 | 21 | 25 | 29 | 34 | 38 | 42    |
|        | 41    | 4 | 8 | 12 | 16 | 21 | 25 | 29 | 33 | 37 | 41    |
|        | Diff. | 1 | 2 | 3  | 4  | 5  | 6  | 7  | 8  | 9  | Diff. |

第十六表 正弧餘弧正切餘切對數表

0°

179°

| M. | Sin.     | D. 1''. | Cos.      | D. 1''. | Tan.     | D. 1''. | Cot.     |    |
|----|----------|---------|-----------|---------|----------|---------|----------|----|
| 0  | —∞       |         | 10.000000 |         | —∞       |         | —∞       | 60 |
| 1  | 6.463726 | 5017.17 | .000000   | .00     | 6.463726 | 5017.17 | 3.536274 | 59 |
| 2  | .764756  | 2934.85 | .000000   | .00     | .764756  | 2934.85 | .235244  | 58 |
| 3  | .940847  | 2082.32 | .000000   | .00     | .940847  | 2082.32 | .059153  | 57 |
| 4  | 7.065786 | 1615.17 | .000000   | .00     | 7.065786 | 1615.17 | 2.934214 | 56 |
| 5  | 7.162696 | 1319.68 | 10.000000 | .02     | 7.162696 | 1319.70 | 2.837304 | 55 |
| 6  | .241877  | 1115.78 | 9.999999  | .00     | .241878  | 1115.78 | .758122  | 54 |
| 7  | .308824  | 966.53  | .999999   | .00     | .308825  | 966.53  | .691175  | 53 |
| 8  | .366816  | 852.53  | .999999   | .00     | .366817  | 852.55  | .633183  | 52 |
| 9  | .417968  | 762.63  | .999999   | .02     | .417970  | 762.62  | .582030  | 51 |
| 10 | 7.463726 | 689.87  | 9.999998  | .00     | 7.463727 | 689.88  | 2.536273 | 50 |
| 11 | .505118  | 629.80  | .999998   | .02     | .505120  | 629.82  | .494880  | 49 |
| 12 | .512906  | 579.37  | .999997   | .02     | .512909  | 579.38  | .457091  | 48 |
| 13 | .577668  | 536.42  | .999997   | .02     | .577672  | 536.42  | .422328  | 47 |
| 14 | .609853  | 499.38  | .999996   | .00     | .609857  | 499.38  | .390143  | 46 |
| 15 | 7.639816 | 467.15  | 9.999996  | .02     | 7.639820 | 467.15  | 2.360180 | 45 |
| 16 | .667845  | 438.80  | .999995   | .02     | .667849  | 438.83  | .332151  | 44 |
| 17 | .694173  | 413.73  | .999995   | .00     | .694179  | 413.73  | .305821  | 43 |
| 18 | .718997  | 391.35  | .999994   | .02     | .719003  | 391.35  | .280997  | 42 |
| 19 | .742478  | 371.27  | .999993   | .02     | .742484  | 371.28  | .257516  | 41 |
| 20 | 7.764754 | 353.15  | 9.999993  | .00     | 7.764761 | 353.17  | 2.235239 | 40 |
| 21 | .785943  | 336.72  | .999992   | .02     | .785951  | 336.73  | .214049  | 39 |
| 22 | .806146  | 321.75  | .999991   | .02     | .806155  | 321.75  | .193845  | 38 |
| 23 | .825451  | 308.05  | .999990   | .02     | .825460  | 308.07  | .174540  | 37 |
| 24 | .843934  | 295.47  | .999989   | .00     | .843944  | 295.50  | .156056  | 36 |
| 25 | 7.861662 | 283.88  | 9.999989  | .02     | 7.861674 | 283.90  | 2.138326 | 35 |
| 26 | .878695  | 273.17  | .999988   | .02     | .878708  | 273.18  | .121292  | 34 |
| 27 | .895085  | 263.23  | .999987   | .02     | .895099  | 263.25  | .104901  | 33 |
| 28 | .910879  | 254.00  | .999986   | .02     | .910894  | 254.00  | .089106  | 32 |
| 29 | .926119  | 245.38  | .999985   | .03     | .926134  | 245.40  | .073866  | 31 |
| 30 | 7.940842 | 237.33  | 9.999983  | .02     | 7.940858 | 237.37  | 2.059142 | 30 |
| 31 | .955082  | 229.80  | .999982   | .02     | .955100  | 229.82  | .044900  | 29 |
| 32 | .968870  | 222.72  | .999981   | .02     | .968889  | 222.73  | .031111  | 28 |
| 33 | .982233  | 216.08  | .999980   | .02     | .982253  | 216.10  | .017747  | 27 |
| 34 | .995198  | 209.82  | .999979   | .03     | .995219  | 209.83  | .004781  | 26 |
| 35 | 8.007787 | 203.90  | 9.999977  | .02     | 8.007809 | 203.92  | 1.992191 | 25 |
| 36 | .020021  | 198.30  | .999976   | .02     | .020044  | 198.35  | .979956  | 24 |
| 37 | .031919  | 193.03  | .999975   | .02     | .031945  | 193.03  | .968055  | 23 |
| 38 | .043501  | 188.00  | .999973   | .03     | .043527  | 188.03  | .956173  | 22 |
| 39 | .054781  | 183.25  | .999972   | .02     | .054800  | 183.28  | .945191  | 21 |
| 40 | 8.065776 | 178.73  | 9.999971  | .03     | 8.065806 | 178.75  | 1.934194 | 20 |
| 41 | .076500  | 174.42  | .999969   | .02     | .076531  | 174.43  | .923469  | 19 |
| 42 | .086965  | 170.30  | .999968   | .03     | .086997  | 170.33  | .913003  | 18 |
| 43 | .097183  | 166.40  | .999966   | .03     | .097217  | 166.43  | .902783  | 17 |
| 44 | .107167  | 162.65  | .999964   | .02     | .107203  | 162.67  | .892797  | 16 |
| 45 | 8.116926 | 159.08  | 9.999963  | .02     | 8.116963 | 159.12  | 1.883037 | 15 |
| 46 | .126171  | 155.65  | .999961   | .03     | .126510  | 155.68  | .873490  | 14 |
| 47 | .135810  | 152.33  | .999959   | .03     | .135851  | 152.42  | .864149  | 13 |
| 48 | .144953  | 149.23  | .999958   | .03     | .144996  | 149.27  | .855004  | 12 |
| 49 | .153907  | 146.23  | .999956   | .03     | .153952  | 146.25  | .846048  | 11 |
| 50 | 8.162681 | 143.32  | 9.999954  | .03     | 8.162727 | 143.35  | 1.837273 | 10 |
| 51 | .171280  | 140.55  | .999952   | .03     | .171328  | 140.58  | .828672  | 9  |
| 52 | .179713  | 137.87  | .999950   | .03     | .179763  | 137.88  | .820237  | 8  |
| 53 | .187985  | 135.28  | .999948   | .03     | .188036  | 135.33  | .811964  | 7  |
| 54 | .196102  | 132.80  | .999946   | .03     | .196156  | 132.83  | .803844  | 6  |
| 55 | 8.204070 | 130.42  | 9.999944  | .03     | 8.204126 | 130.45  | 1.795874 | 5  |
| 56 | .211895  | 128.10  | .999942   | .03     | .211953  | 128.13  | .788047  | 4  |
| 57 | .219581  | 125.88  | .999940   | .03     | .219641  | 125.90  | .780359  | 3  |
| 58 | .227134  | 123.72  | .999938   | .03     | .227195  | 123.77  | .772805  | 2  |
| 59 | .234557  | 121.63  | .999936   | .03     | .234621  | 121.67  | .765379  | 1  |
| 60 | 8.241855 |         | 9.999934  | .03     | 8.241921 |         | 1.758079 | 0  |

90°

89°

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     |    |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 8.241855 | 119.63  | 9.999934 |         | 8.241921 | 119.68  | 1.758079 | 60 |
| 1  | .249033  | 117.68  | .999932  | .03     | .249102  | 117.72  | .750898  | 59 |
| 2  | .256094  | 115.80  | .999929  | .05     | .256165  | 115.83  | .743835  | 58 |
| 3  | .263042  | 113.98  | .999927  | .03     | .263115  | 114.02  | .736885  | 57 |
| 4  | .269881  | 112.22  | .999925  | .05     | .269956  | 112.25  | .730044  | 56 |
| 5  | 8.276614 | 110.48  | 9.999922 | .03     | 8.276691 | 110.53  | 1.723309 | 55 |
| 6  | .283243  | 108.83  | .999920  | .03     | .283323  | 108.88  | .716677  | 54 |
| 7  | .289773  | 107.23  | .999918  | .05     | .289856  | 107.27  | .710144  | 53 |
| 8  | .296207  | 105.65  | .999915  | .03     | .296294  | 105.70  | .703708  | 52 |
| 9  | .302546  | 104.13  | .999913  | .05     | .302634  | 104.17  | .697366  | 51 |
| 10 | 8.308794 | 102.67  | 9.999910 | .05     | 8.308884 | 102.70  | 1.691116 | 50 |
| 11 | .314954  | 101.22  | .999907  | .03     | .315046  | 101.27  | .684954  | 49 |
| 12 | .321027  | 99.82   | .999905  | .05     | .321122  | 99.87   | .678878  | 48 |
| 13 | .327016  | 98.47   | .999902  | .03     | .327114  | 98.52   | .672886  | 47 |
| 14 | .332924  | 97.15   | .999899  | .05     | .333025  | 97.18   | .666975  | 46 |
| 15 | 8.338753 | 95.85   | 9.999897 | .05     | 8.338856 | 95.90   | 1.661144 | 45 |
| 16 | .344504  | 94.62   | .999894  | .03     | .344610  | 94.65   | .655390  | 44 |
| 17 | .350181  | 93.37   | .999891  | .05     | .350289  | 93.43   | .649711  | 43 |
| 18 | .355783  | 92.20   | .999888  | .03     | .355895  | 92.25   | .644105  | 42 |
| 19 | .361315  | 91.03   | .999885  | .05     | .361430  | 91.08   | .638570  | 41 |
| 20 | 8.366777 | 89.90   | 9.999882 | .05     | 8.366895 | 89.95   | 1.633105 | 40 |
| 21 | .372171  | 88.80   | .999879  | .03     | .372292  | 88.83   | .627708  | 39 |
| 22 | .377499  | 87.72   | .999876  | .05     | .377622  | 87.78   | .622378  | 38 |
| 23 | .382762  | 86.67   | .999873  | .03     | .382889  | 86.72   | .617111  | 37 |
| 24 | .387962  | 85.65   | .999870  | .05     | .388092  | 85.70   | .611908  | 36 |
| 25 | 8.393101 | 84.63   | 9.999867 | .05     | 8.393234 | 84.68   | 1.606766 | 35 |
| 26 | .398179  | 83.67   | .999864  | .03     | .398315  | 83.72   | .601685  | 34 |
| 27 | .403199  | 82.70   | .999861  | .05     | .403338  | 82.77   | .596662  | 33 |
| 28 | .408161  | 81.78   | .999858  | .03     | .408304  | 81.82   | .591696  | 32 |
| 29 | .413068  | 80.85   | .999854  | .05     | .413213  | 80.92   | .586787  | 31 |
| 30 | 8.417919 | 79.97   | 9.999851 | .05     | 8.418068 | 80.02   | 1.581932 | 30 |
| 31 | .422717  | 79.08   | .999848  | .03     | .422869  | 79.15   | .577131  | 29 |
| 32 | .427462  | 78.23   | .999844  | .05     | .427618  | 78.28   | .572382  | 28 |
| 33 | .432156  | 77.40   | .999841  | .03     | .432315  | 77.45   | .567685  | 27 |
| 34 | .436800  | 76.57   | .999838  | .05     | .436962  | 76.63   | .563038  | 26 |
| 35 | 8.441394 | 75.78   | 9.999834 | .05     | 8.441560 | 75.83   | 1.558440 | 25 |
| 36 | .445941  | 74.98   | .999831  | .03     | .446110  | 75.05   | .553890  | 24 |
| 37 | .450440  | 74.22   | .999827  | .05     | .450613  | 74.28   | .549387  | 23 |
| 38 | .454893  | 73.47   | .999824  | .03     | .455070  | 73.52   | .544930  | 22 |
| 39 | .459301  | 72.73   | .999820  | .05     | .459481  | 72.80   | .540519  | 21 |
| 40 | 8.463665 | 72.00   | 9.999816 | .05     | 8.463849 | 72.05   | 1.536151 | 20 |
| 41 | .467985  | 71.30   | .999813  | .03     | .468172  | 71.37   | .531828  | 19 |
| 42 | .472263  | 70.58   | .999809  | .05     | .472454  | 70.65   | .527546  | 18 |
| 43 | .476498  | 69.92   | .999805  | .03     | .476693  | 69.98   | .523307  | 17 |
| 44 | .480693  | 69.25   | .999801  | .05     | .480892  | 69.30   | .519108  | 16 |
| 45 | 8.484848 | 68.58   | 9.999797 | .05     | 8.485050 | 68.67   | 1.514950 | 15 |
| 46 | .488963  | 67.95   | .999794  | .03     | .489170  | 68.00   | .510830  | 14 |
| 47 | .493040  | 67.30   | .999790  | .05     | .493250  | 67.38   | .506750  | 13 |
| 48 | .497078  | 66.70   | .999786  | .03     | .497293  | 66.75   | .502707  | 12 |
| 49 | .501080  | 66.08   | .999782  | .05     | .501298  | 66.15   | .498702  | 11 |
| 50 | 8.505045 | 65.48   | 9.999778 | .05     | 8.505267 | 65.55   | 1.494733 | 10 |
| 51 | .508974  | 64.88   | .999774  | .03     | .509200  | 64.97   | .490800  | 9  |
| 52 | .512867  | 64.32   | .999769  | .05     | .513098  | 64.38   | .486902  | 8  |
| 53 | .516726  | 63.75   | .999765  | .03     | .516961  | 63.82   | .483039  | 7  |
| 54 | .520551  | 63.20   | .999761  | .05     | .520790  | 63.27   | .479210  | 6  |
| 55 | 8.524343 | 62.65   | 9.999757 | .05     | 8.524586 | 62.72   | 1.475414 | 5  |
| 56 | .528102  | 62.10   | .999753  | .03     | .528349  | 62.18   | .471651  | 4  |
| 57 | .531828  | 61.58   | .999748  | .05     | .532080  | 61.65   | .467920  | 3  |
| 58 | .535523  | 61.05   | .999744  | .03     | .535779  | 61.13   | .464221  | 2  |
| 59 | .539186  | 60.55   | .999740  | .05     | .539447  | 60.62   | .460553  | 1  |
| 60 | 8.542819 |         | 9.999735 | .08     | 8.543084 |         | 1.456916 | 0  |
|    | Cos.     | D. 1''. | Sin.     | D. 1''. | Cot.     | D. 1''. | Tan.     | M. |

| M. | Sin.     | D. 1''. | Cos.     | D. 1'' | Tan.     | D. 1''. | Cot.     |    |
|----|----------|---------|----------|--------|----------|---------|----------|----|
| 0  | 8.542819 | 60.05   | 9.999735 | .07    | 8.543084 | 60.12   | I.456916 | 60 |
| 1  | .546422  | 59.55   | .999731  | .08    | .546691  | 59.62   | .453399  | 59 |
| 2  | .549995  | 59.07   | .999726  | .07    | .550268  | 59.62   | .449732  | 58 |
| 3  | .553539  | 58.58   | .999722  | .07    | .553817  | 59.15   | .446183  | 57 |
| 4  | .557054  | 58.10   | .999717  | .08    | .557336  | 58.65   | .442664  | 56 |
| 5  | 8.560540 | 57.65   | 9.999713 | .07    | 8.560828 | 58.20   | I.439172 | 55 |
| 6  | .563999  | 57.20   | .999708  | .07    | .564291  | 57.72   | .435709  | 54 |
| 7  | .567431  | 56.75   | .999704  | .08    | .567727  | 57.27   | .432273  | 53 |
| 8  | .570836  | 56.30   | .999699  | .08    | .571137  | 56.83   | .428863  | 52 |
| 9  | .574214  | 55.87   | .999694  | .08    | .574520  | 56.38   | .425480  | 51 |
|    |          |         |          |        |          | 55.95   |          |    |
| 10 | 8.577566 | 55.43   | 9.999689 | .07    | 8.577877 | 55.52   | I.422123 | 50 |
| 11 | .580892  | 55.02   | .999685  | .08    | .581208  | 55.10   | .418792  | 49 |
| 12 | .584193  | 54.60   | .999680  | .08    | .584514  | 54.68   | .415486  | 48 |
| 13 | .587469  | 54.20   | .999675  | .08    | .587795  | 54.27   | .412205  | 47 |
| 14 | .590721  | 53.78   | .999670  | .08    | .591051  | 53.87   | .408949  | 46 |
| 15 | 8.593948 | 53.40   | 9.999665 | .08    | 8.594283 | 53.48   | I.405717 | 45 |
| 16 | .597152  | 53.00   | .999660  | .08    | .597492  | 53.08   | .402508  | 44 |
| 17 | .600332  | 52.62   | .999655  | .08    | .600677  | 52.70   | .399323  | 43 |
| 18 | .603489  | 52.23   | .999650  | .08    | .603839  | 52.32   | .396161  | 42 |
| 19 | .606623  | 51.85   | .999645  | .08    | .606978  | 51.93   | .393022  | 41 |
|    |          |         |          |        |          |         |          |    |
| 20 | 8.609734 | 51.48   | 9.999640 | .08    | 8.610094 | 51.58   | I.389906 | 40 |
| 21 | .612823  | 51.13   | .999635  | .10    | .613189  | 51.22   | .386811  | 39 |
| 22 | .615891  | 50.77   | .999629  | .08    | .616262  | 50.85   | .383738  | 38 |
| 23 | .618937  | 50.42   | .999624  | .08    | .619313  | 50.50   | .380637  | 37 |
| 24 | .621962  | 50.05   | .999619  | .08    | .622343  | 50.15   | .377657  | 36 |
| 25 | 8.624965 | 49.72   | 9.999614 | .10    | 8.625352 | 49.80   | I.374648 | 35 |
| 26 | .627948  | 49.38   | .999608  | .08    | .628340  | 49.47   | .371660  | 34 |
| 27 | .630911  | 49.05   | .999603  | .10    | .631308  | 49.13   | .368662  | 33 |
| 28 | .633854  | 48.70   | .999597  | .08    | .634256  | 48.80   | .365744  | 32 |
| 29 | .636776  | 48.40   | .999592  | .10    | .637184  | 48.48   | .362816  | 31 |
|    |          |         |          |        |          |         |          |    |
| 30 | 8.639650 | 48.05   | 9.999586 | .08    | 8.640093 | 48.15   | I.359907 | 30 |
| 31 | .642363  | 47.75   | .999581  | .10    | .642982  | 47.85   | .357018  | 29 |
| 32 | .645428  | 47.43   | .999575  | .08    | .645853  | 47.52   | .354147  | 28 |
| 33 | .648274  | 47.13   | .999570  | .10    | .648704  | 47.22   | .351296  | 27 |
| 34 | .651102  | 46.82   | .999564  | .10    | .651537  | 46.92   | .348463  | 26 |
| 35 | 8.653911 | 46.52   | 9.999558 | .08    | 8.654352 | 46.62   | I.345648 | 25 |
| 36 | .656702  | 46.22   | .999553  | .10    | .657149  | 46.32   | .342851  | 24 |
| 37 | .659475  | 45.92   | .999547  | .10    | .659928  | 46.02   | .340072  | 23 |
| 38 | .662230  | 45.63   | .999541  | .10    | .662689  | 45.73   | .337311  | 22 |
| 39 | .664968  | 45.35   | .999535  | .10    | .665433  | 45.45   | .334567  | 21 |
|    |          |         |          |        |          |         |          |    |
| 40 | 8.667689 | 45.07   | 9.999529 | .08    | 8.668160 | 45.17   | I.331840 | 20 |
| 41 | .670393  | 44.78   | .999524  | .10    | .670870  | 44.88   | .329130  | 19 |
| 42 | .673080  | 44.52   | .999518  | .10    | .673563  | 44.60   | .326437  | 18 |
| 43 | .675751  | 44.23   | .999512  | .10    | .676239  | 44.35   | .323761  | 17 |
| 44 | .678405  | 43.97   | .999506  | .10    | .678900  | 44.07   | .321100  | 16 |
| 45 | 8.681043 | 43.70   | 9.999500 | .12    | 8.681544 | 43.80   | I.318456 | 15 |
| 46 | .683665  | 43.45   | .999493  | .10    | .684172  | 43.53   | .315828  | 14 |
| 47 | .686272  | 43.18   | .999487  | .10    | .686784  | 43.28   | .313216  | 13 |
| 48 | .688863  | 42.92   | .999481  | .10    | .689381  | 43.03   | .310619  | 12 |
| 49 | .691438  | 42.67   | .999475  | .10    | .691963  | 42.77   | .308037  | 11 |
|    |          |         |          |        |          |         |          |    |
| 50 | 8.693998 | 42.42   | 9.999469 | .10    | 8.694529 | 42.53   | I.305471 | 10 |
| 51 | .696543  | 42.17   | .999463  | .12    | .697081  | 42.27   | .302919  | 9  |
| 52 | .699073  | 41.93   | .999456  | .10    | .699617  | 42.03   | .300383  | 8  |
| 53 | .701589  | 41.68   | .999450  | .12    | .702139  | 41.78   | .297861  | 7  |
| 54 | .704090  | 41.45   | .999443  | .10    | .704646  | 41.57   | .295354  | 6  |
| 55 | 8.706577 | 41.20   | 9.999437 | .10    | 8.707140 | 41.30   | I.292860 | 5  |
| 56 | .709049  | 40.97   | .999431  | .12    | .709618  | 41.08   | .290382  | 4  |
| 57 | .711507  | 40.75   | .999424  | .10    | .712083  | 40.85   | .287917  | 3  |
| 58 | .713952  | 40.52   | .999418  | .12    | .714534  | 40.63   | .285466  | 2  |
| 59 | .716383  | 40.28   | .999411  | .10    | .716972  | 40.40   | .283028  | 1  |
| 60 | 8.718800 |         | 9.999404 | .12    | 8.719396 |         | I.280604 | 0  |

| M. | Sin.      | D. 1''. | Cos.      | D. 1''. | Tan.      | D. 1''. | Cot.      |    |
|----|-----------|---------|-----------|---------|-----------|---------|-----------|----|
| 0  | 8. 718800 | 40. 07  | 9. 999404 | . 10    | 8. 719396 | 40. 17  | I. 280604 | 60 |
| 1  | . 721204  | 39. 85  | . 999398  | . 12    | . 721806  | 39. 97  | . 278194  | 59 |
| 2  | . 723595  | 39. 62  | . 999391  | . 12    | . 724204  | 39. 73  | . 275799  | 58 |
| 3  | . 725972  | 39. 42  | . 999384  | . 10    | . 726588  | 39. 52  | . 273412  | 57 |
| 4  | . 728337  | 39. 18  | . 999378  | . 12    | . 728959  | 39. 30  | . 271041  | 56 |
| 5  | 8. 730688 | 38. 98  | 9. 999371 | . 12    | 8. 731317 | 39. 10  | I. 268683 | 55 |
| 6  | . 733027  | 38. 78  | . 999364  | . 12    | . 733663  | 38. 88  | . 266337  | 54 |
| 7  | . 735354  | 38. 55  | . 999357  | . 12    | . 735996  | 38. 68  | . 264004  | 53 |
| 8  | . 737667  | 38. 37  | . 999350  | . 12    | . 738317  | 38. 48  | . 261683  | 52 |
| 9  | . 739969  | 38. 17  | . 999343  | . 12    | . 740626  | 38. 27  | . 259374  | 51 |
| 10 | 8. 742259 | 37. 95  | 9. 999336 | . 12    | 8. 742922 | 38. 08  | I. 257078 | 50 |
| 11 | . 744536  | 37. 77  | . 999329  | . 12    | . 745207  | 37. 87  | . 254793  | 49 |
| 12 | . 746802  | 37. 55  | . 999322  | . 12    | . 747479  | 37. 68  | . 252521  | 48 |
| 13 | . 749055  | 37. 37  | . 999315  | . 12    | . 749740  | 37. 48  | . 250260  | 47 |
| 14 | . 751297  | 37. 18  | . 999308  | . 12    | . 751989  | 37. 30  | . 248011  | 46 |
| 15 | 8. 753528 | 36. 98  | 9. 999301 | . 12    | 8. 754227 | 37. 10  | I. 245773 | 45 |
| 16 | . 755747  | 36. 80  | . 999294  | . 12    | . 756453  | 36. 92  | . 243547  | 44 |
| 17 | . 757955  | 36. 60  | . 999287  | . 13    | . 758668  | 36. 73  | . 241332  | 43 |
| 18 | . 760151  | 36. 43  | . 999279  | . 12    | . 760872  | 36. 55  | . 239128  | 42 |
| 19 | . 762337  | 36. 23  | . 999272  | . 12    | . 763065  | 36. 35  | . 236935  | 41 |
| 20 | 8. 764511 | 36. 07  | 9. 999265 | . 13    | 8. 765246 | 36. 18  | I. 234754 | 40 |
| 21 | . 766675  | 35. 88  | . 999257  | . 12    | . 767417  | 36. 02  | . 232583  | 39 |
| 22 | . 768828  | 35. 70  | . 999250  | . 13    | . 769578  | 35. 82  | . 230422  | 38 |
| 23 | . 770970  | 35. 52  | . 999242  | . 12    | . 771727  | 35. 65  | . 228273  | 37 |
| 24 | . 773101  | 35. 37  | . 999235  | . 13    | . 773866  | 35. 48  | . 226134  | 36 |
| 25 | 8. 775223 | 35. 17  | 9. 999227 | . 12    | 8. 775995 | 35. 32  | I. 224005 | 35 |
| 26 | . 777333  | 35. 02  | . 999220  | . 12    | . 778114  | 35. 13  | . 221886  | 34 |
| 27 | . 779434  | 34. 83  | . 999212  | . 13    | . 780222  | 34. 97  | . 219778  | 33 |
| 28 | . 781524  | 34. 68  | . 999205  | . 13    | . 782320  | 34. 80  | . 217680  | 32 |
| 29 | . 783605  | 34. 50  | . 999197  | . 13    | . 784408  | 34. 63  | . 215592  | 31 |
| 30 | 8. 785675 | 34. 35  | 9. 999189 | . 13    | 8. 786486 | 34. 47  | I. 213514 | 30 |
| 31 | . 787736  | 34. 18  | . 999181  | . 12    | . 788554  | 34. 32  | . 211446  | 29 |
| 32 | . 789787  | 34. 02  | . 999174  | . 13    | . 790613  | 34. 15  | . 209387  | 28 |
| 33 | . 791828  | 33. 85  | . 999166  | . 13    | . 792662  | 33. 98  | . 207338  | 27 |
| 34 | . 793859  | 33. 70  | . 999158  | . 13    | . 794701  | 33. 83  | . 205299  | 26 |
| 35 | 8. 795881 | 33. 55  | 9. 999150 | . 13    | 8. 796731 | 33. 68  | I. 203269 | 25 |
| 36 | . 797894  | 33. 38  | . 999142  | . 13    | . 798752  | 33. 52  | . 201248  | 24 |
| 37 | . 799897  | 33. 25  | . 999134  | . 13    | . 800763  | 33. 37  | . 199237  | 23 |
| 38 | . 801892  | 33. 07  | . 999126  | . 13    | . 802765  | 33. 22  | . 197235  | 22 |
| 39 | . 803876  | 32. 93  | . 999118  | . 13    | . 804758  | 33. 07  | . 195242  | 21 |
| 40 | 8. 805852 | 32. 78  | 9. 999110 | . 13    | 8. 806742 | 32. 92  | I. 193258 | 20 |
| 41 | . 807819  | 32. 63  | . 999102  | . 13    | . 808717  | 32. 77  | . 191283  | 19 |
| 42 | . 809777  | 32. 48  | . 999094  | . 13    | . 810683  | 32. 63  | . 189317  | 18 |
| 43 | . 811726  | 32. 35  | . 999086  | . 15    | . 812641  | 32. 47  | . 187359  | 17 |
| 44 | . 813667  | 32. 20  | . 999077  | . 13    | . 814589  | 32. 33  | . 185411  | 16 |
| 45 | 8. 815599 | 32. 05  | 9. 999069 | . 13    | 8. 816529 | 32. 20  | I. 183471 | 15 |
| 46 | . 817522  | 31. 90  | . 999061  | . 13    | . 818461  | 32. 05  | . 181539  | 14 |
| 47 | . 819436  | 31. 78  | . 999053  | . 15    | . 820384  | 31. 90  | . 179616  | 13 |
| 48 | . 821343  | 31. 62  | . 999044  | . 13    | . 822298  | 31. 78  | . 177702  | 12 |
| 49 | . 823240  | 31. 50  | . 999036  | . 15    | . 824205  | 31. 63  | . 175795  | 11 |
| 50 | 8. 825130 | 31. 35  | 9. 999027 | . 13    | 8. 826103 | 31. 48  | I. 173897 | 10 |
| 51 | . 827011  | 31. 22  | . 999019  | . 15    | . 827992  | 31. 37  | . 172008  | 9  |
| 52 | . 828884  | 31. 08  | . 999010  | . 13    | . 829874  | 31. 23  | . 170126  | 8  |
| 53 | . 830749  | 30. 97  | . 999002  | . 15    | . 831748  | 31. 08  | . 168252  | 7  |
| 54 | . 832607  | 30. 82  | . 998993  | . 15    | . 833613  | 30. 97  | . 166387  | 6  |
| 55 | 8. 834456 | 30. 68  | 9. 998984 | . 13    | 8. 835471 | 30. 83  | I. 164529 | 5  |
| 56 | . 836297  | 30. 55  | . 998976  | . 15    | . 837321  | 30. 70  | . 162679  | 4  |
| 57 | . 838130  | 30. 43  | . 998967  | . 13    | . 839163  | 30. 58  | . 160837  | 3  |
| 58 | . 839956  | 30. 30  | . 998958  | . 15    | . 840998  | 30. 45  | . 159002  | 2  |
| 59 | . 841774  | 30. 18  | . 998950  | . 13    | . 842825  | 30. 32  | . 157175  | 1  |
| 60 | 8. 843585 |         | 9. 998941 | . 15    | 8. 844644 |         | I. 155356 | 0  |
|    | Cos.      | D. 1''. | Sin.      | D. 1''. | Cot.      | D. 1''. | Tan.      | M. |

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     | M. |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 8.843585 | 30.03   | 9.998941 | .15     | 8.844644 | 30.18   | I.155356 | 60 |
| 1  | .845387  | 29.93   | .998932  | .15     | .846455  | 30.08   | .153545  | 59 |
| 2  | .847183  | 29.80   | .998923  | .15     | .848260  | 29.95   | .151740  | 58 |
| 3  | .848971  | 29.67   | .998914  | .15     | .850057  | 29.82   | .149943  | 57 |
| 4  | .850751  | 29.57   | .998905  | .15     | .851846  | 29.70   | .148154  | 56 |
| 5  | 8.852525 | 29.43   | 9.998896 | .15     | 8.853628 | 29.58   | I.146372 | 55 |
| 6  | .854291  | 29.30   | .998887  | .15     | .855403  | 29.47   | .144597  | 54 |
| 7  | .856049  | 29.20   | .998878  | .15     | .857171  | 29.35   | .142820  | 53 |
| 8  | .857801  | 29.08   | .998869  | .15     | .858932  | 29.23   | .141068  | 52 |
| 9  | .859546  | 28.95   | .998860  | .15     | .860686  | 29.12   | .139314  | 51 |
| 10 | 8.861283 | 28.85   | 9.998851 | .17     | 8.862433 | 29.00   | I.137567 | 50 |
| 11 | .863014  | 28.73   | .998841  | .15     | .864173  | 28.88   | .135827  | 49 |
| 12 | .864738  | 28.62   | .998832  | .15     | .865906  | 28.77   | .134094  | 48 |
| 13 | .866455  | 28.50   | .998823  | .17     | .867632  | 28.65   | .132368  | 47 |
| 14 | .868165  | 28.38   | .998813  | .15     | .869351  | 28.55   | .130649  | 46 |
| 15 | 8.869868 | 28.28   | 9.998804 | .15     | 8.871064 | 28.43   | I.128936 | 45 |
| 16 | .871565  | 28.17   | .998795  | .15     | .872770  | 28.32   | .127230  | 44 |
| 17 | .873255  | 28.05   | .998785  | .15     | .874469  | 28.22   | .125531  | 43 |
| 18 | .874938  | 27.95   | .998776  | .17     | .876162  | 28.12   | .123838  | 42 |
| 19 | .876615  | 27.83   | .998766  | .15     | .877849  | 28.00   | .122151  | 41 |
| 20 | 8.878285 | 27.73   | 9.998757 | .17     | 8.879529 | 27.88   | I.120471 | 40 |
| 21 | .879949  | 27.63   | .998747  | .15     | .881202  | 27.78   | .118798  | 39 |
| 22 | .881607  | 27.52   | .998738  | .17     | .882869  | 27.68   | .117131  | 38 |
| 23 | .883258  | 27.42   | .998728  | .17     | .884530  | 27.58   | .115470  | 37 |
| 24 | .884903  | 27.32   | .998718  | .17     | .886185  | 27.47   | .113815  | 36 |
| 25 | 8.886542 | 27.20   | 9.998708 | .15     | 8.887833 | 27.38   | I.112167 | 35 |
| 26 | .888174  | 27.12   | .998699  | .17     | .889476  | 27.27   | .110524  | 34 |
| 27 | .889801  | 27.00   | .998689  | .17     | .891112  | 27.17   | .108888  | 33 |
| 28 | .891421  | 26.90   | .998679  | .17     | .892742  | 27.07   | .107258  | 32 |
| 29 | .893035  | 26.80   | .998669  | .17     | .894366  | 26.97   | .105634  | 31 |
| 30 | 8.894643 | 26.72   | 9.998659 | .17     | 8.895984 | 26.87   | I.104016 | 30 |
| 31 | .896246  | 26.60   | .998649  | .17     | .897596  | 26.78   | .102404  | 29 |
| 32 | .897842  | 26.50   | .998639  | .17     | .899203  | 26.67   | .100797  | 28 |
| 33 | .899432  | 26.42   | .998629  | .17     | .900803  | 26.58   | .099197  | 27 |
| 34 | .901017  | 26.32   | .998619  | .17     | .902398  | 26.48   | .097602  | 26 |
| 35 | 8.902596 | 26.22   | 9.998609 | .17     | 8.903987 | 26.38   | I.096013 | 25 |
| 36 | .904169  | 26.12   | .998599  | .17     | .905570  | 26.28   | .094430  | 24 |
| 37 | .905736  | 26.02   | .998589  | .17     | .907147  | 26.18   | .092853  | 23 |
| 38 | .907297  | 25.93   | .998578  | .18     | .908719  | 26.10   | .091281  | 22 |
| 39 | .908853  | 25.85   | .998568  | .17     | .910285  | 26.02   | .089715  | 21 |
| 40 | 8.910404 | 25.75   | 9.998558 | .17     | 8.911846 | 25.92   | I.088154 | 20 |
| 41 | .911949  | 25.65   | .998548  | .18     | .913401  | 25.83   | .086599  | 19 |
| 42 | .913488  | 25.57   | .998537  | .17     | .914951  | 25.73   | .085049  | 18 |
| 43 | .915022  | 25.47   | .998527  | .18     | .916495  | 25.65   | .083505  | 17 |
| 44 | .916550  | 25.38   | .998516  | .17     | .918034  | 25.57   | .081966  | 16 |
| 45 | 8.918073 | 25.30   | 9.998506 | .17     | 8.919568 | 25.47   | I.080432 | 15 |
| 46 | .919591  | 25.20   | .998495  | .18     | .921096  | 25.38   | .078904  | 14 |
| 47 | .921103  | 25.12   | .998485  | .18     | .922619  | 25.28   | .077381  | 13 |
| 48 | .922610  | 25.03   | .998474  | .17     | .924136  | 25.22   | .075864  | 12 |
| 49 | .924112  | 24.95   | .998464  | .18     | .925649  | 25.12   | .074351  | 11 |
| 50 | 8.925609 | 24.85   | 9.998453 | .18     | 8.927156 | 25.03   | I.072844 | 10 |
| 51 | .927100  | 24.78   | .998442  | .18     | .928658  | 24.95   | .071342  | 9  |
| 52 | .928587  | 24.68   | .998431  | .17     | .930155  | 24.87   | .069845  | 8  |
| 53 | .930068  | 24.60   | .998421  | .18     | .931647  | 24.78   | .068353  | 7  |
| 54 | .931544  | 24.52   | .998410  | .18     | .933134  | 24.70   | .066866  | 6  |
| 55 | 8.933015 | 24.43   | 9.998399 | .18     | 8.934616 | 24.62   | I.065384 | 5  |
| 56 | .934481  | 24.35   | .998388  | .18     | .936093  | 24.53   | .063907  | 4  |
| 57 | .935942  | 24.27   | .998377  | .18     | .937565  | 24.45   | .062435  | 3  |
| 58 | .937398  | 24.20   | .998366  | .18     | .939032  | 24.37   | .060968  | 2  |
| 59 | .938850  | 24.10   | .998355  | .18     | .940494  | 24.30   | .059506  | 1  |
| 60 | 8.940296 |         | 9.998344 |         | 8.941952 |         | I.058048 | 0  |
|    | Cos.     | D. 1''. | Sin.     | D. 1''. | Cot.     | D. 1''. | Tan.     | M. |



| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     | M. |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 8.940296 | 24.03   | 9.998344 | .18     | 8.941952 | 24.20   | 1.058048 | 60 |
| 1  | .941738  | 28.93   | .998333  | .18     | .943404  | 24.13   | .056596  | 59 |
| 2  | .943174  | 23.87   | .998322  | .18     | .944852  | 24.05   | .055148  | 58 |
| 3  | .944606  | 23.80   | .998311  | .18     | .946295  | 23.98   | .053705  | 57 |
| 4  | .946034  | 23.70   | .998300  | .18     | .947734  | 23.90   | .052266  | 56 |
| 5  | 8.947456 | 23.63   | 9.998289 | .18     | 8.949168 | 23.82   | 1.050832 | 55 |
| 6  | .948874  | 23.55   | .998277  | .18     | .950597  | 23.73   | .049403  | 54 |
| 7  | .950287  | 23.48   | .998266  | .18     | .952021  | 23.67   | .047979  | 53 |
| 8  | .951696  | 23.40   | .998255  | .20     | .953441  | 23.58   | .046559  | 52 |
| 9  | .953100  | 23.32   | .998243  | .18     | .954856  | 23.52   | .045144  | 51 |
| 10 | 8.954499 | 23.25   | 9.998232 | .20     | 8.956267 | 23.45   | 1.043733 | 50 |
| 11 | .955894  | 23.17   | .998220  | .20     | .957674  | 23.35   | .042326  | 49 |
| 12 | .957284  | 23.10   | .998209  | .20     | .959075  | 23.30   | .040925  | 48 |
| 13 | .958670  | 23.03   | .998197  | .18     | .960473  | 23.22   | .039527  | 47 |
| 14 | .960052  | 22.95   | .998186  | .20     | .961866  | 23.15   | .038134  | 46 |
| 15 | 8.961429 | 22.87   | 9.998174 | .18     | 8.963255 | 23.07   | 1.036745 | 45 |
| 16 | .962801  | 22.82   | .998163  | .20     | .964639  | 23.00   | .035361  | 44 |
| 17 | .964170  | 22.73   | .998151  | .20     | .966019  | 22.92   | .033981  | 43 |
| 18 | .965534  | 22.65   | .998139  | .18     | .967394  | 22.87   | .032606  | 42 |
| 19 | .966893  | 22.60   | .998128  | .20     | .968766  | 22.78   | .031234  | 41 |
| 20 | 8.968249 | 22.52   | 9.998116 | .20     | 8.970133 | 22.72   | 1.028867 | 40 |
| 21 | .969600  | 22.45   | .998104  | .20     | .971496  | 22.65   | .028504  | 39 |
| 22 | .970947  | 22.37   | .998092  | .20     | .972855  | 22.57   | .027145  | 38 |
| 23 | .972289  | 22.32   | .998080  | .20     | .974209  | 22.52   | .025791  | 37 |
| 24 | .973628  | 22.23   | .998068  | .20     | .975560  | 22.43   | .024440  | 36 |
| 25 | 8.974962 | 22.18   | 9.998056 | .20     | 8.976906 | 22.37   | 1.023094 | 35 |
| 26 | .976293  | 22.10   | .998044  | .20     | .978248  | 22.30   | .022752  | 34 |
| 27 | .977619  | 22.03   | .998032  | .20     | .979586  | 22.25   | .021414  | 33 |
| 28 | .978941  | 21.97   | .998020  | .20     | .980921  | 22.17   | .019079  | 32 |
| 29 | .980259  | 21.90   | .998008  | .20     | .982251  | 22.10   | .017749  | 31 |
| 30 | 8.981573 | 21.83   | 9.997996 | .20     | 8.983577 | 22.03   | 1.016423 | 30 |
| 31 | .982883  | 21.77   | .997984  | .20     | .984899  | 21.97   | .015101  | 29 |
| 32 | .984189  | 21.70   | .997972  | .22     | .986217  | 21.92   | .013783  | 28 |
| 33 | .985491  | 21.63   | .997959  | .20     | .987532  | 21.83   | .012468  | 27 |
| 34 | .986789  | 21.57   | .997947  | .20     | .988842  | 21.78   | .011158  | 26 |
| 35 | 8.988083 | 21.52   | 9.997935 | .22     | 8.990149 | 21.70   | 1.009851 | 25 |
| 36 | .989374  | 21.43   | .997922  | .20     | .991451  | 21.65   | .008549  | 24 |
| 37 | .990660  | 21.38   | .997910  | .22     | .992750  | 21.58   | .007250  | 23 |
| 38 | .991943  | 21.32   | .997897  | .20     | .994045  | 21.53   | .005955  | 22 |
| 39 | .993222  | 21.25   | .997885  | .22     | .995337  | 21.45   | .004663  | 21 |
| 40 | 8.994497 | 21.18   | 9.997872 | .20     | 8.996624 | 21.40   | 1.003376 | 20 |
| 41 | .995768  | 21.13   | .997860  | .22     | .997908  | 21.33   | .002092  | 19 |
| 42 | .997036  | 21.05   | .997847  | .20     | .999188  | 21.28   | .000812  | 18 |
| 43 | .998299  | 21.02   | .997835  | .22     | 9.000465 | 21.22   | 0.999535 | 17 |
| 44 | .999560  | 20.93   | .997822  | .22     | .001738  | 21.15   | .998262  | 16 |
| 45 | 9.000816 | 20.88   | 9.997809 | .20     | 9.003007 | 21.08   | 0.996993 | 15 |
| 46 | .002069  | 20.82   | .997797  | .22     | .004272  | 21.03   | .995728  | 14 |
| 47 | .003318  | 20.75   | .997784  | .22     | .005534  | 20.97   | .994466  | 13 |
| 48 | .004563  | 20.70   | .997771  | .22     | .006792  | 20.92   | .993208  | 12 |
| 49 | .005805  | 20.65   | .997758  | .22     | .008047  | 20.85   | .991953  | 11 |
| 50 | 9.007044 | 20.57   | 9.997745 | .22     | 9.009298 | 20.80   | 0.990702 | 10 |
| 51 | .008278  | 20.53   | .997732  | .22     | .010546  | 20.73   | .989454  | 9  |
| 52 | .009510  | 20.45   | .997719  | .22     | .011790  | 20.68   | .988210  | 8  |
| 53 | .010737  | 20.42   | .997706  | .22     | .013031  | 20.62   | .986969  | 7  |
| 54 | .011962  | 20.33   | .997693  | .22     | .014268  | 20.57   | .985732  | 6  |
| 55 | 9.013182 | 20.30   | 9.997680 | .22     | 9.015502 | 20.50   | 0.984498 | 5  |
| 56 | .014400  | 20.22   | .997667  | .22     | .016732  | 20.45   | .983268  | 4  |
| 57 | .015613  | 20.18   | .997654  | .22     | .017959  | 20.40   | .982041  | 3  |
| 58 | .016824  | 20.12   | .997641  | .22     | .019183  | 20.33   | .980817  | 2  |
| 59 | .018031  | 20.07   | .997628  | .23     | .020403  | 20.28   | .979597  | 1  |
| 60 | 9.019235 |         | 9.997614 |         | 9.021620 |         | 0.978380 | 0  |
|    | Cos.     | D. 1''. | Sin.     | D. 1''. | Cot.     | D. 1''. | Tan.     | M. |

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     | M. |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.019235 | 20.00   | 9.997614 | .22     | 9.021620 | 20.23   | 0.978380 | 60 |
| 1  | .020435  | 19.95   | .997601  | .22     | .022834  | 20.17   | .977166  | 59 |
| 2  | .021632  | 19.88   | .997588  | .22     | .024044  | 20.12   | .975956  | 58 |
| 3  | .022825  | 19.85   | .997574  | .22     | .025251  | 20.07   | .974749  | 57 |
| 4  | .024016  | 19.78   | .997561  | .22     | .026455  | 20.00   | .973545  | 56 |
| 5  | 9.025203 | 19.72   | 9.997547 | .22     | 9.027655 | 19.95   | 0.972345 | 55 |
| 6  | .026386  | 19.68   | .997534  | .22     | .028852  | 19.90   | .971148  | 54 |
| 7  | .027567  | 19.62   | .997520  | .22     | .030046  | 19.85   | .969954  | 53 |
| 8  | .028744  | 19.57   | .997507  | .22     | .031237  | 19.80   | .968763  | 52 |
| 9  | .029918  | 19.52   | .997493  | .22     | .032425  | 19.73   | .967575  | 51 |
| 10 | 9.031089 | 19.47   | 9.997480 | .23     | 9.033609 | 19.70   | 0.966391 | 50 |
| 11 | .032257  | 19.40   | .997466  | .23     | .034791  | 19.63   | .965209  | 49 |
| 12 | .033421  | 19.35   | .997452  | .22     | .035969  | 19.58   | .964031  | 48 |
| 13 | .034582  | 19.32   | .997439  | .22     | .037144  | 19.53   | .962856  | 47 |
| 14 | .035741  | 19.25   | .997425  | .23     | .038316  | 19.48   | .961684  | 46 |
| 15 | 9.036896 | 19.20   | 9.997411 | .23     | 9.039485 | 19.43   | 0.960515 | 45 |
| 16 | .038048  | 19.15   | .997397  | .23     | .040651  | 19.37   | .959349  | 44 |
| 17 | .039197  | 19.08   | .997383  | .23     | .041813  | 19.33   | .958187  | 43 |
| 18 | .040342  | 19.05   | .997369  | .23     | .042973  | 19.28   | .957027  | 42 |
| 19 | .041485  | 19.00   | .997355  | .23     | .044130  | 19.23   | .955870  | 41 |
| 20 | 9.042625 | 18.95   | 9.997341 | .23     | 9.045284 | 19.17   | 0.954716 | 40 |
| 21 | .043762  | 18.88   | .997327  | .23     | .046434  | 19.13   | .953566  | 39 |
| 22 | .044895  | 18.85   | .997313  | .23     | .047582  | 19.08   | .952418  | 38 |
| 23 | .046026  | 18.80   | .997299  | .23     | .048727  | 19.03   | .951273  | 37 |
| 24 | .047154  | 18.75   | .997285  | .23     | .049869  | 18.98   | .950131  | 36 |
| 25 | 9.048279 | 18.68   | 9.997271 | .23     | 9.051008 | 18.93   | 0.948992 | 35 |
| 26 | .049400  | 18.65   | .997257  | .25     | .052144  | 18.88   | .947856  | 34 |
| 27 | .050519  | 18.60   | .997242  | .25     | .053277  | 18.83   | .946723  | 33 |
| 28 | .051635  | 18.57   | .997228  | .23     | .054407  | 18.80   | .945593  | 32 |
| 29 | .052749  | 18.50   | .997214  | .25     | .055535  | 18.73   | .944465  | 31 |
| 30 | 9.053859 | 18.45   | 9.997199 | .23     | 9.056659 | 18.70   | 0.943341 | 30 |
| 31 | .054966  | 18.42   | .997185  | .25     | .057781  | 18.65   | .942219  | 29 |
| 32 | .056071  | 18.35   | .997170  | .25     | .058900  | 18.60   | .941100  | 28 |
| 33 | .057172  | 18.32   | .997156  | .23     | .060016  | 18.57   | .939984  | 27 |
| 34 | .058271  | 18.27   | .997141  | .23     | .061130  | 18.50   | .938870  | 26 |
| 35 | 9.059367 | 18.22   | 9.997127 | .25     | 9.062240 | 18.47   | 0.937760 | 25 |
| 36 | .060460  | 18.18   | .997112  | .25     | .063348  | 18.42   | .936652  | 24 |
| 37 | .061551  | 18.13   | .997098  | .23     | .064453  | 18.38   | .935547  | 23 |
| 38 | .062639  | 18.08   | .997083  | .25     | .065556  | 18.32   | .934444  | 22 |
| 39 | .063724  | 18.03   | .997068  | .25     | .066655  | 18.28   | .933345  | 21 |
| 40 | 9.064806 | 17.98   | 9.997053 | .23     | 9.067752 | 18.23   | 0.932248 | 20 |
| 41 | .065885  | 17.95   | .997039  | .25     | .068846  | 18.20   | .931154  | 19 |
| 42 | .066962  | 17.90   | .997024  | .25     | .069938  | 18.15   | .930062  | 18 |
| 43 | .068036  | 17.85   | .997009  | .25     | .071027  | 18.10   | .928973  | 17 |
| 44 | .069107  | 17.82   | .996994  | .25     | .072113  | 18.07   | .927887  | 16 |
| 45 | 9.070176 | 17.77   | 9.996979 | .25     | 9.073197 | 18.02   | 0.926803 | 15 |
| 46 | .071242  | 17.73   | .996964  | .25     | .074278  | 17.97   | .925722  | 14 |
| 47 | .072306  | 17.67   | .996949  | .25     | .075356  | 17.93   | .924644  | 13 |
| 48 | .073366  | 17.63   | .996934  | .25     | .076432  | 17.88   | .923568  | 12 |
| 49 | .074424  | 17.60   | .996919  | .25     | .077505  | 17.85   | .922495  | 11 |
| 50 | 9.075480 | 17.55   | 9.996904 | .25     | 9.078576 | 17.80   | 0.921424 | 10 |
| 51 | .076533  | 17.50   | .996889  | .25     | .079644  | 17.77   | .920356  | 9  |
| 52 | .077583  | 17.47   | .996874  | .25     | .080710  | 17.72   | .919290  | 8  |
| 53 | .078631  | 17.42   | .996858  | .27     | .081773  | 17.67   | .918227  | 7  |
| 54 | .079676  | 17.38   | .996843  | .25     | .082833  | 17.62   | .917167  | 6  |
| 55 | 9.080719 | 17.33   | 9.996828 | .27     | 9.083891 | 17.60   | 0.916109 | 5  |
| 56 | .081759  | 17.30   | .996812  | .25     | .084947  | 17.55   | .915053  | 4  |
| 57 | .082797  | 17.25   | .996797  | .25     | .086000  | 17.50   | .914000  | 3  |
| 58 | .083832  | 17.20   | .996782  | .25     | .087050  | 17.47   | .912950  | 2  |
| 59 | .084864  | 17.17   | .996766  | .27     | .088098  | 17.44   | .911902  | 1  |
| 60 | 9.085894 |         | 9.996751 | .25     | 9.089144 |         | 0.910856 | 0  |
|    | Cos.     | D. 1''. | Sin.     | D. 1''. | Cot.     | D. 1''. | Tan.     | M. |

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     |    |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.085894 | 17.13   | 9.996751 |         | 9.089144 | 17.38   | 0.910856 | 60 |
| 1  | .086922  | 17.08   | .996735  | .27     | .090187  | 17.35   | .909813  | 59 |
| 2  | .087947  | 17.05   | .996720  | .27     | .091228  | 17.30   | .908772  | 58 |
| 3  | .088970  | 17.00   | .996704  | .27     | .092266  | 17.27   | .907734  | 57 |
| 4  | .089990  | 16.97   | .996688  | .27     | .093302  | 17.23   | .906698  | 56 |
| 5  | 9.091008 | 16.93   | 9.996673 | .25     | 9.094336 | 17.18   | 0.905664 | 55 |
| 6  | .092024  | 16.88   | .996657  | .27     | .095367  | 17.13   | .904633  | 54 |
| 7  | .093037  | 16.83   | .996641  | .27     | .096395  | 17.12   | .903605  | 53 |
| 8  | .094047  | 16.82   | .996625  | .25     | .097422  | 17.07   | .902578  | 52 |
| 9  | .095056  | 16.77   | .996610  | .27     | .098446  | 17.03   | .901554  | 51 |
| 10 | 9.096062 | 16.72   | 9.996594 | .27     | 9.099468 | 16.98   | 0.900532 | 50 |
| 11 | .097065  | 16.68   | .996578  | .27     | .100487  | 16.95   | .899513  | 49 |
| 12 | .098066  | 16.65   | .996562  | .27     | .101504  | 16.92   | .898496  | 48 |
| 13 | .099065  | 16.62   | .996546  | .27     | .102519  | 16.88   | .897481  | 47 |
| 14 | .100062  | 16.57   | .996530  | .27     | .103532  | 16.83   | .896468  | 46 |
| 15 | 9.101056 | 16.53   | 9.996514 | .27     | 9.104542 | 16.80   | 0.895458 | 45 |
| 16 | .102048  | 16.48   | .996498  | .27     | .105550  | 16.77   | .894450  | 44 |
| 17 | .103037  | 16.47   | .996482  | .27     | .106556  | 16.72   | .893444  | 43 |
| 18 | .104025  | 16.42   | .996465  | .28     | .107559  | 16.68   | .892441  | 42 |
| 19 | .105010  | 16.37   | .996449  | .27     | .108560  | 16.65   | .891440  | 41 |
| 20 | 9.105992 | 16.35   | 9.996433 | .27     | 9.109559 | 16.62   | 0.890441 | 40 |
| 21 | .106973  | 16.30   | .996417  | .28     | .110556  | 16.58   | .889444  | 39 |
| 22 | .107951  | 16.27   | .996400  | .27     | .111551  | 16.53   | .888449  | 38 |
| 23 | .108927  | 16.23   | .996384  | .27     | .112544  | 16.50   | .887457  | 37 |
| 24 | .109901  | 16.20   | .996368  | .28     | .113533  | 16.47   | .886467  | 36 |
| 25 | 9.110873 | 16.15   | 9.996351 | .27     | 9.114521 | 16.43   | 0.885479 | 35 |
| 26 | .111842  | 16.12   | .996335  | .28     | .115507  | 16.40   | .884493  | 34 |
| 27 | .112809  | 16.08   | .996318  | .27     | .116491  | 16.35   | .883509  | 33 |
| 28 | .113774  | 16.05   | .996302  | .28     | .117472  | 16.33   | .882528  | 32 |
| 29 | .114737  | 16.02   | .996285  | .27     | .118452  | 16.28   | .881548  | 31 |
| 30 | 9.115698 | 15.97   | 9.996269 | .28     | 9.119429 | 16.25   | 0.880571 | 30 |
| 31 | .116656  | 15.95   | .996252  | .28     | .120404  | 16.22   | .879596  | 29 |
| 32 | .117613  | 15.90   | .996235  | .27     | .121377  | 16.18   | .878623  | 28 |
| 33 | .118567  | 15.87   | .996219  | .28     | .122348  | 16.15   | .877652  | 27 |
| 34 | .119519  | 15.83   | .996202  | .28     | .123317  | 16.12   | .876683  | 26 |
| 35 | 9.120469 | 15.80   | 9.996185 | .28     | 9.124284 | 16.08   | 0.875716 | 25 |
| 36 | .121417  | 15.75   | .996168  | .28     | .125249  | 16.03   | .874751  | 24 |
| 37 | .122362  | 15.73   | .996151  | .28     | .126211  | 16.02   | .873789  | 23 |
| 38 | .123306  | 15.70   | .996134  | .28     | .127172  | 15.97   | .872828  | 22 |
| 39 | .124248  | 15.65   | .996117  | .28     | .128130  | 15.95   | .871870  | 21 |
| 40 | 9.125187 | 15.63   | 9.996100 | .28     | 9.129087 | 15.90   | 0.870913 | 20 |
| 41 | .126125  | 15.58   | .996083  | .28     | .130041  | 15.88   | .869959  | 19 |
| 42 | .127060  | 15.55   | .996066  | .28     | .130994  | 15.83   | .869006  | 18 |
| 43 | .127993  | 15.53   | .996049  | .28     | .131944  | 15.82   | .868056  | 17 |
| 44 | .128925  | 15.48   | .996032  | .28     | .132893  | 15.77   | .867107  | 16 |
| 45 | 9.129854 | 15.45   | 9.996015 | .28     | 9.133839 | 15.75   | 0.866161 | 15 |
| 46 | .130781  | 15.42   | .995998  | .30     | .134784  | 15.70   | .865216  | 14 |
| 47 | .131706  | 15.40   | .995980  | .28     | .135726  | 15.68   | .864274  | 13 |
| 48 | .132630  | 15.35   | .995963  | .28     | .136667  | 15.63   | .863333  | 12 |
| 49 | .133551  | 15.32   | .995946  | .30     | .137605  | 15.62   | .862395  | 11 |
| 50 | 9.134470 | 15.28   | 9.995928 | .28     | 9.138542 | 15.57   | 0.861458 | 10 |
| 51 | .135357  | 15.27   | .995911  | .28     | .139476  | 15.55   | .860524  | 9  |
| 52 | .136303  | 15.22   | .995894  | .30     | .140409  | 15.52   | .859591  | 8  |
| 53 | .137216  | 15.20   | .995876  | .28     | .141340  | 15.48   | .858660  | 7  |
| 54 | .138128  | 15.15   | .995859  | .28     | .142269  | 15.45   | .857731  | 6  |
| 55 | 9.139037 | 15.12   | 9.995841 | .30     | 9.143196 | 15.42   | 0.856804 | 5  |
| 56 | .139944  | 15.10   | .995823  | .28     | .144121  | 15.38   | .855879  | 4  |
| 57 | .140850  | 15.07   | .995806  | .30     | .145044  | 15.37   | .854956  | 3  |
| 58 | .141754  | 15.02   | .995788  | .28     | .145966  | 15.32   | .854034  | 2  |
| 59 | .142655  | 15.00   | .995771  | .30     | .146885  | 15.30   | .853115  | 1  |
| 60 | 9.143555 |         | 9.995753 |         | 9.147803 |         | 0.852197 | 0  |
|    | Cos.     | D. 1''. | Sin.     | D. 1''. | Cot      | D. 1''. | Tan.     | M. |

| M. | Sin.      | D. 1". | Cos.      | D. 1". | Tan.      | D. 1". | Cot.      | M. |
|----|-----------|--------|-----------|--------|-----------|--------|-----------|----|
| 0  | 9. 143555 | 14. 97 | 9. 995753 |        | 9. 147803 | 15. 25 | 0. 852197 | 60 |
| 1  | . 144453  | 14. 93 | . 995735  | . 30   | . 148718  | 15. 23 | . 851282  | 59 |
| 2  | . 145349  | 14. 90 | . 995717  | . 30   | . 149632  | 15. 20 | . 850368  | 58 |
| 3  | . 146243  | 14. 88 | . 995699  | . 30   | . 150544  | 15. 17 | . 849456  | 57 |
| 4  | . 147136  | 14. 83 | . 995681  | . 28   | . 151454  | 15. 15 | . 848546  | 56 |
| 5  | 9. 148026 | 14. 83 | 9. 995664 |        | 9. 152363 | 15. 10 | 0. 847637 | 55 |
| 6  | . 148915  | 14. 82 | . 995646  | . 30   | . 153269  | 15. 10 | . 846731  | 54 |
| 7  | . 149802  | 14. 78 | . 995628  | . 30   | . 154174  | 15. 08 | . 845826  | 53 |
| 8  | . 150686  | 14. 73 | . 995610  | . 30   | . 155077  | 15. 05 | . 844923  | 52 |
| 9  | . 151569  | 14. 70 | . 995591  | . 30   | . 155978  | 15. 02 | . 844022  | 51 |
| 10 | 9. 152451 | 14. 65 | 9. 995573 |        | 9. 156877 | 14. 97 | 0. 843123 | 50 |
| 11 | . 153330  | 14. 63 | . 995555  | . 30   | . 157775  | 14. 93 | . 842225  | 49 |
| 12 | . 154208  | 14. 58 | . 995537  | . 30   | . 158671  | 14. 90 | . 841329  | 48 |
| 13 | . 155083  | 14. 57 | . 995519  | . 30   | . 159565  | 14. 87 | . 840435  | 47 |
| 14 | . 155957  | 14. 55 | . 995501  | . 30   | . 160457  | 14. 87 | . 839543  | 46 |
| 15 | 9. 156830 | 14. 50 | 9. 995482 |        | 9. 161347 | 14. 83 | 0. 838653 | 45 |
| 16 | . 157700  | 14. 50 | . 995464  | . 30   | . 162236  | 14. 82 | . 837704  | 44 |
| 17 | . 158569  | 14. 48 | . 995446  | . 30   | . 163123  | 14. 78 | . 836877  | 43 |
| 18 | . 159435  | 14. 43 | . 995427  | . 32   | . 164008  | 14. 75 | . 835992  | 42 |
| 19 | . 160301  | 14. 43 | . 995409  | . 30   | . 164892  | 14. 73 | . 835108  | 41 |
| 20 | 9. 161164 | 14. 38 | 9. 995390 |        | 9. 165774 | 14. 70 | 0. 834226 | 40 |
| 21 | . 162025  | 14. 35 | . 995372  | . 30   | . 166654  | 14. 67 | . 833346  | 39 |
| 22 | . 162885  | 14. 33 | . 995353  | . 32   | . 167532  | 14. 63 | . 832468  | 38 |
| 23 | . 163743  | 14. 30 | . 995334  | . 32   | . 168409  | 14. 62 | . 831591  | 37 |
| 24 | . 164600  | 14. 28 | . 995316  | . 30   | . 169284  | 14. 58 | . 830716  | 36 |
| 25 | 9. 165454 | 14. 23 | 9. 995297 |        | 9. 170157 | 14. 55 | 0. 829843 | 35 |
| 26 | . 166307  | 14. 22 | . 995278  | . 32   | . 171029  | 14. 53 | . 828971  | 34 |
| 27 | . 167159  | 14. 20 | . 995260  | . 30   | . 171899  | 14. 50 | . 828101  | 33 |
| 28 | . 168008  | 14. 15 | . 995241  | . 32   | . 172767  | 14. 47 | . 827233  | 32 |
| 29 | . 168856  | 14. 13 | . 995222  | . 32   | . 173634  | 14. 45 | . 826366  | 31 |
| 30 | 9. 169702 | 14. 10 | 9. 995203 |        | 9. 174499 | 14. 42 | 0. 825501 | 30 |
| 31 | . 170547  | 14. 08 | . 995184  | . 32   | . 175362  | 14. 38 | . 824638  | 29 |
| 32 | . 171389  | 14. 03 | . 995165  | . 32   | . 176224  | 14. 37 | . 823776  | 28 |
| 33 | . 172230  | 14. 02 | . 995146  | . 32   | . 177084  | 14. 33 | . 822916  | 27 |
| 34 | . 173070  | 14. 00 | . 995127  | . 32   | . 177942  | 14. 30 | . 822058  | 26 |
| 35 | 9. 173908 | 13. 97 | 9. 995108 |        | 9. 178799 | 14. 28 | 0. 821201 | 25 |
| 36 | . 174744  | 13. 93 | . 995089  | . 32   | . 179655  | 14. 27 | . 820345  | 24 |
| 37 | . 175578  | 13. 90 | . 995070  | . 32   | . 180508  | 14. 22 | . 819492  | 23 |
| 38 | . 176411  | 13. 88 | . 995051  | . 32   | . 181360  | 14. 20 | . 818640  | 22 |
| 39 | . 177242  | 13. 85 | . 995032  | . 32   | . 182211  | 14. 18 | . 817789  | 21 |
| 40 | 9. 178072 | 13. 83 | 9. 995013 |        | 9. 183059 | 14. 13 | 0. 816941 | 20 |
| 41 | . 178900  | 13. 80 | . 994993  | . 33   | . 183907  | 14. 13 | . 816093  | 19 |
| 42 | . 179726  | 13. 77 | . 994974  | . 32   | . 184752  | 14. 08 | . 815248  | 18 |
| 43 | . 180551  | 13. 75 | . 994955  | . 32   | . 185597  | 14. 08 | . 814403  | 17 |
| 44 | . 181374  | 13. 72 | . 994935  | . 33   | . 186439  | 14. 03 | . 813561  | 16 |
| 45 | 9. 182196 | 13. 70 | 9. 994916 |        | 9. 187280 | 14. 02 | 0. 812720 | 15 |
| 46 | . 183016  | 13. 67 | . 994896  | . 33   | . 188120  | 14. 00 | . 811880  | 14 |
| 47 | . 183834  | 13. 63 | . 994877  | . 32   | . 188958  | 13. 97 | . 811042  | 13 |
| 48 | . 184651  | 13. 62 | . 994857  | . 33   | . 189794  | 13. 93 | . 810206  | 12 |
| 49 | . 185466  | 13. 58 | . 994838  | . 32   | . 190629  | 13. 92 | . 809371  | 11 |
| 50 | 9. 186280 | 13. 57 | 9. 994818 |        | 9. 191462 | 13. 88 | 0. 808538 | 10 |
| 51 | . 187092  | 13. 53 | . 994798  | . 33   | . 192294  | 13. 87 | . 807706  | 9  |
| 52 | . 187903  | 13. 52 | . 994779  | . 32   | . 193124  | 13. 83 | . 806876  | 8  |
| 53 | . 188712  | 13. 48 | . 994759  | . 33   | . 193953  | 13. 82 | . 806047  | 7  |
| 54 | . 189519  | 13. 45 | . 994739  | . 33   | . 194780  | 13. 78 | . 805220  | 6  |
| 55 | 9. 190325 | 13. 43 | 9. 994720 |        | 9. 195606 | 13. 77 | 0. 804394 | 5  |
| 56 | . 191130  | 13. 42 | . 994700  | . 33   | . 196430  | 13. 73 | . 803570  | 4  |
| 57 | . 191933  | 13. 38 | . 994680  | . 33   | . 197253  | 13. 72 | . 802747  | 3  |
| 58 | . 192734  | 13. 35 | . 994660  | . 33   | . 198074  | 13. 68 | . 801926  | 2  |
| 59 | . 193534  | 13. 33 | . 994640  | . 33   | . 198894  | 13. 67 | . 801106  | 1  |
| 60 | 9. 194332 | 13. 30 | 9. 994620 |        | 9. 199713 | 13. 65 | 0. 800287 | 0  |
|    | Cos.      | D. 1". | Sin.      | D. 1". | Cot.      | D. 1". | Tan.      | M. |

| M. | Sin.      | D. 1". | Cos.      | D. 1". | Tan.      | D. 1". | Cot.      | M. |
|----|-----------|--------|-----------|--------|-----------|--------|-----------|----|
| 0  | 9. 194332 | 13. 28 | 9. 994620 |        | 9. 199713 | 13. 60 | 0. 800287 | 60 |
| 1  | . 195129  | 13. 27 | . 994600  | . 33   | . 200529  | 13. 60 | . 799471  | 59 |
| 2  | . 195925  | 13. 23 | . 994580  | . 33   | . 201345  | 13. 57 | . 798655  | 58 |
| 3  | . 196719  | 13. 20 | . 994560  | . 33   | . 202159  | 13. 53 | . 797841  | 57 |
| 4  | . 197511  | 13. 18 | . 994540  | . 33   | . 202971  | 13. 52 | . 797029  | 56 |
| 5  | 9. 198302 | 13. 15 | 9. 994519 | . 35   | 9. 203782 | 13. 50 | 0. 796218 | 55 |
| 6  | . 199091  | 13. 13 | . 994499  | . 33   | . 204592  | 13. 47 | . 795408  | 54 |
| 7  | . 199879  | 13. 12 | . 994479  | . 33   | . 205400  | 13. 45 | . 794600  | 53 |
| 8  | . 200666  | 13. 08 | . 994459  | . 35   | . 206207  | 13. 43 | . 793793  | 52 |
| 9  | . 201451  | 13. 05 | . 994438  | . 33   | . 207013  | 13. 40 | . 792987  | 51 |
| 10 | 9. 202234 | 13. 05 | 9. 994418 | . 33   | 9. 207817 | 13. 37 | 0. 792183 | 50 |
| 11 | . 203017  | 13. 00 | . 994398  | . 35   | . 208619  | 13. 35 | . 791381  | 49 |
| 12 | . 203797  | 13. 00 | . 994377  | . 33   | . 209420  | 13. 33 | . 790580  | 48 |
| 13 | . 204577  | 12. 95 | . 994357  | . 33   | . 210220  | 13. 30 | . 789780  | 47 |
| 14 | . 205354  | 12. 95 | . 994336  | . 35   | . 211018  | 13. 28 | . 788982  | 46 |
| 15 | 9. 206131 | 12. 92 | 9. 994316 | . 33   | 9. 211815 | 13. 27 | 0. 788185 | 45 |
| 16 | . 206906  | 12. 88 | . 994295  | . 35   | . 212611  | 13. 23 | . 787389  | 44 |
| 17 | . 207679  | 12. 88 | . 994274  | . 33   | . 213405  | 13. 23 | . 786595  | 43 |
| 18 | . 208452  | 12. 83 | . 994254  | . 35   | . 214198  | 13. 18 | . 785802  | 42 |
| 19 | . 209222  | 12. 83 | . 994233  | . 35   | . 214989  | 13. 18 | . 785011  | 41 |
| 20 | 9. 209992 | 12. 80 | 9. 994212 | . 35   | 9. 215780 | 13. 13 | 0. 784220 | 40 |
| 21 | . 210769  | 12. 77 | . 994191  | . 33   | . 216568  | 13. 13 | . 783432  | 39 |
| 22 | . 211526  | 12. 75 | . 994171  | . 33   | . 217356  | 13. 10 | . 782644  | 38 |
| 23 | . 212291  | 12. 73 | . 994150  | . 35   | . 218142  | 13. 07 | . 781858  | 37 |
| 24 | . 213055  | 12. 72 | . 994129  | . 35   | . 218926  | 13. 07 | . 781074  | 36 |
| 25 | 9. 213818 | 12. 68 | 9. 994108 | . 35   | 9. 219710 | 13. 07 | 0. 780290 | 35 |
| 26 | . 214579  | 12. 65 | . 994087  | . 35   | . 220492  | 13. 00 | . 779508  | 34 |
| 27 | . 215338  | 12. 65 | . 994066  | . 35   | . 221272  | 13. 00 | . 778728  | 33 |
| 28 | . 216097  | 12. 62 | . 994045  | . 35   | . 222052  | 12. 97 | . 777948  | 32 |
| 29 | . 216854  | 12. 58 | . 994024  | . 35   | . 222830  | 12. 95 | . 777170  | 31 |
| 30 | 9. 217609 | 12. 57 | 9. 994003 | . 35   | 9. 223607 | 12. 92 | 0. 776393 | 30 |
| 31 | . 218363  | 12. 55 | . 993982  | . 37   | . 224382  | 12. 90 | . 775618  | 29 |
| 32 | . 219116  | 12. 53 | . 993960  | . 35   | . 225156  | 12. 88 | . 774844  | 28 |
| 33 | . 219868  | 12. 50 | . 993939  | . 35   | . 225929  | 12. 85 | . 774071  | 27 |
| 34 | . 220618  | 12. 48 | . 993918  | . 35   | . 226700  | 12. 85 | . 773300  | 26 |
| 35 | 9. 221367 | 12. 47 | 9. 993897 | . 35   | 9. 227471 | 12. 80 | 0. 772529 | 25 |
| 36 | . 222115  | 12. 43 | . 993875  | . 37   | . 228239  | 12. 80 | . 771761  | 24 |
| 37 | . 222861  | 12. 42 | . 993854  | . 35   | . 229007  | 12. 77 | . 770993  | 23 |
| 38 | . 223606  | 12. 38 | . 993832  | . 37   | . 229773  | 12. 77 | . 770227  | 22 |
| 39 | . 224349  | 12. 38 | . 993811  | . 37   | . 230539  | 12. 72 | . 769461  | 21 |
| 40 | 9. 225092 | 12. 35 | 9. 993789 | . 35   | 9. 231302 | 12. 72 | 0. 768698 | 20 |
| 41 | . 225833  | 12. 33 | . 993768  | . 37   | . 232065  | 12. 68 | . 767935  | 19 |
| 42 | . 226573  | 12. 30 | . 993746  | . 37   | . 232826  | 12. 67 | . 767174  | 18 |
| 43 | . 227311  | 12. 28 | . 993725  | . 35   | . 233586  | 12. 65 | . 766414  | 17 |
| 44 | . 228048  | 12. 27 | . 993703  | . 37   | . 234345  | 12. 63 | . 765655  | 16 |
| 45 | 9. 228784 | 12. 23 | 9. 993681 | . 35   | 9. 235103 | 12. 60 | 0. 764897 | 15 |
| 46 | . 229518  | 12. 23 | . 993660  | . 37   | . 235859  | 12. 58 | . 764141  | 14 |
| 47 | . 230252  | 12. 20 | . 993638  | . 37   | . 236614  | 12. 57 | . 763386  | 13 |
| 48 | . 230984  | 12. 18 | . 993616  | . 37   | . 237368  | 12. 53 | . 762632  | 12 |
| 49 | . 231715  | 12. 15 | . 993594  | . 37   | . 238120  | 12. 53 | . 761880  | 11 |
| 50 | 9. 232444 | 12. 13 | 9. 993572 | . 37   | 9. 238872 | 12. 50 | 0. 761128 | 10 |
| 51 | . 233172  | 12. 12 | . 993550  | . 37   | . 239621  | 12. 48 | . 760378  | 9  |
| 52 | . 233899  | 12. 10 | . 993528  | . 37   | . 240371  | 12. 45 | . 759629  | 8  |
| 53 | . 234625  | 12. 07 | . 993506  | . 37   | . 241118  | 12. 45 | . 758882  | 7  |
| 54 | . 235349  | 12. 07 | . 993484  | . 37   | . 241865  | 12. 42 | . 758135  | 6  |
| 55 | 9. 236073 | 12. 03 | 9. 993462 | . 37   | 9. 242610 | 12. 40 | 0. 757390 | 5  |
| 56 | . 236795  | 12. 00 | . 993440  | . 37   | . 243354  | 12. 38 | . 756646  | 4  |
| 57 | . 237515  | 12. 00 | . 993418  | . 37   | . 244097  | 12. 37 | . 755903  | 3  |
| 58 | . 238235  | 11. 97 | . 993396  | . 37   | . 244839  | 12. 33 | . 755161  | 2  |
| 59 | . 238953  | 11. 95 | . 993374  | . 38   | . 245579  | 12. 33 | . 754421  | 1  |
| 60 | 9. 239670 |        | 9. 993351 |        | 9. 246319 |        | 0. 753681 | 0  |
|    | Cos.      | D. 1". | Sin.      | D. 1". | Cot.      | D. 1". | Tan.      | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.239670 | 11.93  | 9.993351 |        | 9.246319 |        | 0.753681 | 60 |
| 1  | .240386  | 11.92  | .993329  | .37    | .247957  | 12.30  | .752943  | 59 |
| 2  | .241101  | 11.88  | .993307  | .38    | .247794  | 12.28  | .752206  | 58 |
| 3  | .241814  | 11.87  | .993284  | .37    | .248530  | 12.27  | .751470  | 57 |
| 4  | .242526  | 11.85  | .993262  | .37    | .249264  | 12.23  | .750736  | 56 |
| 5  | 9.243237 | 11.83  | 9.993240 | .38    | 9.249998 | 12.20  | 0.750002 | 55 |
| 6  | .243947  | 11.82  | .993217  | .37    | .250730  | 12.18  | .749270  | 54 |
| 7  | .244656  | 11.78  | .993195  | .38    | .251461  | 12.17  | .748539  | 53 |
| 8  | .245363  | 11.77  | .993172  | .38    | .252191  | 12.15  | .747809  | 52 |
| 9  | .246069  | 11.77  | .993149  | .37    | .252920  | 12.13  | .747080  | 51 |
| 10 | 9.246775 | 11.72  | 9.993127 | .38    | 9.253648 | 12.10  | 0.746352 | 50 |
| 11 | .247478  | 11.72  | .993104  | .38    | .254374  | 12.10  | .745622  | 49 |
| 12 | .248181  | 11.70  | .993081  | .37    | .255100  | 12.07  | .744900  | 48 |
| 13 | .248883  | 11.67  | .993059  | .37    | .255824  | 12.07  | .744176  | 47 |
| 14 | .249583  | 11.65  | .993036  | .38    | .256547  | 12.05  | .743453  | 46 |
| 15 | 9.250282 | 11.63  | 9.993013 | .38    | 9.257269 | 12.03  | 0.742731 | 45 |
| 16 | .250980  | 11.62  | .992990  | .38    | .257990  | 12.02  | .742010  | 44 |
| 17 | .251677  | 11.60  | .992967  | .38    | .258710  | 12.00  | .741290  | 43 |
| 18 | .252373  | 11.57  | .992944  | .38    | .259429  | 11.98  | .740571  | 42 |
| 19 | .253067  | 11.57  | .992921  | .38    | .260146  | 11.95  | .739854  | 41 |
| 20 | 9.253761 | 11.53  | 9.992898 | .38    | 9.260863 | 11.92  | 0.739137 | 40 |
| 21 | .254453  | 11.52  | .992875  | .38    | .261578  | 11.90  | .738422  | 39 |
| 22 | .255144  | 11.50  | .992852  | .38    | .262292  | 11.88  | .737708  | 38 |
| 23 | .255834  | 11.48  | .992829  | .38    | .263005  | 11.87  | .736995  | 37 |
| 24 | .256523  | 11.47  | .992806  | .38    | .263717  | 11.85  | .736283  | 36 |
| 25 | 9.257211 | 11.45  | 9.992783 | .40    | 9.264428 | 11.83  | 0.735572 | 35 |
| 26 | .257908  | 11.42  | .992759  | .38    | .265138  | 11.82  | .734862  | 34 |
| 27 | .258583  | 11.42  | .992736  | .38    | .265847  | 11.82  | .734153  | 33 |
| 28 | .259268  | 11.38  | .992713  | .38    | .266555  | 11.80  | .733445  | 32 |
| 29 | .259951  | 11.37  | .992690  | .40    | .267261  | 11.77  | .732739  | 31 |
| 30 | 9.260633 | 11.35  | 9.992666 | .38    | 9.267967 | 11.73  | 0.732033 | 30 |
| 31 | .261314  | 11.33  | .992643  | .40    | .268671  | 11.73  | .731329  | 29 |
| 32 | .261994  | 11.32  | .992619  | .38    | .269375  | 11.70  | .730625  | 28 |
| 33 | .262673  | 11.30  | .992596  | .40    | .270077  | 11.70  | .729923  | 27 |
| 34 | .263351  | 11.27  | .992572  | .40    | .270779  | 11.67  | .729221  | 26 |
| 35 | 9.264027 | 11.27  | 9.992549 | .38    | 9.271479 | 11.65  | 0.728521 | 25 |
| 36 | .264703  | 11.23  | .992525  | .40    | .272178  | 11.65  | .727822  | 24 |
| 37 | .265377  | 11.23  | .992501  | .38    | .272876  | 11.63  | .727124  | 23 |
| 38 | .266051  | 11.20  | .992478  | .40    | .273573  | 11.62  | .726427  | 22 |
| 39 | .266723  | 11.20  | .992454  | .40    | .274269  | 11.60  | .725731  | 21 |
| 40 | 9.267395 | 11.17  | 9.992430 | .40    | 9.274964 | 11.57  | 0.725036 | 20 |
| 41 | .268065  | 11.15  | .992406  | .40    | .275658  | 11.55  | .724342  | 19 |
| 42 | .268734  | 11.13  | .992382  | .40    | .276351  | 11.53  | .723649  | 18 |
| 43 | .269402  | 11.12  | .992359  | .38    | .277043  | 11.53  | .722957  | 17 |
| 44 | .270069  | 11.10  | .992335  | .40    | .277734  | 11.52  | .722266  | 16 |
| 45 | 9.270735 | 11.08  | 9.992311 | .40    | 9.278424 | 11.50  | 0.721576 | 15 |
| 46 | .271400  | 11.07  | .992287  | .40    | .279113  | 11.48  | .720887  | 14 |
| 47 | .272064  | 11.07  | .992263  | .40    | .279801  | 11.47  | .720199  | 13 |
| 48 | .272726  | 11.03  | .992239  | .40    | .280488  | 11.45  | .719512  | 12 |
| 49 | .273388  | 11.03  | .992214  | .42    | .281174  | 11.43  | .718826  | 11 |
| 50 | 9.274049 | 11.02  | 9.992190 | .40    | 9.281858 | 11.40  | 0.718142 | 10 |
| 51 | .274708  | 10.98  | .992166  | .40    | .282542  | 11.40  | .717458  | 9  |
| 52 | .275367  | 10.98  | .992142  | .40    | .283225  | 11.38  | .716775  | 8  |
| 53 | .276025  | 10.97  | .992118  | .40    | .283907  | 11.37  | .716093  | 7  |
| 54 | .276681  | 10.93  | .992093  | .42    | .284588  | 11.35  | .715412  | 6  |
| 55 | 9.277337 | 10.93  | 9.992069 | .40    | 9.285268 | 11.33  | 0.714732 | 5  |
| 56 | .277991  | 10.90  | .992044  | .42    | .285947  | 11.32  | .714053  | 4  |
| 57 | .278645  | 10.90  | .992020  | .40    | .286624  | 11.28  | .713376  | 3  |
| 58 | .279297  | 10.87  | .991996  | .40    | .287301  | 11.28  | .712699  | 2  |
| 59 | .279948  | 10.85  | .991971  | .42    | .287977  | 11.27  | .712023  | 1  |
| 60 | 9.280599 | 10.85  | 9.991947 | .40    | 9.288652 | 11.25  | 0.711348 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     | M. |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.280599 | 10.82   | 9.991947 | .42     | 9.288652 | 11.23   | 0.711348 | 60 |
| 1  | .281248  | 10.82   | .991922  | .42     | .289326  | 11.22   | .710674  | 59 |
| 2  | .281897  | 10.78   | .991897  | .42     | .289999  | 11.21   | .710001  | 58 |
| 3  | .282544  | 10.77   | .991873  | .40     | .290671  | 11.20   | .709329  | 57 |
| 4  | .283190  | 10.77   | .991848  | .42     | .291342  | 11.18   | .708658  | 56 |
| 5  | 9.283836 | 10.73   | 9.991823 | .40     | 9.292013 | 11.15   | 0.707987 | 55 |
| 6  | .284480  | 10.73   | .991799  | .42     | .292682  | 11.13   | .707318  | 54 |
| 7  | .285124  | 10.70   | .991774  | .42     | .293350  | 11.12   | .706650  | 53 |
| 8  | .285766  | 10.70   | .991749  | .42     | .294017  | 11.12   | .705983  | 52 |
| 9  | .286408  | 10.67   | .991724  | .42     | .294684  | 11.08   | .705316  | 51 |
| 10 | 9.287048 | 10.67   | 9.991699 | .42     | 9.295349 | 11.07   | 0.704651 | 50 |
| 11 | .287688  | 10.63   | .991674  | .42     | .296013  | 11.07   | .703987  | 49 |
| 12 | .288326  | 10.63   | .991649  | .42     | .296677  | 11.03   | .703323  | 48 |
| 13 | .288964  | 10.60   | .991624  | .42     | .297339  | 11.03   | .702661  | 47 |
| 14 | .289600  | 10.60   | .991599  | .42     | .298001  | 11.02   | .701999  | 46 |
| 15 | 9.290236 | 10.57   | 9.991574 | .42     | 9.298662 | 11.00   | 0.701338 | 45 |
| 16 | .290870  | 10.57   | .991549  | .42     | .299322  | 11.00   | .700678  | 44 |
| 17 | .291504  | 10.55   | .991524  | .42     | .299980  | 10.97   | .700020  | 43 |
| 18 | .292137  | 10.52   | .991498  | .43     | .300638  | 10.97   | .699362  | 42 |
| 19 | .292768  | 10.52   | .991473  | .42     | .301295  | 10.93   | .698705  | 41 |
| 20 | 9.293399 | 10.50   | 9.991448 | .43     | 9.301951 | 10.93   | 0.698049 | 40 |
| 21 | .294029  | 10.48   | .991422  | .42     | .302607  | 10.90   | .697393  | 39 |
| 22 | .294658  | 10.47   | .991397  | .42     | .303261  | 10.88   | .696739  | 38 |
| 23 | .295286  | 10.45   | .991372  | .43     | .303914  | 10.88   | .696086  | 37 |
| 24 | .295913  | 10.43   | .991346  | .42     | .304567  | 10.85   | .695433  | 36 |
| 25 | 9.296539 | 10.42   | 9.991321 | .42     | 9.305218 | 10.85   | 0.694782 | 35 |
| 26 | .297164  | 10.40   | .991295  | .43     | .305869  | 10.83   | .694131  | 34 |
| 27 | .297788  | 10.40   | .991270  | .43     | .306519  | 10.82   | .693481  | 33 |
| 28 | .298412  | 10.37   | .991244  | .43     | .307168  | 10.80   | .692832  | 32 |
| 29 | .299034  | 10.35   | .991218  | .42     | .307816  | 10.78   | .692184  | 31 |
| 30 | 9.299655 | 10.35   | 9.991193 | .43     | 9.308463 | 10.77   | 0.691537 | 30 |
| 31 | .300276  | 10.32   | .991167  | .43     | .309109  | 10.75   | .690891  | 29 |
| 32 | .300895  | 10.32   | .991141  | .43     | .309754  | 10.75   | .690246  | 28 |
| 33 | .301514  | 10.30   | .991115  | .43     | .310399  | 10.72   | .689601  | 27 |
| 34 | .302132  | 10.27   | .991090  | .42     | .311042  | 10.72   | .688958  | 26 |
| 35 | 9.302748 | 10.27   | 9.991064 | .43     | 9.311685 | 10.70   | 0.688315 | 25 |
| 36 | .303364  | 10.25   | .991038  | .43     | .312327  | 10.68   | .687673  | 24 |
| 37 | .303979  | 10.25   | .991012  | .43     | .312968  | 10.67   | .687032  | 23 |
| 38 | .304593  | 10.23   | .990986  | .43     | .313608  | 10.65   | .686392  | 22 |
| 39 | .305207  | 10.20   | .990960  | .43     | .314247  | 10.63   | .685753  | 21 |
| 40 | 9.305819 | 10.18   | 9.990934 | .43     | 9.314885 | 10.63   | 0.685115 | 20 |
| 41 | .306430  | 10.18   | .990908  | .43     | .315523  | 10.60   | .684477  | 19 |
| 42 | .307041  | 10.15   | .990882  | .45     | .316159  | 10.60   | .683841  | 18 |
| 43 | .307650  | 10.15   | .990855  | .43     | .316795  | 10.58   | .683205  | 17 |
| 44 | .308259  | 10.13   | .990829  | .43     | .317430  | 10.57   | .682570  | 16 |
| 45 | 9.308867 | 10.12   | 9.990803 | .43     | 9.318064 | 10.57   | 0.681936 | 15 |
| 46 | .309474  | 10.10   | .990777  | .43     | .318697  | 10.55   | .681303  | 14 |
| 47 | .310080  | 10.08   | .990750  | .45     | .319330  | 10.55   | .680670  | 13 |
| 48 | .310685  | 10.07   | .990724  | .45     | .319961  | 10.52   | .680039  | 12 |
| 49 | .311289  | 10.07   | .990697  | .43     | .320592  | 10.50   | .679408  | 11 |
| 50 | 9.311893 | 10.03   | 9.990671 | .43     | 9.321222 | 10.48   | 0.678778 | 10 |
| 51 | .312495  | 10.03   | .990645  | .45     | .321851  | 10.47   | .678149  | 9  |
| 52 | .313097  | 10.02   | .990618  | .45     | .322479  | 10.45   | .677521  | 8  |
| 53 | .313698  | 9.98    | .990591  | .43     | .323106  | 10.45   | .676894  | 7  |
| 54 | .314297  | 10.00   | .990565  | .45     | .323733  | 10.42   | .676267  | 6  |
| 55 | 9.314897 | 9.97    | 9.990538 | .45     | 9.324358 | 10.42   | 0.675642 | 5  |
| 56 | .315495  | 9.95    | .990511  | .43     | .324983  | 10.40   | .675017  | 4  |
| 57 | .316092  | 9.95    | .990485  | .45     | .325607  | 10.40   | .674393  | 3  |
| 58 | .316689  | 9.92    | .990458  | .45     | .326231  | 10.37   | .673769  | 2  |
| 59 | .317284  | 9.92    | .990431  | .45     | .326853  | 10.37   | .673147  | 1  |
| 60 | 9.317879 |         | 9.990404 |         | 9.327475 |         | 0.672525 | 0  |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.317879 | 9.90   | 9.990404 | .43    | 9.327475 | Io. 33 | 0.672525 | 60 |
| 1  | .318473  | 9.88   | .990378  | .45    | .328095  | Io. 33 | .671905  | 59 |
| 2  | .319066  | 9.87   | .990351  | .45    | .328715  | Io. 32 | .671285  | 58 |
| 3  | .319658  | 9.85   | .990324  | .45    | .329334  | Io. 32 | .670666  | 57 |
| 4  | .320249  | 9.85   | .990297  | .45    | .329953  | Io. 28 | .670047  | 56 |
| 5  | 9.320840 | 9.83   | 9.990270 | .45    | 9.330570 | Io. 28 | 0.669430 | 55 |
| 6  | .321430  | 9.82   | .990243  | .45    | .331187  | Io. 28 | .668813  | 54 |
| 7  | .322019  | 9.82   | .990215  | .47    | .331803  | Io. 27 | .668197  | 53 |
| 8  | .322607  | 9.80   | .990188  | .45    | .332418  | Io. 25 | .667582  | 52 |
| 9  | .323194  | 9.78   | .990161  | .45    | .333033  | Io. 25 | .666967  | 51 |
| 10 | 9.323780 | 9.77   | 9.990134 | .45    | 9.333646 | Io. 22 | 0.666354 | 50 |
| 11 | .324366  | 9.73   | .990107  | .47    | .334259  | Io. 20 | .665741  | 49 |
| 12 | .324950  | 9.73   | .990079  | .45    | .334871  | Io. 18 | .665129  | 48 |
| 13 | .325534  | 9.72   | .990052  | .45    | .335482  | Io. 18 | .664518  | 47 |
| 14 | .326117  | 9.72   | .990025  | .45    | .336093  | Io. 15 | .663907  | 46 |
| 15 | 9.326700 | 9.72   | 9.989997 | .47    | 9.336702 | Io. 15 | 0.663298 | 45 |
| 16 | .327281  | 9.68   | .989970  | .45    | .337311  | Io. 15 | .662689  | 44 |
| 17 | .327862  | 9.68   | .989942  | .47    | .337919  | Io. 13 | .662081  | 43 |
| 18 | .328442  | 9.67   | .989915  | .45    | .338527  | Io. 13 | .661473  | 42 |
| 19 | .329021  | 9.65   | .989887  | .47    | .339133  | Io. 10 | .660867  | 41 |
| 20 | 9.329599 | 9.63   | 9.989860 | .45    | 9.339739 | Io. 10 | 0.660261 | 40 |
| 21 | .330176  | 9.62   | .989832  | .47    | .340344  | Io. 08 | .659656  | 39 |
| 22 | .330753  | 9.62   | .989804  | .47    | .340948  | Io. 07 | .659052  | 38 |
| 23 | .331329  | 9.60   | .989777  | .45    | .341552  | Io. 07 | .658448  | 37 |
| 24 | .331903  | 9.57   | .989749  | .47    | .342155  | Io. 05 | .657845  | 36 |
| 25 | 9.332478 | 9.58   | 9.989721 | .47    | 9.342757 | Io. 03 | 0.657243 | 35 |
| 26 | .333051  | 9.55   | .989693  | .47    | .343358  | Io. 02 | .656642  | 34 |
| 27 | .333624  | 9.55   | .989665  | .47    | .343958  | Io. 00 | .656042  | 33 |
| 28 | .334195  | 9.52   | .989637  | .47    | .344558  | Io. 00 | .655442  | 32 |
| 29 | .334767  | 9.53   | .989610  | .45    | .345157  | 9.98   | .654843  | 31 |
| 30 | 9.335337 | 9.50   | 9.989582 | .47    | 9.345755 | 9.97   | 0.654245 | 30 |
| 31 | .335906  | 9.48   | .989553  | .48    | .346353  | 9.97   | .653647  | 29 |
| 32 | .336475  | 9.48   | .989525  | .47    | .346949  | 9.93   | .653051  | 28 |
| 33 | .337043  | 9.47   | .989497  | .47    | .347545  | 9.93   | .652455  | 27 |
| 34 | .337610  | 9.45   | .989469  | .47    | .348141  | 9.93   | .651859  | 26 |
| 35 | 9.338176 | 9.43   | 9.989441 | .47    | 9.348735 | 9.90   | 0.651265 | 25 |
| 36 | .338742  | 9.43   | .989413  | .47    | .349329  | 9.90   | .650671  | 24 |
| 37 | .339307  | 9.42   | .989385  | .47    | .349922  | 9.88   | .650078  | 23 |
| 38 | .339871  | 9.40   | .989356  | .48    | .350514  | 9.87   | .649486  | 22 |
| 39 | .340434  | 9.38   | .989328  | .47    | .351106  | 9.87   | .648894  | 21 |
| 40 | 9.340996 | 9.37   | 9.989300 | .48    | 9.351697 | 9.85   | 0.648303 | 20 |
| 41 | .341558  | 9.35   | .989271  | .47    | .352287  | 9.82   | .647713  | 19 |
| 42 | .342119  | 9.33   | .989243  | .47    | .352876  | 9.82   | .647124  | 18 |
| 43 | .342679  | 9.33   | .989214  | .48    | .353465  | 9.82   | .646535  | 17 |
| 44 | .343239  | 9.33   | .989186  | .47    | .354053  | 9.80   | .645947  | 16 |
| 45 | 9.343797 | 9.30   | 9.989157 | .48    | 9.354640 | 9.78   | 0.645360 | 15 |
| 46 | .344355  | 9.30   | .989128  | .48    | .355227  | 9.78   | .644773  | 14 |
| 47 | .344912  | 9.28   | .989100  | .47    | .355813  | 9.77   | .644187  | 13 |
| 48 | .345469  | 9.28   | .989071  | .48    | .356398  | 9.75   | .643602  | 12 |
| 49 | .346024  | 9.25   | .989042  | .48    | .356982  | 9.73   | .643018  | 11 |
| 50 | 9.346579 | 9.25   | 9.989014 | .47    | 9.357566 | 9.73   | 0.642434 | 10 |
| 51 | .347134  | 9.25   | .988985  | .48    | .358149  | 9.72   | .641851  | 9  |
| 52 | .347687  | 9.22   | .988956  | .48    | .358731  | 9.70   | .641269  | 8  |
| 53 | .348240  | 9.22   | .988927  | .48    | .359313  | 9.70   | .640687  | 7  |
| 54 | .348792  | 9.20   | .988898  | .48    | .359893  | 9.67   | .640107  | 6  |
| 55 | 9.349343 | 9.18   | 9.988869 | .48    | 9.360474 | 9.68   | 0.639526 | 5  |
| 56 | .349893  | 9.17   | .988840  | .48    | .361053  | 9.65   | .638947  | 4  |
| 57 | .350443  | 9.17   | .988811  | .48    | .361632  | 9.65   | .638368  | 3  |
| 58 | .350992  | 9.15   | .988782  | .48    | .362210  | 9.63   | .637790  | 2  |
| 59 | .351540  | 9.13   | .988753  | .48    | .362787  | 9.62   | .637213  | 1  |
| 60 | 9.352088 | 9.13   | 9.988724 | .48    | 9.363364 | 9.62   | 0.636636 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |



| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.352088 | 9.12   | 9.988724 | .48    | 9.363364 | 9.60   | 0.636636 | 60 |
| 1  | .352635  | 9.10   | .988695  | .48    | .363940  | 9.58   | .636600  | 59 |
| 2  | .353181  | 9.08   | .988666  | .50    | .364515  | 9.58   | .635485  | 58 |
| 3  | .353726  | 9.08   | .988636  | .50    | .365090  | 9.57   | .634910  | 57 |
| 4  | .354271  | 9.07   | .988607  | .48    | .365664  | 9.57   | .634336  | 56 |
| 5  | 9.354815 | 9.05   | 9.988578 | .50    | 9.366237 | 9.55   | 0.633763 | 55 |
| 6  | .355358  | 9.05   | .988548  | .48    | .366810  | 9.53   | .633190  | 54 |
| 7  | .355901  | 9.03   | .988519  | .50    | .367382  | 9.52   | .632618  | 53 |
| 8  | .356443  | 9.02   | .988489  | .48    | .367953  | 9.52   | .632047  | 52 |
| 9  | .356984  | 9.00   | .988460  | .50    | .368524  | 9.50   | .631476  | 51 |
| 10 | 9.357524 | 8.99   | 9.988430 | .48    | 9.369094 | 9.48   | 0.630906 | 50 |
| 11 | .358064  | 8.98   | .988401  | .50    | .369663  | 9.48   | .630337  | 49 |
| 12 | .358603  | 8.97   | .988371  | .48    | .370232  | 9.45   | .629768  | 48 |
| 13 | .359141  | 8.95   | .988342  | .50    | .370799  | 9.47   | .629201  | 47 |
| 14 | .359678  | 8.95   | .988312  | .50    | .371367  | 9.43   | .628633  | 46 |
| 15 | 9.360215 | 8.92   | 9.988282 | .48    | 9.371933 | 9.43   | 0.628066 | 45 |
| 16 | .360752  | 8.92   | .988252  | .50    | .372499  | 9.42   | .627501  | 44 |
| 17 | .361287  | 8.92   | .988223  | .48    | .373064  | 9.42   | .626936  | 43 |
| 18 | .361822  | 8.90   | .988193  | .50    | .373629  | 9.40   | .626371  | 42 |
| 19 | .362356  | 8.88   | .988163  | .50    | .374193  | 9.38   | .625807  | 41 |
| 20 | 9.362889 | 8.88   | 9.988133 | .50    | 9.374756 | 9.38   | 0.625244 | 40 |
| 21 | .363422  | 8.87   | .988103  | .50    | .375319  | 9.37   | .624681  | 39 |
| 22 | .363954  | 8.85   | .988073  | .50    | .375881  | 9.35   | .624119  | 38 |
| 23 | .364485  | 8.85   | .988043  | .50    | .376442  | 9.35   | .623558  | 37 |
| 24 | .365016  | 8.83   | .988013  | .50    | .377003  | 9.33   | .622997  | 36 |
| 25 | 9.365546 | 8.82   | 9.987983 | .50    | 9.377563 | 9.33   | 0.622437 | 35 |
| 26 | .366075  | 8.82   | .987953  | .52    | .378122  | 9.32   | .621878  | 34 |
| 27 | .366604  | 8.78   | .987922  | .50    | .378681  | 9.30   | .621319  | 33 |
| 28 | .367131  | 8.80   | .987892  | .50    | .379239  | 9.30   | .620761  | 32 |
| 29 | .367659  | 8.77   | .987862  | .50    | .379797  | 9.28   | .620203  | 31 |
| 30 | 9.368185 | 8.77   | 9.987832 | .52    | 9.380354 | 9.27   | 0.619646 | 30 |
| 31 | .368711  | 8.75   | .987801  | .50    | .380910  | 9.27   | .619090  | 29 |
| 32 | .369236  | 8.75   | .987771  | .52    | .381466  | 9.23   | .618534  | 28 |
| 33 | .369761  | 8.73   | .987740  | .50    | .382020  | 9.23   | .617980  | 27 |
| 34 | .370285  | 8.72   | .987710  | .52    | .382575  | 9.23   | .617425  | 26 |
| 35 | 9.370808 | 8.70   | 9.987679 | .50    | 9.383129 | 9.22   | 0.616871 | 25 |
| 36 | .371330  | 8.70   | .987649  | .52    | .383682  | 9.20   | .616318  | 24 |
| 37 | .371852  | 8.68   | .987618  | .50    | .384234  | 9.20   | .615766  | 23 |
| 38 | .372373  | 8.68   | .987588  | .52    | .384786  | 9.18   | .615214  | 22 |
| 39 | .372894  | 8.67   | .987557  | .52    | .385337  | 9.18   | .614663  | 21 |
| 40 | 9.373414 | 8.65   | 9.987526 | .50    | 9.385888 | 9.17   | 0.614112 | 20 |
| 41 | .373933  | 8.65   | .987496  | .52    | .386438  | 9.15   | .613562  | 19 |
| 42 | .374452  | 8.63   | .987465  | .52    | .386987  | 9.15   | .613013  | 18 |
| 43 | .374970  | 8.62   | .987434  | .52    | .387536  | 9.13   | .612464  | 17 |
| 44 | .375487  | 8.60   | .987403  | .52    | .388084  | 9.12   | .611916  | 16 |
| 45 | 9.376003 | 8.60   | 9.987372 | .52    | 9.388631 | 9.12   | 0.611369 | 15 |
| 46 | .376519  | 8.60   | .987341  | .52    | .389178  | 9.10   | .610822  | 14 |
| 47 | .377035  | 8.57   | .987310  | .52    | .389724  | 9.10   | .610276  | 13 |
| 48 | .377549  | 8.57   | .987279  | .52    | .390270  | 9.08   | .609730  | 12 |
| 49 | .378063  | 8.57   | .987248  | .52    | .390815  | 9.08   | .609185  | 11 |
| 50 | 9.378577 | 8.53   | 9.987217 | .52    | 9.391360 | 9.05   | 0.608640 | 10 |
| 51 | .379089  | 8.53   | .987186  | .52    | .391903  | 9.07   | .608097  | 9  |
| 52 | .379601  | 8.53   | .987155  | .52    | .392447  | 9.03   | .607553  | 8  |
| 53 | .380113  | 8.52   | .987124  | .52    | .392989  | 9.03   | .607011  | 7  |
| 54 | .380624  | 8.50   | .987092  | .53    | .393531  | 9.03   | .606469  | 6  |
| 55 | 9.381134 | 8.48   | 9.987061 | .52    | 9.394073 | 9.02   | 0.605927 | 5  |
| 56 | .381643  | 8.48   | .987030  | .53    | .394614  | 9.00   | .605386  | 4  |
| 57 | .382152  | 8.48   | .986998  | .52    | .395154  | 9.00   | .604846  | 3  |
| 58 | .382661  | 8.45   | .986966  | .52    | .395694  | 8.98   | .604306  | 2  |
| 59 | .383168  | 8.45   | .986936  | .52    | .396233  | 8.97   | .603767  | 1  |
| 60 | 9.383675 | 8.45   | 9.986904 | .53    | 9.396771 | 8.97   | 0.603229 | 0  |

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     |    |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.383675 | 8.45    | 9.986904 | .52     | 9.396771 | 8.97    | 0.603229 | 60 |
| 1  | .384182  | 8.42    | .986873  | .53     | .397309  | 8.95    | .602691  | 59 |
| 2  | .384687  | 8.42    | .986841  | .53     | .397846  | 8.95    | .602154  | 58 |
| 3  | .385192  | 8.42    | .986809  | .53     | .398383  | 8.93    | .601617  | 57 |
| 4  | .385697  | 8.40    | .986778  | .52     | .398919  | 8.93    | .601081  | 56 |
| 5  | 9.386201 | 8.38    | 9.986746 | .53     | 9.399455 | 8.92    | 0.600545 | 55 |
| 6  | .386704  | 8.38    | .986714  | .52     | .399990  | 8.90    | .600010  | 54 |
| 7  | .387207  | 8.37    | .986683  | .53     | .400524  | 8.90    | .599476  | 53 |
| 8  | .387709  | 8.35    | .986651  | .53     | .401058  | 8.88    | .598942  | 52 |
| 9  | .388210  | 8.35    | .986619  | .53     | .401591  | 8.88    | .598409  | 51 |
| 10 | 9.388711 | 8.33    | 9.986587 | .53     | 9.402124 | 8.87    | 0.597876 | 50 |
| 11 | .389211  | 8.33    | .986555  | .53     | .402656  | 8.85    | .597344  | 49 |
| 12 | .389711  | 8.32    | .986523  | .53     | .403187  | 8.85    | .596813  | 48 |
| 13 | .390210  | 8.30    | .986491  | .53     | .403718  | 8.85    | .596282  | 47 |
| 14 | .390708  | 8.30    | .986459  | .53     | .404249  | 8.82    | .595751  | 46 |
| 15 | 9.391206 | 8.28    | 9.986427 | .53     | 9.404778 | 8.83    | 0.595222 | 45 |
| 16 | .391703  | 8.27    | .986395  | .53     | .405308  | 8.80    | .594692  | 44 |
| 17 | .392199  | 8.27    | .986363  | .53     | .405836  | 8.80    | .594164  | 43 |
| 18 | .392695  | 8.27    | .986331  | .53     | .406364  | 8.80    | .593636  | 42 |
| 19 | .393191  | 8.23    | .986299  | .55     | .406892  | 8.78    | .593108  | 41 |
| 20 | 9.393685 | 8.23    | 9.986266 | .53     | 9.407419 | 8.77    | 0.592581 | 40 |
| 21 | .394179  | 8.23    | .986234  | .53     | .407945  | 8.77    | .592055  | 39 |
| 22 | .394673  | 8.22    | .986202  | .55     | .408471  | 8.75    | .591529  | 38 |
| 23 | .395166  | 8.20    | .986169  | .55     | .408996  | 8.75    | .591004  | 37 |
| 24 | .395658  | 8.20    | .986137  | .53     | .409521  | 8.73    | .590479  | 36 |
| 25 | 9.396150 | 8.18    | 9.986104 | .55     | 9.410045 | 8.73    | 0.589955 | 35 |
| 26 | .396641  | 8.18    | .986072  | .53     | .410569  | 8.73    | .589431  | 34 |
| 27 | .397132  | 8.15    | .986039  | .55     | .411092  | 8.72    | .588908  | 33 |
| 28 | .397621  | 8.17    | .986007  | .55     | .411615  | 8.70    | .588385  | 32 |
| 29 | .398111  | 8.15    | .985974  | .53     | .412137  | 8.68    | .587863  | 31 |
| 30 | 9.398600 | 8.13    | 9.985942 | .55     | 9.412658 | 8.68    | 0.587342 | 30 |
| 31 | .399088  | 8.12    | .985909  | .55     | .413179  | 8.67    | .586821  | 29 |
| 32 | .399575  | 8.12    | .985876  | .55     | .413699  | 8.67    | .586301  | 28 |
| 33 | .400062  | 8.12    | .985843  | .55     | .414219  | 8.65    | .585781  | 27 |
| 34 | .400549  | 8.10    | .985811  | .53     | .414738  | 8.65    | .585262  | 26 |
| 35 | 9.401035 | 8.08    | 9.985778 | .55     | 9.415257 | 8.63    | 0.584743 | 25 |
| 36 | .401520  | 8.08    | .985745  | .55     | .415775  | 8.63    | .584225  | 24 |
| 37 | .402005  | 8.07    | .985712  | .55     | .416293  | 8.62    | .583707  | 23 |
| 38 | .402489  | 8.05    | .985679  | .55     | .416810  | 8.60    | .583190  | 22 |
| 39 | .402972  | 8.05    | .985646  | .55     | .417326  | 8.60    | .582674  | 21 |
| 40 | 9.403455 | 8.05    | 9.985613 | .55     | 9.417842 | 8.60    | 0.582158 | 20 |
| 41 | .403938  | 8.03    | .985580  | .55     | .418358  | 8.58    | .581642  | 19 |
| 42 | .404420  | 8.02    | .985547  | .55     | .418873  | 8.57    | .581127  | 18 |
| 43 | .404901  | 8.02    | .985514  | .57     | .419387  | 8.57    | .580613  | 17 |
| 44 | .405382  | 8.00    | .985480  | .55     | .419901  | 8.57    | .580099  | 16 |
| 45 | 9.405862 | 7.98    | 9.985447 | .55     | 9.420415 | 8.53    | 0.579585 | 15 |
| 46 | .406341  | 7.98    | .985414  | .55     | .420927  | 8.53    | .579073  | 14 |
| 47 | .406820  | 7.98    | .985381  | .55     | .421440  | 8.55    | .578560  | 13 |
| 48 | .407299  | 7.98    | .985347  | .57     | .421952  | 8.53    | .578048  | 12 |
| 49 | .407777  | 7.95    | .985314  | .57     | .422463  | 8.52    | .577537  | 11 |
| 50 | 9.408254 | 7.95    | 9.985280 | .55     | 9.422974 | 8.50    | 0.577026 | 10 |
| 51 | .408731  | 7.93    | .985247  | .57     | .423484  | 8.48    | .576516  | 9  |
| 52 | .409207  | 7.92    | .985213  | .55     | .423993  | 8.50    | .576007  | 8  |
| 53 | .409682  | 7.92    | .985180  | .55     | .424503  | 8.47    | .575497  | 7  |
| 54 | .410157  | 7.92    | .985146  | .57     | .425011  | 8.47    | .574989  | 6  |
| 55 | 9.410632 | 7.90    | 9.985113 | .55     | 9.425519 | 8.47    | 0.574481 | 5  |
| 56 | .411106  | 7.88    | .985079  | .57     | .426027  | 8.45    | .573973  | 4  |
| 57 | .411579  | 7.88    | .985045  | .57     | .426534  | 8.45    | .573466  | 3  |
| 58 | .412052  | 7.87    | .985011  | .55     | .427041  | 8.43    | .572959  | 2  |
| 59 | .412524  | 7.87    | .984978  | .57     | .427547  | 8.42    | .572453  | 1  |
| 60 | 9.412996 | 7.87    | 9.984944 | .57     | 9.428052 | 8.42    | 0.571948 | 0  |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.412996 | 7.85   | 9.984944 | .57    | 9.428052 | 8.43   | 0.571948 | 60 |
| 1  | .413467  | 7.85   | .984910  | .57    | .428558  | 8.40   | .571442  | 59 |
| 2  | .413938  | 7.83   | .984876  | .57    | .429062  | 8.40   | .570938  | 58 |
| 3  | .414408  | 7.83   | .984842  | .57    | .429566  | 8.40   | .570434  | 57 |
| 4  | .414878  | 7.82   | .984808  | .57    | .430070  | 8.38   | .569930  | 56 |
| 5  | 9.415347 | 7.80   | 9.984774 | .57    | 9.430573 | 8.37   | 0.569427 | 55 |
| 6  | .415815  | 7.80   | .984740  | .57    | .431075  | 8.37   | .568925  | 54 |
| 7  | .416283  | 7.80   | .984706  | .57    | .431577  | 8.37   | .568423  | 53 |
| 8  | .416751  | 7.77   | .984672  | .57    | .432079  | 8.37   | .567921  | 52 |
| 9  | .417217  | 7.78   | .984638  | .58    | .432580  | 8.35   | .567420  | 51 |
| 10 | 9.417684 | 7.77   | 9.984603 | .57    | 9.433080 | 8.33   | 0.566920 | 50 |
| 11 | .418150  | 7.75   | .984569  | .57    | .433580  | 8.33   | .566420  | 49 |
| 12 | .418615  | 7.73   | .984535  | .58    | .434080  | 8.32   | .565920  | 48 |
| 13 | .419079  | 7.75   | .984500  | .57    | .434579  | 8.32   | .565421  | 47 |
| 14 | .419544  | 7.72   | .984466  | .57    | .435078  | 8.30   | .564922  | 46 |
| 15 | 9.420007 | 7.72   | 9.984432 | .58    | 9.435576 | 8.28   | 0.564424 | 45 |
| 16 | .420470  | 7.72   | .984397  | .57    | .436073  | 8.28   | .563927  | 44 |
| 17 | .420933  | 7.70   | .984363  | .58    | .436570  | 8.28   | .563430  | 43 |
| 18 | .421395  | 7.70   | .984328  | .57    | .437067  | 8.27   | .562933  | 42 |
| 19 | .421857  | 7.68   | .984294  | .58    | .437563  | 8.27   | .562437  | 41 |
| 20 | 9.422318 | 7.67   | 9.984259 | .58    | 9.438059 | 8.25   | 0.561941 | 40 |
| 21 | .422778  | 7.67   | .984224  | .57    | .438554  | 8.23   | .561446  | 39 |
| 22 | .423238  | 7.65   | .934190  | .58    | .439048  | 8.25   | .560952  | 38 |
| 23 | .423697  | 7.65   | .984155  | .58    | .439543  | 8.25   | .560457  | 37 |
| 24 | .424156  | 7.65   | .984120  | .58    | .440036  | 8.22   | .559964  | 36 |
| 25 | 9.424615 | 7.63   | 9.984085 | .58    | 9.440529 | 8.22   | 0.559471 | 35 |
| 26 | .425073  | 7.62   | .984050  | .58    | .441022  | 8.20   | .558978  | 34 |
| 27 | .425530  | 7.62   | .984015  | .57    | .441514  | 8.20   | .558486  | 33 |
| 28 | .425987  | 7.60   | .983981  | .58    | .442006  | 8.18   | .557994  | 32 |
| 29 | .426443  | 7.60   | .983946  | .58    | .442497  | 8.18   | .557503  | 31 |
| 30 | 9.426899 | 7.58   | 9.983911 | .60    | 9.442988 | 8.18   | 0.557012 | 30 |
| 31 | .427354  | 7.58   | .983875  | .58    | .443479  | 8.15   | .556521  | 29 |
| 32 | .427809  | 7.57   | .983840  | .58    | .443968  | 8.17   | .556032  | 28 |
| 33 | .428263  | 7.57   | .983805  | .58    | .444458  | 8.15   | .555542  | 27 |
| 34 | .428717  | 7.55   | .983770  | .58    | .444947  | 8.13   | .555053  | 26 |
| 35 | 9.429170 | 7.55   | 9.983735 | .58    | 9.445435 | 8.13   | 0.554565 | 25 |
| 36 | .429623  | 7.53   | .983700  | .60    | .445923  | 8.13   | .554077  | 24 |
| 37 | .430075  | 7.53   | .983664  | .60    | .446411  | 8.13   | .553589  | 23 |
| 38 | .430527  | 7.53   | .983629  | .58    | .446898  | 8.12   | .553102  | 22 |
| 39 | .430978  | 7.52   | .983594  | .60    | .447384  | 8.10   | .552616  | 21 |
| 40 | 9.431429 | 7.50   | 9.983558 | .58    | 9.447870 | 8.10   | 0.552130 | 20 |
| 41 | .431879  | 7.50   | .983523  | .60    | .448356  | 8.08   | .551644  | 19 |
| 42 | .432329  | 7.48   | .983487  | .58    | .448841  | 8.08   | .551159  | 18 |
| 43 | .432778  | 7.47   | .983452  | .60    | .449326  | 8.07   | .550674  | 17 |
| 44 | .433226  | 7.47   | .983416  | .60    | .449810  | 8.07   | .550190  | 16 |
| 45 | 9.433675 | 7.48   | 9.983381 | .58    | 9.450294 | 8.07   | 0.549706 | 15 |
| 46 | .434122  | 7.45   | .983345  | .60    | .450777  | 8.05   | .549223  | 14 |
| 47 | .434569  | 7.45   | .983309  | .60    | .451260  | 8.05   | .548740  | 13 |
| 48 | .435016  | 7.45   | .983273  | .58    | .451743  | 8.03   | .548257  | 12 |
| 49 | .435462  | 7.43   | .983238  | .60    | .452225  | 8.02   | .547775  | 11 |
| 50 | 9.435908 | 7.42   | 9.983202 | .60    | 9.452706 | 8.02   | 0.547294 | 10 |
| 51 | .436353  | 7.42   | .983166  | .60    | .453187  | 8.02   | .546813  | 9  |
| 52 | .436798  | 7.40   | .983130  | .60    | .453668  | 8.00   | .546332  | 8  |
| 53 | .437242  | 7.40   | .983094  | .60    | .454148  | 8.00   | .545852  | 7  |
| 54 | .437686  | 7.38   | .983058  | .60    | .454628  | 7.98   | .545372  | 6  |
| 55 | 9.438129 | 7.38   | 9.983022 | .60    | 9.455107 | 7.98   | 0.544893 | 5  |
| 56 | .438572  | 7.37   | .982986  | .60    | .455586  | 7.97   | .544414  | 4  |
| 57 | .439014  | 7.37   | .982950  | .60    | .456064  | 7.97   | .543936  | 3  |
| 58 | .439456  | 7.35   | .982914  | .60    | .456542  | 7.97   | .543458  | 2  |
| 59 | .439897  | 7.35   | .982878  | .60    | .457019  | 7.95   | .542981  | 1  |
| 60 | 9.440338 | 7.35   | 9.982842 | .60    | 9.457496 | 7.95   | 0.542504 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.440338 | 7.33   | 9.982842 | .62    | 9.457496 | 7.95   | 0.542504 | 60 |
| 1  | .440778  | 7.33   | .982805  | .60    | .457973  | 7.93   | .542027  | 59 |
| 2  | .441218  | 7.33   | .982769  | .60    | .458449  | 7.93   | .541551  | 58 |
| 3  | .441658  | 7.33   | .982733  | .60    | .458925  | 7.92   | .541075  | 57 |
| 4  | .442096  | 7.32   | .982696  | .60    | .459400  | 7.92   | .540600  | 56 |
| 5  | 9.442535 | 7.30   | 9.982660 | .60    | 9.459875 | 7.90   | 0.540125 | 55 |
| 6  | .442973  | 7.28   | .982624  | .62    | .460349  | 7.90   | .539651  | 54 |
| 7  | .443410  | 7.28   | .982587  | .62    | .460823  | 7.90   | .539177  | 53 |
| 8  | .443847  | 7.28   | .982551  | .60    | .461297  | 7.90   | .538703  | 52 |
| 9  | .444284  | 7.27   | .982514  | .62    | .461770  | 7.88   | .538230  | 51 |
| 10 | 9.444720 | 7.25   | 9.982477 | .60    | 9.462242 | 7.88   | 0.537758 | 50 |
| 11 | .445155  | 7.25   | .982441  | .62    | .462715  | 7.85   | .537285  | 49 |
| 12 | .445590  | 7.25   | .982404  | .60    | .463186  | 7.87   | .536814  | 48 |
| 13 | .446025  | 7.23   | .982367  | .62    | .463658  | 7.83   | .536342  | 47 |
| 14 | .446459  | 7.23   | .982331  | .62    | .464128  | 7.83   | .535872  | 46 |
| 15 | 9.446893 | 7.22   | 9.982294 | .62    | 9.464599 | 7.85   | 0.535401 | 45 |
| 16 | .447326  | 7.22   | .982257  | .62    | .465069  | 7.83   | .534931  | 44 |
| 17 | .447759  | 7.20   | .982220  | .62    | .465539  | 7.83   | .534461  | 43 |
| 18 | .448191  | 7.20   | .982183  | .62    | .466008  | 7.82   | .533992  | 42 |
| 19 | .448623  | 7.18   | .982146  | .62    | .466477  | 7.80   | .533523  | 41 |
| 20 | 9.449054 | 7.18   | 9.982109 | .62    | 9.466945 | 7.80   | 0.533055 | 40 |
| 21 | .449485  | 7.17   | .982072  | .62    | .467413  | 7.78   | .532587  | 39 |
| 22 | .449915  | 7.17   | .982035  | .62    | .467880  | 7.78   | .532120  | 38 |
| 23 | .450345  | 7.17   | .981998  | .62    | .468347  | 7.78   | .531653  | 37 |
| 24 | .450775  | 7.15   | .981961  | .62    | .468814  | 7.78   | .531186  | 36 |
| 25 | 9.451204 | 7.15   | 9.981924 | .62    | 9.469280 | 7.77   | 0.530720 | 35 |
| 26 | .451632  | 7.13   | .981886  | .63    | .469746  | 7.75   | .530254  | 34 |
| 27 | .452060  | 7.13   | .981849  | .62    | .470211  | 7.75   | .529789  | 33 |
| 28 | .452488  | 7.12   | .981812  | .63    | .470676  | 7.75   | .529324  | 32 |
| 29 | .452915  | 7.12   | .981774  | .62    | .471141  | 7.75   | .528859  | 31 |
| 30 | 9.453342 | 7.10   | 9.981737 | .62    | 9.471605 | 7.73   | 0.528395 | 30 |
| 31 | .453768  | 7.10   | .981700  | .63    | .472069  | 7.72   | .527931  | 29 |
| 32 | .454194  | 7.08   | .981662  | .62    | .472532  | 7.72   | .527468  | 28 |
| 33 | .454619  | 7.08   | .981625  | .63    | .472995  | 7.70   | .527005  | 27 |
| 34 | .455044  | 7.08   | .981587  | .63    | .473457  | 7.70   | .526543  | 26 |
| 35 | 9.455469 | 7.07   | 9.981549 | .62    | 9.473919 | 7.70   | 0.526081 | 25 |
| 36 | .455893  | 7.05   | .981512  | .63    | .474381  | 7.68   | .525619  | 24 |
| 37 | .456316  | 7.05   | .981474  | .63    | .474844  | 7.68   | .525158  | 23 |
| 38 | .456739  | 7.05   | .981436  | .63    | .475307  | 7.67   | .524697  | 22 |
| 39 | .457162  | 7.03   | .981399  | .62    | .475769  | 7.67   | .524237  | 21 |
| 40 | 9.457584 | 7.03   | 9.981361 | .63    | 9.476223 | 7.67   | 0.523777 | 20 |
| 41 | .458006  | 7.02   | .981323  | .63    | .476683  | 7.65   | .523317  | 19 |
| 42 | .458427  | 7.02   | .981285  | .63    | .477142  | 7.65   | .522858  | 18 |
| 43 | .458848  | 7.00   | .981247  | .63    | .477601  | 7.63   | .522399  | 17 |
| 44 | .459268  | 7.00   | .981209  | .63    | .478059  | 7.63   | .521941  | 16 |
| 45 | 9.459688 | 7.00   | 9.981171 | .63    | 9.478517 | 7.63   | 0.521483 | 15 |
| 46 | .460108  | 6.98   | .981133  | .63    | .478975  | 7.62   | .521025  | 14 |
| 47 | .460527  | 6.98   | .981095  | .63    | .479432  | 7.62   | .520568  | 13 |
| 48 | .460946  | 6.97   | .981057  | .63    | .479889  | 7.60   | .520111  | 12 |
| 49 | .461364  | 6.97   | .981019  | .63    | .480345  | 7.60   | .519655  | 11 |
| 50 | 9.461782 | 6.95   | 9.980981 | .65    | 9.480801 | 7.60   | 0.519199 | 10 |
| 51 | .462199  | 6.95   | .980942  | .63    | .481257  | 7.58   | .518743  | 9  |
| 52 | .462616  | 6.93   | .980904  | .63    | .481712  | 7.58   | .518288  | 8  |
| 53 | .463032  | 6.93   | .980866  | .63    | .482167  | 7.57   | .517833  | 7  |
| 54 | .463448  | 6.93   | .980827  | .65    | .482621  | 7.57   | .517379  | 6  |
| 55 | 9.463864 | 6.92   | 9.980789 | .65    | 9.483075 | 7.57   | 0.516925 | 5  |
| 56 | .464279  | 6.92   | .980750  | .63    | .483529  | 7.55   | .516471  | 4  |
| 57 | .464694  | 6.90   | .980712  | .65    | .483982  | 7.55   | .516018  | 3  |
| 58 | .465108  | 6.90   | .980673  | .65    | .484435  | 7.55   | .515565  | 2  |
| 59 | .465522  | 6.88   | .980635  | .63    | .484887  | 7.53   | .515113  | 1  |
| 60 | 9.465935 | 6.88   | 9.980596 | .65    | 9.485339 | 7.53   | 0.514661 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.465935 | 6.88   | 9.980596 | .63    | 9.485339 | 7.53   | 0.514661 | 60 |
| 1  | .466348  | 6.88   | .980558  | .65    | .485791  | 7.52   | .514209  | 59 |
| 2  | .466761  | 6.87   | .980519  | .65    | .486242  | 7.52   | .513758  | 58 |
| 3  | .467173  | 6.87   | .980480  | .63    | .486693  | 7.50   | .513307  | 57 |
| 4  | .467585  | 6.85   | .980442  | .65    | .487143  | 7.50   | .512857  | 56 |
| 5  | 9.467996 | 6.85   | 9.980403 | .65    | 9.487593 | 7.50   | 0.512407 | 55 |
| 6  | .468407  | 6.83   | .980364  | .65    | .488043  | 7.48   | .511957  | 54 |
| 7  | .468817  | 6.83   | .980325  | .65    | .488492  | 7.48   | .511508  | 53 |
| 8  | .469227  | 6.83   | .980286  | .65    | .488941  | 7.48   | .511059  | 52 |
| 9  | .469637  | 6.82   | .980247  | .65    | .489390  | 7.47   | .510610  | 51 |
| 10 | 9.470046 | 6.82   | 9.980208 | .65    | 9.489838 | 7.47   | 0.510162 | 50 |
| 11 | .470455  | 6.80   | .980169  | .65    | .490286  | 7.45   | .509714  | 49 |
| 12 | .470863  | 6.80   | .980130  | .65    | .490733  | 7.45   | .509267  | 48 |
| 13 | .471271  | 6.80   | .980091  | .65    | .491180  | 7.45   | .508820  | 47 |
| 14 | .471679  | 6.78   | .980052  | .65    | .491627  | 7.45   | .508373  | 46 |
| 15 | 9.472086 | 6.77   | 9.980012 | .65    | 9.492073 | 7.43   | 0.507927 | 45 |
| 16 | .472492  | 6.77   | .979973  | .65    | .492519  | 7.43   | .507481  | 44 |
| 17 | .472898  | 6.77   | .979934  | .65    | .492965  | 7.42   | .507035  | 43 |
| 18 | .473304  | 6.77   | .979895  | .67    | .493410  | 7.40   | .506590  | 42 |
| 19 | .473710  | 6.75   | .979855  | .65    | .493854  | 7.42   | .506146  | 41 |
| 20 | 9.474115 | 6.73   | 9.979816 | .67    | 9.494299 | 7.40   | 0.505701 | 40 |
| 21 | .474519  | 6.73   | .979776  | .65    | .494743  | 7.38   | .505257  | 39 |
| 22 | .474923  | 6.73   | .979737  | .67    | .495186  | 7.40   | .504814  | 38 |
| 23 | .475327  | 6.72   | .979697  | .65    | .495630  | 7.38   | .504370  | 37 |
| 24 | .475730  | 6.72   | .979658  | .67    | .496073  | 7.37   | .503927  | 36 |
| 25 | 9.476133 | 6.72   | 9.979618 | .65    | 9.496515 | 7.37   | 0.503485 | 35 |
| 26 | .476536  | 6.70   | .979579  | .65    | .496957  | 7.37   | .503043  | 34 |
| 27 | .476938  | 6.70   | .979539  | .67    | .497399  | 7.37   | .502601  | 33 |
| 28 | .477340  | 6.68   | .979499  | .67    | .497841  | 7.35   | .502159  | 32 |
| 29 | .477741  | 6.68   | .979459  | .65    | .498282  | 7.33   | .501718  | 31 |
| 30 | 9.478142 | 6.67   | 9.979420 | .67    | 9.498722 | 7.35   | 0.501278 | 30 |
| 31 | .478542  | 6.67   | .979380  | .67    | .499163  | 7.33   | .500837  | 29 |
| 32 | .478942  | 6.67   | .979340  | .67    | .499603  | 7.32   | .500397  | 28 |
| 33 | .479342  | 6.65   | .979300  | .67    | .500042  | 7.32   | .499958  | 27 |
| 34 | .479741  | 6.65   | .979260  | .67    | .500481  | 7.32   | .499519  | 26 |
| 35 | 9.480140 | 6.65   | 9.979220 | .67    | 9.500920 | 7.32   | 0.499080 | 25 |
| 36 | .480539  | 6.63   | .979180  | .67    | .501359  | 7.30   | .498641  | 24 |
| 37 | .480937  | 6.62   | .979140  | .67    | .501797  | 7.30   | .498203  | 23 |
| 38 | .481334  | 6.62   | .979100  | .68    | .502235  | 7.28   | .497765  | 22 |
| 39 | .481731  | 6.62   | .979059  | .67    | .502672  | 7.28   | .497328  | 21 |
| 40 | 9.482128 | 6.62   | 9.979019 | .67    | 9.503109 | 7.28   | 0.496891 | 20 |
| 41 | .482525  | 6.60   | .978979  | .67    | .503546  | 7.27   | .496454  | 19 |
| 42 | .482921  | 6.58   | .978939  | .68    | .503982  | 7.27   | .496018  | 18 |
| 43 | .483316  | 6.60   | .978898  | .67    | .504418  | 7.27   | .495582  | 17 |
| 44 | .483712  | 6.58   | .978858  | .68    | .504854  | 7.25   | .495146  | 16 |
| 45 | 9.484107 | 6.57   | 9.978817 | .67    | 9.505289 | 7.25   | 0.494711 | 15 |
| 46 | .484501  | 6.57   | .978777  | .67    | .505724  | 7.25   | .494276  | 14 |
| 47 | .484895  | 6.57   | .978737  | .68    | .506159  | 7.25   | .493841  | 13 |
| 48 | .485289  | 6.55   | .978696  | .68    | .506593  | 7.23   | .493407  | 12 |
| 49 | .485682  | 6.55   | .978655  | .67    | .507027  | 7.22   | .492973  | 11 |
| 50 | 9.486075 | 6.53   | 9.978615 | .68    | 9.507460 | 7.22   | 0.492540 | 10 |
| 51 | .486467  | 6.55   | .978574  | .68    | .507893  | 7.22   | .492107  | 9  |
| 52 | .486860  | 6.52   | .978533  | .67    | .508326  | 7.22   | .491674  | 8  |
| 53 | .487251  | 6.53   | .978493  | .68    | .508759  | 7.20   | .491241  | 7  |
| 54 | .487643  | 6.52   | .978452  | .68    | .509191  | 7.18   | .490809  | 6  |
| 55 | 9.488034 | 6.50   | 9.978411 | .68    | 9.509622 | 7.20   | 0.490378 | 5  |
| 56 | .488424  | 6.50   | .978370  | .68    | .510054  | 7.18   | .489946  | 4  |
| 57 | .488814  | 6.50   | .978329  | .68    | .510485  | 7.18   | .489515  | 3  |
| 58 | .489204  | 6.48   | .978288  | .68    | .510916  | 7.17   | .489084  | 2  |
| 59 | .489593  | 6.48   | .978247  | .68    | .511346  | 7.17   | .488654  | 1  |
| 60 | 9.489982 | 6.48   | 9.978206 | .68    | 9.511776 | 7.17   | 0.488224 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.489982 | 6.48   | 9.978206 | .68    | 9.511776 |        | 0.488224 | 60 |
| 1  | .490371  | 6.47   | .978165  | .68    | .512206  | 7.17   | .487794  | 59 |
| 2  | .490759  | 6.47   | .978124  | .68    | .512635  | 7.15   | .487365  | 58 |
| 3  | .491147  | 6.47   | .978083  | .68    | .513064  | 7.15   | .486936  | 57 |
| 4  | .491535  | 6.45   | .978042  | .68    | .513493  | 7.15   | .486507  | 56 |
| 5  | 9.491922 | 6.43   | 9.978001 | .70    | 9.513921 | 7.13   | 0.486079 | 55 |
| 6  | .492308  | 6.45   | .977959  | .68    | .514349  | 7.13   | .485651  | 54 |
| 7  | .492695  | 6.43   | .977918  | .68    | .514777  | 7.12   | .485223  | 53 |
| 8  | .493081  | 6.42   | .977877  | .70    | .515204  | 7.12   | .484795  | 52 |
| 9  | .493466  | 6.42   | .977835  | .68    | .515631  | 7.10   | .484369  | 51 |
| 10 | 9.493851 | 6.42   | 9.977794 | .70    | 9.516057 | 7.12   | 0.483943 | 50 |
| 11 | .494236  | 6.42   | .977752  | .68    | .516484  | 7.10   | .483516  | 49 |
| 12 | .494621  | 6.40   | .977711  | .70    | .516910  | 7.08   | .483090  | 48 |
| 13 | .495005  | 6.38   | .977669  | .68    | .517335  | 7.10   | .482665  | 47 |
| 14 | .495388  | 6.40   | .977628  | .70    | .517761  | 7.08   | .482239  | 46 |
| 15 | 9.495772 | 6.37   | 9.977586 | .70    | 9.518186 | 7.07   | 0.481814 | 45 |
| 16 | .496154  | 6.38   | .977544  | .68    | .518610  | 7.07   | .481390  | 44 |
| 17 | .496537  | 6.37   | .977503  | .70    | .519034  | 7.07   | .480966  | 43 |
| 18 | .496919  | 6.37   | .977461  | .70    | .519458  | 7.07   | .480542  | 42 |
| 19 | .497301  | 6.35   | .977419  | .70    | .519882  | 7.05   | .480118  | 41 |
| 20 | 9.497682 | 6.37   | 9.977377 | .70    | 9.520305 | 7.05   | 0.479695 | 40 |
| 21 | .498064  | 6.33   | .977335  | .70    | .520728  | 7.05   | .479272  | 39 |
| 22 | .498444  | 6.35   | .977293  | .70    | .521151  | 7.03   | .478849  | 38 |
| 23 | .498825  | 6.32   | .977251  | .70    | .521573  | 7.03   | .478427  | 37 |
| 24 | .499204  | 6.33   | .977209  | .70    | .521995  | 7.03   | .478005  | 36 |
| 25 | 9.499584 | 6.33   | 9.977167 | .70    | 9.522417 | 7.03   | 0.477583 | 35 |
| 26 | .499963  | 6.32   | .977125  | .70    | .522838  | 7.02   | .477162  | 34 |
| 27 | .500342  | 6.32   | .977083  | .70    | .523259  | 7.02   | .476741  | 33 |
| 28 | .500721  | 6.30   | .977041  | .70    | .523680  | 7.00   | .476320  | 32 |
| 29 | .501099  | 6.28   | .976999  | .70    | .524100  | 7.00   | .475900  | 31 |
| 30 | 9.501476 | 6.30   | 9.976957 | .72    | 9.524520 | 7.00   | 0.475480 | 30 |
| 31 | .501854  | 6.28   | .976914  | .70    | .524940  | 6.98   | .475060  | 29 |
| 32 | .502231  | 6.27   | .976872  | .70    | .525359  | 6.98   | .474641  | 28 |
| 33 | .502607  | 6.28   | .976830  | .72    | .525778  | 6.98   | .474222  | 27 |
| 34 | .502984  | 6.27   | .976787  | .70    | .526197  | 6.97   | .473803  | 26 |
| 35 | 9.503360 | 6.25   | 9.976745 | .72    | 9.526615 | 6.97   | 0.473385 | 25 |
| 36 | .503735  | 6.25   | .976702  | .70    | .527033  | 6.97   | .472967  | 24 |
| 37 | .504110  | 6.25   | .976660  | .72    | .527451  | 6.95   | .472549  | 23 |
| 38 | .504485  | 6.25   | .976617  | .72    | .527868  | 6.95   | .472132  | 22 |
| 39 | .504860  | 6.23   | .976574  | .70    | .528285  | 6.95   | .471715  | 21 |
| 40 | 9.505234 | 6.23   | 9.976532 | .72    | 9.528702 | 6.95   | 0.471298 | 20 |
| 41 | .505608  | 6.22   | .976489  | .72    | .529119  | 6.93   | .470881  | 19 |
| 42 | .505981  | 6.22   | .976446  | .70    | .529535  | 6.93   | .470465  | 18 |
| 43 | .506354  | 6.22   | .976404  | .72    | .529951  | 6.92   | .470049  | 17 |
| 44 | .506727  | 6.20   | .976361  | .72    | .530366  | 6.92   | .469634  | 16 |
| 45 | 9.507099 | 6.20   | 9.976318 | .72    | 9.530781 | 6.92   | 0.469219 | 15 |
| 46 | .507471  | 6.20   | .976275  | .72    | .531196  | 6.92   | .468804  | 14 |
| 47 | .507843  | 6.18   | .976232  | .72    | .531611  | 6.92   | .468389  | 13 |
| 48 | .508214  | 6.18   | .976189  | .72    | .532025  | 6.90   | .467975  | 12 |
| 49 | .508585  | 6.18   | .976146  | .72    | .532439  | 6.90   | .467561  | 11 |
| 50 | 9.508956 | 6.17   | 9.976103 | .72    | 9.532853 | 6.88   | 0.467147 | 10 |
| 51 | .509326  | 6.17   | .976060  | .72    | .533266  | 6.88   | .466734  | 9  |
| 52 | .509696  | 6.15   | .976017  | .72    | .533679  | 6.88   | .466321  | 8  |
| 53 | .510065  | 6.15   | .975974  | .73    | .534092  | 6.87   | .465908  | 7  |
| 54 | .510434  | 6.15   | .975930  | .73    | .534504  | 6.87   | .465496  | 6  |
| 55 | 9.510803 | 6.15   | 9.975887 | .72    | 9.534916 | 6.87   | 0.465084 | 5  |
| 56 | .511172  | 6.13   | .975844  | .73    | .535328  | 6.87   | .464672  | 4  |
| 57 | .511540  | 6.12   | .975800  | .73    | .535739  | 6.85   | .464261  | 3  |
| 58 | .511907  | 6.13   | .975757  | .72    | .536150  | 6.85   | .463850  | 2  |
| 59 | .512275  | 6.12   | .975714  | .73    | .536561  | 6.85   | .463439  | 1  |
| 60 | 9.512642 |        | 9.975670 |        | 9.536972 |        | 0.463028 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.512642 | 6.12   | 9.975670 | .72    | 9.536972 | 6.83   | 0.463028 | 60 |
| 1  | .513009  | 6.10   | .975627  | .73    | .537352  | 6.83   | .462618  | 59 |
| 2  | .513375  | 6.10   | .975583  | .73    | .537792  | 6.83   | .462208  | 58 |
| 3  | .513741  | 6.10   | .975539  | .73    | .538202  | 6.82   | .461798  | 57 |
| 4  | .514107  | 6.08   | .975496  | .72    | .538611  | 6.82   | .461389  | 56 |
| 5  | 9.514472 | 6.08   | 9.975452 | .73    | 9.539020 | 6.82   | 0.460980 | 55 |
| 6  | .514837  | 6.08   | .975408  | .72    | .539429  | 6.80   | .460571  | 54 |
| 7  | .515202  | 6.07   | .975365  | .73    | .539837  | 6.80   | .460163  | 53 |
| 8  | .515566  | 6.07   | .975321  | .73    | .540245  | 6.80   | .459755  | 52 |
| 9  | .515930  | 6.07   | .975277  | .73    | .540653  | 6.80   | .459347  | 51 |
| 10 | 9.516294 | 6.05   | 9.975233 | .73    | 9.541061 | 6.78   | 0.458939 | 50 |
| 11 | .516657  | 6.05   | .975189  | .73    | .541468  | 6.78   | .458532  | 49 |
| 12 | .517020  | 6.03   | .975145  | .73    | .541875  | 6.77   | .458125  | 48 |
| 13 | .517382  | 6.05   | .975101  | .73    | .542281  | 6.78   | .457719  | 47 |
| 14 | .517745  | 6.03   | .975057  | .73    | .542688  | 6.77   | .457312  | 46 |
| 15 | 9.518107 | 6.02   | 9.975013 | .73    | 9.543094 | 6.75   | 0.456906 | 45 |
| 16 | .518468  | 6.02   | .974969  | .73    | .543499  | 6.77   | .456501  | 44 |
| 17 | .518829  | 6.02   | .974925  | .73    | .543905  | 6.77   | .456095  | 43 |
| 18 | .519190  | 6.02   | .974880  | .75    | .544310  | 6.75   | .455690  | 42 |
| 19 | .519551  | 6.00   | .974836  | .73    | .544715  | 6.73   | .455285  | 41 |
| 20 | 9.519911 | 6.00   | 9.974792 | .73    | 9.545119 | 6.75   | 0.454881 | 40 |
| 21 | .520271  | 6.00   | .974748  | .75    | .545524  | 6.73   | .454476  | 39 |
| 22 | .520631  | 5.98   | .974703  | .73    | .545928  | 6.72   | .454072  | 38 |
| 23 | .520990  | 5.98   | .974659  | .75    | .546331  | 6.73   | .453669  | 37 |
| 24 | .521349  | 5.97   | .974614  | .73    | .546735  | 6.72   | .453265  | 36 |
| 25 | 9.521707 | 5.97   | 9.974570 | .75    | 9.547138 | 6.70   | 0.452862 | 35 |
| 26 | .522066  | 5.97   | .974525  | .73    | .547540  | 6.72   | .452460  | 34 |
| 27 | .522424  | 5.95   | .974481  | .75    | .547943  | 6.70   | .452057  | 33 |
| 28 | .522781  | 5.95   | .974436  | .75    | .548345  | 6.70   | .451653  | 32 |
| 29 | .523138  | 5.95   | .974391  | .73    | .548747  | 6.70   | .451253  | 31 |
| 30 | 9.523495 | 5.95   | 9.974347 | .75    | 9.549149 | 6.68   | 0.450851 | 30 |
| 31 | .523852  | 5.93   | .974302  | .75    | .549550  | 6.68   | .450450  | 29 |
| 32 | .524208  | 5.93   | .974257  | .75    | .549951  | 6.68   | .450049  | 28 |
| 33 | .524564  | 5.93   | .974212  | .75    | .550352  | 6.67   | .449648  | 27 |
| 34 | .524920  | 5.92   | .974167  | .75    | .550752  | 6.68   | .449248  | 26 |
| 35 | 9.525275 | 5.92   | 9.974122 | .75    | 9.551153 | 6.65   | 0.448847 | 25 |
| 36 | .525630  | 5.90   | .974077  | .75    | .551552  | 6.67   | .448448  | 24 |
| 37 | .525984  | 5.92   | .974032  | .75    | .551952  | 6.65   | .448048  | 23 |
| 38 | .526339  | 5.90   | .973987  | .75    | .552351  | 6.65   | .447649  | 22 |
| 39 | .526693  | 5.88   | .973942  | .75    | .552750  | 6.65   | .447250  | 21 |
| 40 | 9.527046 | 5.90   | 9.973897 | .75    | 9.553149 | 6.65   | 0.446851 | 20 |
| 41 | .527400  | 5.88   | .973852  | .75    | .553548  | 6.63   | .446452  | 19 |
| 42 | .527753  | 5.87   | .973807  | .77    | .553946  | 6.63   | .446054  | 18 |
| 43 | .528105  | 5.88   | .973761  | .75    | .554344  | 6.62   | .445656  | 17 |
| 44 | .528458  | 5.87   | .973716  | .75    | .554741  | 6.63   | .445259  | 16 |
| 45 | 9.528810 | 5.85   | 9.973671 | .75    | 9.555139 | 6.62   | 0.444861 | 15 |
| 46 | .529161  | 5.87   | .973625  | .77    | .555536  | 6.62   | .444464  | 14 |
| 47 | .529513  | 5.85   | .973580  | .75    | .555933  | 6.60   | .444067  | 13 |
| 48 | .529864  | 5.85   | .973535  | .77    | .556329  | 6.60   | .443671  | 12 |
| 49 | .530215  | 5.83   | .973489  | .75    | .556725  | 6.60   | .443275  | 11 |
| 50 | 9.530565 | 5.83   | 9.973444 | .77    | 9.557121 | 6.60   | 0.442879 | 10 |
| 51 | .530915  | 5.83   | .973398  | .77    | .557517  | 6.60   | .442483  | 9  |
| 52 | .531265  | 5.82   | .973352  | .75    | .557913  | 6.58   | .442087  | 8  |
| 53 | .531614  | 5.82   | .973307  | .77    | .558308  | 6.58   | .441692  | 7  |
| 54 | .531963  | 5.82   | .973261  | .77    | .558703  | 6.57   | .441297  | 6  |
| 55 | 9.532312 | 5.82   | 9.973215 | .77    | 9.559097 | 6.57   | 0.440903 | 5  |
| 56 | .532661  | 5.80   | .973169  | .75    | .559491  | 6.57   | .440509  | 4  |
| 57 | .533009  | 5.80   | .973124  | .77    | .559885  | 6.57   | .440115  | 3  |
| 58 | .533357  | 5.78   | .973078  | .77    | .560279  | 6.57   | .439721  | 2  |
| 59 | .533704  | 5.78   | .973032  | .77    | .560673  | 6.55   | .439327  | 1  |
| 60 | 9.534052 | 5.80   | 9.972986 | .77    | 9.561066 | 6.55   | 0.438934 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.534052 | 5.78   | 9.972986 |        | 9.561066 | 6.55   | 0.438934 | 60 |
| 1  | .534399  | 5.77   | .972940  | .77    | .561459  | 6.55   | .438541  | 59 |
| 2  | .534745  | 5.77   | .972894  | .77    | .561851  | 6.53   | .438149  | 58 |
| 3  | .535092  | 5.77   | .972848  | .77    | .562244  | 6.55   | .437756  | 57 |
| 4  | .535438  | 5.75   | .972802  | .78    | .562636  | 6.53   | .437364  | 56 |
| 5  | 9.535783 | 5.77   | 9.972755 | .77    | 9.563028 | 6.53   | 0.436972 | 55 |
| 6  | .536129  | 5.77   | .972709  | .77    | .563419  | 6.52   | .436581  | 54 |
| 7  | .536474  | 5.75   | .972663  | .77    | .563811  | 6.53   | .436189  | 53 |
| 8  | .536818  | 5.73   | .972617  | .77    | .564202  | 6.52   | .435798  | 52 |
| 9  | .537163  | 5.73   | .972570  | .78    | .564593  | 6.52   | .435407  | 51 |
| 10 | 9.537507 | 5.73   | 9.972524 | .77    | 9.564983 | 6.50   | 0.435017 | 50 |
| 11 | .537851  | 5.72   | .972478  | .78    | .565373  | 6.50   | .434627  | 49 |
| 12 | .538194  | 5.72   | .972431  | .77    | .565763  | 6.50   | .434237  | 48 |
| 13 | .538538  | 5.73   | .972385  | .77    | .566153  | 6.50   | .433847  | 47 |
| 14 | .538880  | 5.70   | .972338  | .78    | .566542  | 6.48   | .433458  | 46 |
| 15 | 9.539223 | 5.72   | 9.972291 | .78    | 9.566932 | 6.50   | 0.433068 | 45 |
| 16 | .539565  | 5.70   | .972245  | .77    | .567320  | 6.47   | .432680  | 44 |
| 17 | .539907  | 5.70   | .972198  | .78    | .567709  | 6.48   | .432291  | 43 |
| 18 | .540249  | 5.68   | .972151  | .77    | .568098  | 6.48   | .431902  | 42 |
| 19 | .540590  | 5.68   | .972105  | .78    | .568486  | 6.45   | .431514  | 41 |
| 20 | 9.540931 | 5.68   | 9.972058 | .78    | 9.568873 | 6.47   | 0.431127 | 40 |
| 21 | .541272  | 5.68   | .972011  | .78    | .569261  | 6.47   | .430739  | 39 |
| 22 | .541613  | 5.67   | .971964  | .78    | .569648  | 6.45   | .430352  | 38 |
| 23 | .541953  | 5.67   | .971917  | .78    | .570035  | 6.45   | .429965  | 37 |
| 24 | .542293  | 5.65   | .971870  | .78    | .570422  | 6.45   | .429578  | 36 |
| 25 | 9.542632 | 5.65   | 9.971823 | .78    | 9.570809 | 6.43   | 0.429191 | 35 |
| 26 | .542971  | 5.65   | .971776  | .78    | .571195  | 6.43   | .428805  | 34 |
| 27 | .543310  | 5.65   | .971729  | .78    | .571581  | 6.43   | .428419  | 33 |
| 28 | .543649  | 5.63   | .971682  | .78    | .571967  | 6.43   | .428033  | 32 |
| 29 | .543987  | 5.63   | .971635  | .78    | .572352  | 6.42   | .427648  | 31 |
| 30 | 9.544325 | 5.63   | 9.971588 | .80    | 9.572738 | 6.42   | 0.427262 | 30 |
| 31 | .544663  | 5.62   | .971540  | .80    | .573123  | 6.42   | .426877  | 29 |
| 32 | .545000  | 5.62   | .971493  | .78    | .573507  | 6.40   | .426493  | 28 |
| 33 | .545338  | 5.63   | .971446  | .80    | .573892  | 6.42   | .426108  | 27 |
| 34 | .545674  | 5.60   | .971398  | .80    | .574276  | 6.40   | .425724  | 26 |
| 35 | 9.546011 | 5.60   | 9.971351 | .80    | 9.574660 | 6.40   | 0.425340 | 25 |
| 36 | .546347  | 5.60   | .971303  | .80    | .575044  | 6.40   | .424956  | 24 |
| 37 | .546683  | 5.60   | .971256  | .78    | .575427  | 6.38   | .424573  | 23 |
| 38 | .547019  | 5.58   | .971208  | .80    | .575810  | 6.38   | .424190  | 22 |
| 39 | .547354  | 5.58   | .971161  | .80    | .576193  | 6.38   | .423807  | 21 |
| 40 | 9.547689 | 5.58   | 9.971113 | .78    | 9.576576 | 6.38   | 0.423424 | 20 |
| 41 | .548024  | 5.58   | .971066  | .80    | .576959  | 6.37   | .423041  | 19 |
| 42 | .548359  | 5.57   | .971018  | .80    | .577341  | 6.37   | .422659  | 18 |
| 43 | .548693  | 5.57   | .970970  | .80    | .577723  | 6.35   | .422277  | 17 |
| 44 | .549027  | 5.55   | .970922  | .80    | .578104  | 6.35   | .421896  | 16 |
| 45 | 9.549360 | 5.55   | 9.970874 | .80    | 9.578486 | 6.37   | 0.421514 | 15 |
| 46 | .549693  | 5.55   | .970827  | .78    | .578867  | 6.35   | .421133  | 14 |
| 47 | .550026  | 5.55   | .970779  | .80    | .579248  | 6.35   | .420752  | 13 |
| 48 | .550359  | 5.55   | .970731  | .80    | .579629  | 6.33   | .420371  | 12 |
| 49 | .550692  | 5.53   | .970683  | .80    | .580009  | 6.33   | .419991  | 11 |
| 50 | 9.551024 | 5.53   | 9.970635 | .82    | 9.580389 | 6.33   | 0.419611 | 10 |
| 51 | .551356  | 5.52   | .970586  | .80    | .580769  | 6.33   | .419231  | 9  |
| 52 | .551687  | 5.52   | .970538  | .80    | .581149  | 6.32   | .418851  | 8  |
| 53 | .552018  | 5.52   | .970490  | .80    | .581528  | 6.32   | .418472  | 7  |
| 54 | .552349  | 5.52   | .970442  | .80    | .581907  | 6.32   | .418093  | 6  |
| 55 | 9.552680 | 5.50   | 9.970394 | .82    | 9.582286 | 6.32   | 0.417714 | 5  |
| 56 | .553010  | 5.50   | .970345  | .80    | .582665  | 6.32   | .417335  | 4  |
| 57 | .553341  | 5.48   | .970297  | .80    | .583044  | 6.30   | .416956  | 3  |
| 58 | .553670  | 5.48   | .970249  | .80    | .583422  | 6.30   | .416578  | 2  |
| 59 | .554000  | 5.50   | .970200  | .82    | .583800  | 6.30   | .416200  | 1  |
| 60 | 9.554329 | 5.48   | 9.970152 | .80    | 9.584177 | 6.28   | 0.415823 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |



| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.554329 | 5.48   | 9.970152 | .82    | 9.584177 | 6.30   | 0.415823 | 60 |
| 1  | .554658  | 5.48   | .970103  | .80    | .584555  | 6.28   | .415445  | 59 |
| 2  | .554987  | 5.47   | .970055  | .82    | .584932  | 6.28   | .415068  | 58 |
| 3  | .555315  | 5.47   | .970006  | .82    | .585309  | 6.28   | .414691  | 57 |
| 4  | .555643  | 5.47   | .969957  | .80    | .585686  | 6.27   | .414314  | 56 |
| 5  | 9.555971 | 5.47   | 9.969909 | .82    | 9.586062 | 6.28   | 0.413938 | 55 |
| 6  | .556299  | 5.45   | .969860  | .82    | .586439  | 6.27   | .413561  | 54 |
| 7  | .556626  | 5.45   | .969811  | .82    | .586815  | 6.27   | .413185  | 53 |
| 8  | .556953  | 5.45   | .969762  | .82    | .587190  | 6.25   | .412810  | 52 |
| 9  | .557280  | 5.45   | .969714  | .80    | .587566  | 6.27   | .412434  | 51 |
| 10 | 9.557606 | 5.43   | 9.969665 | .82    | 9.587941 | 6.25   | 0.412059 | 50 |
| 11 | .557932  | 5.43   | .969616  | .82    | .588316  | 6.25   | .411684  | 49 |
| 12 | .558258  | 5.43   | .969567  | .82    | .588691  | 6.25   | .411309  | 48 |
| 13 | .558583  | 5.42   | .969518  | .82    | .589066  | 6.23   | .410934  | 47 |
| 14 | .558909  | 5.42   | .969469  | .82    | .589440  | 6.23   | .410560  | 46 |
| 15 | 9.559234 | 5.42   | 9.969420 | .82    | 9.589814 | 6.23   | 0.410186 | 45 |
| 16 | .559558  | 5.40   | .969370  | .83    | .590188  | 6.23   | .409812  | 44 |
| 17 | .559883  | 5.42   | .969321  | .82    | .590562  | 6.23   | .409438  | 43 |
| 18 | .560207  | 5.40   | .969272  | .82    | .590935  | 6.22   | .409065  | 42 |
| 19 | .560531  | 5.40   | .969223  | .83    | .591308  | 6.22   | .408692  | 41 |
| 20 | 9.560855 | 5.38   | 9.969173 | .82    | 9.591681 | 6.22   | 0.408319 | 40 |
| 21 | .561178  | 5.38   | .969124  | .82    | .592054  | 6.20   | .407946  | 39 |
| 22 | .561501  | 5.38   | .969075  | .83    | .592426  | 6.22   | .407574  | 38 |
| 23 | .561824  | 5.37   | .969025  | .82    | .592799  | 6.20   | .407201  | 37 |
| 24 | .562146  | 5.37   | .968976  | .83    | .593171  | 6.18   | .406829  | 36 |
| 25 | 9.562468 | 5.37   | 9.968926 | .82    | 9.593542 | 6.20   | 0.406458 | 35 |
| 26 | .562790  | 5.37   | .968877  | .83    | .593914  | 6.18   | .406086  | 34 |
| 27 | .563112  | 5.35   | .968827  | .83    | .594285  | 6.18   | .405715  | 33 |
| 28 | .563433  | 5.37   | .968777  | .82    | .594656  | 6.18   | .405344  | 32 |
| 29 | .563755  | 5.33   | .968728  | .83    | .595027  | 6.18   | .404973  | 31 |
| 30 | 9.564075 | 5.35   | 9.968678 | .83    | 9.595398 | 6.17   | 0.404602 | 30 |
| 31 | .564396  | 5.33   | .968628  | .83    | .595768  | 6.17   | .404232  | 29 |
| 32 | .564716  | 5.33   | .968578  | .83    | .596138  | 6.17   | .403862  | 28 |
| 33 | .565036  | 5.33   | .968528  | .83    | .596508  | 6.17   | .403492  | 27 |
| 34 | .565356  | 5.33   | .968479  | .83    | .596878  | 6.15   | .403122  | 26 |
| 35 | 9.565676 | 5.32   | 9.968429 | .83    | 9.597247 | 6.15   | 0.402753 | 25 |
| 36 | .565995  | 5.32   | .968379  | .83    | .597616  | 6.15   | .402384  | 24 |
| 37 | .566314  | 5.30   | .968329  | .85    | .597985  | 6.15   | .402015  | 23 |
| 38 | .566632  | 5.32   | .968278  | .85    | .598354  | 6.13   | .401646  | 22 |
| 39 | .566951  | 5.30   | .968228  | .83    | .598722  | 6.15   | .401278  | 21 |
| 40 | 9.567269 | 5.30   | 9.968178 | .83    | 9.599091 | 6.13   | 0.400909 | 20 |
| 41 | .567587  | 5.28   | .968128  | .83    | .599459  | 6.13   | .400541  | 19 |
| 42 | .567904  | 5.30   | .968078  | .85    | .599827  | 6.12   | .400173  | 18 |
| 43 | .568222  | 5.28   | .968027  | .83    | .600194  | 6.13   | .399806  | 17 |
| 44 | .568539  | 5.28   | .967977  | .83    | .600562  | 6.12   | .399438  | 16 |
| 45 | 9.568856 | 5.27   | 9.967927 | .85    | 9.600929 | 6.12   | 0.399071 | 15 |
| 46 | .569172  | 5.27   | .967876  | .83    | .601296  | 6.12   | .398704  | 14 |
| 47 | .569488  | 5.27   | .967826  | .85    | .601663  | 6.10   | .398337  | 13 |
| 48 | .569804  | 5.27   | .967775  | .83    | .602029  | 6.10   | .397971  | 12 |
| 49 | .570120  | 5.25   | .967725  | .85    | .602395  | 6.10   | .397605  | 11 |
| 50 | 9.570435 | 5.27   | 9.967674 | .83    | 9.602761 | 6.10   | 0.397239 | 10 |
| 51 | .570751  | 5.25   | .967624  | .85    | .603127  | 6.10   | .396873  | 9  |
| 52 | .571066  | 5.23   | .967573  | .85    | .603493  | 6.08   | .396507  | 8  |
| 53 | .571380  | 5.25   | .967522  | .85    | .603858  | 6.08   | .396142  | 7  |
| 54 | .571695  | 5.25   | .967471  | .85    | .604223  | 6.08   | .395777  | 6  |
| 55 | 9.572009 | 5.23   | 9.967421 | .85    | 9.604588 | 6.08   | 0.395412 | 5  |
| 56 | .572323  | 5.22   | .967370  | .85    | .604953  | 6.07   | .395047  | 4  |
| 57 | .572636  | 5.23   | .967319  | .85    | .605317  | 6.08   | .394683  | 3  |
| 58 | .572950  | 5.22   | .967268  | .85    | .605682  | 6.07   | .394318  | 2  |
| 59 | .573263  | 5.20   | .967217  | .85    | .606046  | 6.07   | .393954  | 1  |
| 60 | 9.573575 | 5.20   | 9.967166 | .85    | 9.606410 | 6.07   | 0.393590 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     | M. |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.573575 | 5.22    | 9.967166 | .85     | 9.606410 | 6.05    | 0.393590 | 60 |
| 1  | .573888  | 5.20    | .967115  | .85     | .606773  | 6.07    | .393227  | 59 |
| 2  | .574200  | 5.20    | .967064  | .85     | .607137  | 6.05    | .392863  | 58 |
| 3  | .574512  | 5.20    | .967013  | .85     | .607500  | 6.05    | .392500  | 57 |
| 4  | .574824  | 5.20    | .966961  | .87     | .607863  | 6.05    | .392137  | 56 |
| 5  | 9.575136 | 5.18    | 9.966910 | .85     | 9.608225 | 6.05    | 0.391775 | 55 |
| 6  | .575447  | 5.18    | .966859  | .85     | .608588  | 6.03    | .391412  | 54 |
| 7  | .575758  | 5.18    | .966808  | .85     | .608950  | 6.03    | .391050  | 53 |
| 8  | .576069  | 5.17    | .966756  | .87     | .609312  | 6.03    | .390688  | 52 |
| 9  | 9.576379 | 5.17    | .966705  | .87     | .609674  | 6.03    | .390326  | 51 |
| 10 | 9.576689 | 5.17    | 9.966653 | .85     | 9.610036 | 6.02    | 0.389964 | 50 |
| 11 | .576999  | 5.17    | .966602  | .87     | .610397  | 6.03    | .389603  | 49 |
| 12 | .577309  | 5.15    | .966550  | .85     | .610759  | 6.02    | .389241  | 48 |
| 13 | .577618  | 5.15    | .966499  | .87     | .611120  | 6.00    | .388880  | 47 |
| 14 | .577927  | 5.15    | .966447  | .87     | .611480  | 6.02    | .388520  | 46 |
| 15 | 9.578236 | 5.15    | 9.966395 | .85     | 9.611841 | 6.00    | 0.388159 | 45 |
| 16 | .578545  | 5.13    | .966344  | .87     | .612201  | 6.00    | .387799  | 44 |
| 17 | .578853  | 5.15    | .966292  | .87     | .612561  | 6.00    | .387439  | 43 |
| 18 | .579162  | 5.13    | .966240  | .87     | .612921  | 6.00    | .387079  | 42 |
| 19 | 9.579470 | 5.12    | .966188  | .87     | .613281  | 6.00    | .386719  | 41 |
| 20 | 9.579777 | 5.13    | 9.966136 | .85     | 9.613641 | 5.98    | 0.386359 | 40 |
| 21 | .580085  | 5.12    | .966085  | .87     | .614000  | 5.98    | .386000  | 39 |
| 22 | .580392  | 5.12    | .966033  | .87     | .614359  | 5.98    | .385641  | 38 |
| 23 | .580699  | 5.10    | .965981  | .87     | .614718  | 5.98    | .385282  | 37 |
| 24 | .581005  | 5.12    | .965929  | .88     | .615077  | 5.97    | .384923  | 36 |
| 25 | 9.581312 | 5.10    | 9.965876 | .87     | 9.615435 | 5.97    | 0.384565 | 35 |
| 26 | .581618  | 5.10    | .965824  | .87     | .615793  | 5.97    | .384207  | 34 |
| 27 | .581924  | 5.08    | .965772  | .87     | .616151  | 5.97    | .383849  | 33 |
| 28 | .582229  | 5.10    | .965720  | .87     | .616509  | 5.97    | .383491  | 32 |
| 29 | .582535  | 5.08    | .965668  | .88     | .616867  | 5.95    | .383133  | 31 |
| 30 | 9.582840 | 5.08    | 9.965615 | .87     | 9.617224 | 5.97    | 0.382776 | 30 |
| 31 | .583145  | 5.07    | .965563  | .87     | .617582  | 5.95    | .382418  | 29 |
| 32 | .583449  | 5.08    | .965511  | .88     | .617939  | 5.93    | .382061  | 28 |
| 33 | .583754  | 5.07    | .965458  | .87     | .618295  | 5.93    | .381705  | 27 |
| 34 | .584058  | 5.05    | .965406  | .88     | .618652  | 5.93    | .381348  | 26 |
| 35 | 9.584361 | 5.07    | 9.965353 | .87     | 9.619008 | 5.93    | 0.380992 | 25 |
| 36 | .584665  | 5.05    | .965301  | .88     | .619364  | 5.93    | .380636  | 24 |
| 37 | .584968  | 5.07    | .965248  | .88     | .619720  | 5.93    | .380280  | 23 |
| 38 | .585272  | 5.03    | .965195  | .87     | .620076  | 5.93    | .379924  | 22 |
| 39 | .585574  | 5.05    | .965143  | .88     | .620432  | 5.92    | .379568  | 21 |
| 40 | 9.585877 | 5.03    | 9.965090 | .88     | 9.620787 | 5.92    | 0.379213 | 20 |
| 41 | .586179  | 5.05    | .965037  | .88     | .621142  | 5.92    | .378858  | 19 |
| 42 | .586482  | 5.02    | .964984  | .88     | .621497  | 5.92    | .378503  | 18 |
| 43 | .586783  | 5.03    | .964931  | .87     | .621852  | 5.92    | .378148  | 17 |
| 44 | 9.587085 | 5.02    | 9.964879 | .88     | .622207  | 5.90    | .377793  | 16 |
| 45 | .587386  | 5.03    | 9.964826 | .88     | 9.622561 | 5.90    | 0.377439 | 15 |
| 46 | .587688  | 5.02    | .964773  | .88     | .622915  | 5.90    | .377085  | 14 |
| 47 | .587989  | 5.00    | .964720  | .88     | .623269  | 5.90    | .376731  | 13 |
| 48 | .588289  | 5.02    | .964666  | .88     | .623623  | 5.88    | .376377  | 12 |
| 49 | .588590  | 5.00    | .964613  | .88     | .623976  | 5.90    | .376024  | 11 |
| 50 | 9.588890 | 5.00    | 9.964560 | .88     | 9.624330 | 5.88    | 0.375670 | 10 |
| 51 | .589190  | 4.98    | .964507  | .88     | .624683  | 5.88    | .375317  | 9  |
| 52 | .589489  | 5.00    | .964454  | .90     | .625036  | 5.87    | .374964  | 8  |
| 53 | .589788  | 4.98    | .964400  | .88     | .625388  | 5.88    | .374612  | 7  |
| 54 | 9.590088 | 4.98    | 9.964347 | .88     | .625741  | 5.87    | 0.374259 | 6  |
| 55 | .590387  | 4.98    | 9.964294 | .90     | 9.626093 | 5.87    | 0.373907 | 5  |
| 56 | .590686  | 4.97    | .964240  | .88     | .626445  | 5.87    | .373555  | 4  |
| 57 | .590984  | 4.97    | .964187  | .88     | .626797  | 5.87    | .373203  | 3  |
| 58 | .591282  | 4.97    | .964133  | .88     | .627149  | 5.87    | .372851  | 2  |
| 59 | .591580  | 4.97    | .964080  | .90     | .627501  | 5.85    | .372499  | 1  |
| 60 | 9.591878 | 4.97    | 9.964026 | .90     | 9.627852 | 5.85    | 0.372148 | 0  |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.591878 |        | 9.964026 | .90    | 9.627852 | 5.85   | 0.372148 | 60 |
| 1  | .592176  | 4.97   | .963972  | .88    | .628203  | 5.85   | .371797  | 59 |
| 2  | .592473  | 4.95   | .963919  | .90    | .628554  | 5.85   | .371446  | 58 |
| 3  | .592770  | 4.95   | .963865  | .90    | .628905  | 5.83   | .371095  | 57 |
| 4  | .593067  | 4.93   | .963811  | .90    | .629255  | 5.85   | .370745  | 56 |
| 5  | 9.593363 | 4.93   | 9.963757 | .88    | 9.629606 | 5.83   | 0.370394 | 55 |
| 6  | .593659  | 4.93   | .963704  | .90    | .629956  | 5.83   | .370044  | 54 |
| 7  | .593955  | 4.93   | .963650  | .90    | .630306  | 5.83   | .369694  | 53 |
| 8  | .594251  | 4.93   | .963596  | .90    | .630656  | 5.82   | .369344  | 52 |
| 9  | .594547  | 4.92   | .963542  | .90    | .631005  | 5.83   | .368995  | 51 |
| 10 | 9.594842 | 4.92   | 9.963488 | .92    | 9.631355 | 5.82   | 0.368645 | 50 |
| 11 | .595137  | 4.92   | .963434  | .90    | .631704  | 5.82   | .368296  | 49 |
| 12 | .595432  | 4.92   | .963379  | .90    | .632053  | 5.82   | .367947  | 48 |
| 13 | .595727  | 4.92   | .963325  | .90    | .632402  | 5.80   | .367598  | 47 |
| 14 | .596021  | 4.90   | .963271  | .90    | .632750  | 5.82   | .367250  | 46 |
| 15 | 9.596315 | 4.90   | 9.963217 | .90    | 9.633099 | 5.80   | 0.366901 | 45 |
| 16 | .596609  | 4.90   | .963163  | .92    | .633447  | 5.80   | .366553  | 44 |
| 17 | .596903  | 4.88   | .963108  | .90    | .633795  | 5.80   | .366205  | 43 |
| 18 | .597196  | 4.90   | .963054  | .92    | .634143  | 5.78   | .365857  | 42 |
| 19 | .597490  | 4.88   | .962999  | .90    | .634490  | 5.80   | .365510  | 41 |
| 20 | 9.597783 | 4.87   | 9.962945 | .92    | 9.634838 | 5.78   | 0.365162 | 40 |
| 21 | .598075  | 4.88   | .962890  | .90    | .635185  | 5.78   | .364815  | 39 |
| 22 | .598368  | 4.87   | .962836  | .92    | .635532  | 5.78   | .364468  | 38 |
| 23 | .598660  | 4.87   | .962781  | .90    | .635879  | 5.78   | .364121  | 37 |
| 24 | .598952  | 4.87   | .962727  | .92    | .636226  | 5.77   | .363774  | 36 |
| 25 | 9.599244 | 4.87   | 9.962672 | .92    | 9.636572 | 5.78   | 0.363428 | 35 |
| 26 | .599536  | 4.85   | .962617  | .90    | .636919  | 5.77   | .363081  | 34 |
| 27 | .599827  | 4.85   | .962562  | .92    | .637265  | 5.77   | .362735  | 33 |
| 28 | .600118  | 4.85   | .962508  | .90    | .637611  | 5.77   | .362389  | 32 |
| 29 | .600409  | 4.85   | .962453  | .92    | .637956  | 5.75   | .362044  | 31 |
| 30 | 9.600700 | 4.83   | 9.962398 | .92    | 9.638302 | 5.75   | 0.361698 | 30 |
| 31 | .600990  | 4.83   | .962343  | .92    | .638647  | 5.75   | .361353  | 29 |
| 32 | .601280  | 4.83   | .962288  | .92    | .638992  | 5.75   | .361008  | 28 |
| 33 | .601570  | 4.83   | .962233  | .92    | .639337  | 5.75   | .360663  | 27 |
| 34 | .601860  | 4.83   | .962178  | .92    | .639682  | 5.75   | .360318  | 26 |
| 35 | 9.602150 | 4.82   | 9.962123 | .92    | 9.640027 | 5.75   | 0.359973 | 25 |
| 36 | .602439  | 4.82   | .962067  | .93    | .640371  | 5.73   | .359629  | 24 |
| 37 | .602728  | 4.82   | .962012  | .92    | .640716  | 5.75   | .359284  | 23 |
| 38 | .603017  | 4.80   | .961957  | .92    | .641060  | 5.73   | .358940  | 22 |
| 39 | .603305  | 4.82   | .961902  | .93    | .641404  | 5.72   | .358596  | 21 |
| 40 | 9.603594 | 4.80   | 9.961846 | .92    | 9.641747 | 5.73   | 0.358253 | 20 |
| 41 | .603882  | 4.80   | .961791  | .93    | .642091  | 5.72   | .357909  | 19 |
| 42 | .604170  | 4.78   | .961735  | .92    | .642434  | 5.72   | .357566  | 18 |
| 43 | .604457  | 4.80   | .961680  | .92    | .642777  | 5.72   | .357223  | 17 |
| 44 | .604745  | 4.78   | .961624  | .93    | .643120  | 5.72   | .356880  | 16 |
| 45 | 9.605032 | 4.78   | 9.961569 | .93    | 9.643463 | 5.72   | 0.356537 | 15 |
| 46 | .605319  | 4.78   | .961513  | .92    | .643806  | 5.70   | .356194  | 14 |
| 47 | .605606  | 4.77   | .961458  | .93    | .644148  | 5.70   | .355852  | 13 |
| 48 | .605892  | 4.78   | .961402  | .93    | .644490  | 5.70   | .355510  | 12 |
| 49 | .606179  | 4.77   | .961346  | .93    | .644832  | 5.70   | .355168  | 11 |
| 50 | 9.606465 | 4.77   | 9.961290 | .92    | 9.645174 | 5.70   | 0.354826 | 10 |
| 51 | .606751  | 4.75   | .961235  | .93    | .645516  | 5.68   | .354484  | 9  |
| 52 | .607036  | 4.77   | .961179  | .93    | .645857  | 5.70   | .354143  | 8  |
| 53 | .607322  | 4.75   | .961123  | .93    | .646199  | 5.68   | .353801  | 7  |
| 54 | .607607  | 4.75   | .961067  | .93    | .646540  | 5.68   | .353460  | 6  |
| 55 | 9.607892 | 4.75   | 9.961011 | .93    | 9.646881 | 5.68   | 0.353119 | 5  |
| 56 | .608177  | 4.73   | .960955  | .93    | .647222  | 5.67   | .352778  | 4  |
| 57 | .608461  | 4.73   | .960899  | .93    | .647562  | 5.68   | .352438  | 3  |
| 58 | .608745  | 4.73   | .960843  | .93    | .647903  | 5.67   | .352097  | 2  |
| 59 | .609029  | 4.73   | .960786  | .95    | .648243  | 5.67   | .351757  | 1  |
| 60 | 9.609313 | 4.73   | 9.960730 | .93    | 9.648583 |        | 0.351417 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.609313 | 4.73   | 9.960730 | .93    | 9.648583 | 5.67   | 0.351417 | 60 |
| 1  | .609597  | 4.72   | .960674  | .93    | .648923  | 5.67   | .351077  | 59 |
| 2  | .609880  | 4.73   | .960618  | .93    | .649263  | 5.67   | .350737  | 58 |
| 3  | .610164  | 4.73   | .960561  | .95    | .649602  | 5.65   | .350398  | 57 |
| 4  | .610447  | 4.72   | .960505  | .93    | .649942  | 5.67   | .350058  | 56 |
| 5  | 9.610729 | 4.70   | 9.960448 | .95    | 9.650281 | 5.65   | 0.349719 | 55 |
| 6  | .611012  | 4.72   | .960392  | .93    | .650620  | 5.65   | .349380  | 54 |
| 7  | .611294  | 4.70   | .960335  | .95    | .650959  | 5.65   | .349041  | 53 |
| 8  | .611576  | 4.70   | .960279  | .93    | .651297  | 5.63   | .348703  | 52 |
| 9  | .611858  | 4.70   | .960222  | .95    | .651636  | 5.65   | .348364  | 51 |
| 10 | 9.612140 | 4.68   | 9.960165 | .93    | 9.651974 | 5.63   | 0.348026 | 50 |
| 11 | .612421  | 4.68   | .960109  | .95    | .652312  | 5.63   | .347688  | 49 |
| 12 | .612702  | 4.68   | .960052  | .95    | .652650  | 5.63   | .347350  | 48 |
| 13 | .612983  | 4.68   | .959995  | .95    | .652988  | 5.63   | .347012  | 47 |
| 14 | .613264  | 4.68   | .959938  | .93    | .653326  | 5.62   | .346674  | 46 |
| 15 | 9.613545 | 4.68   | 9.959882 | .93    | 9.653663 | 5.62   | 0.346337 | 45 |
| 16 | .613825  | 4.67   | .959825  | .95    | .654000  | 5.62   | .346000  | 44 |
| 17 | .614105  | 4.67   | .959768  | .95    | .654337  | 5.62   | .345663  | 43 |
| 18 | .614385  | 4.67   | .959711  | .95    | .654674  | 5.62   | .345326  | 42 |
| 19 | .614665  | 4.67   | .959654  | .95    | .655011  | 5.62   | .344989  | 41 |
| 20 | 9.614944 | 4.65   | 9.959596 | .95    | 9.655348 | 5.60   | 0.344652 | 40 |
| 21 | .615223  | 4.65   | .959539  | .95    | .655684  | 5.60   | .344316  | 39 |
| 22 | .615502  | 4.65   | .959482  | .95    | .656020  | 5.60   | .343980  | 38 |
| 23 | .615781  | 4.65   | .959425  | .95    | .656356  | 5.60   | .343644  | 37 |
| 24 | .616060  | 4.63   | .959368  | .95    | .656692  | 5.60   | .343308  | 36 |
| 25 | 9.616338 | 4.63   | 9.959310 | .97    | 9.657028 | 5.60   | 0.342972 | 35 |
| 26 | .616616  | 4.63   | .959253  | .95    | .657364  | 5.60   | .342636  | 34 |
| 27 | .616894  | 4.63   | .959195  | .97    | .657699  | 5.58   | .342301  | 33 |
| 28 | .617172  | 4.63   | .959138  | .95    | .658034  | 5.58   | .341966  | 32 |
| 29 | .617450  | 4.62   | .959080  | .97    | .658369  | 5.58   | .341631  | 31 |
| 30 | 9.617727 | 4.62   | 9.959023 | .97    | 9.658704 | 5.58   | 0.341296 | 30 |
| 31 | .618004  | 4.62   | .958965  | .95    | .659039  | 5.58   | .340961  | 29 |
| 32 | .618281  | 4.62   | .958908  | .95    | .659373  | 5.57   | .340627  | 28 |
| 33 | .618558  | 4.60   | .958850  | .97    | .659708  | 5.58   | .340292  | 27 |
| 34 | .618834  | 4.60   | .958792  | .97    | .660042  | 5.57   | .339958  | 26 |
| 35 | 9.619110 | 4.60   | 9.958734 | .95    | 9.660376 | 5.57   | 0.339624 | 25 |
| 36 | .619386  | 4.60   | .958677  | .97    | .660710  | 5.57   | .339290  | 24 |
| 37 | .619662  | 4.60   | .958619  | .97    | .661043  | 5.55   | .338957  | 23 |
| 38 | .619938  | 4.60   | .958561  | .97    | .661377  | 5.57   | .338623  | 22 |
| 39 | .620213  | 4.58   | .958503  | .97    | .661710  | 5.55   | .338290  | 21 |
| 40 | 9.620488 | 4.58   | 9.958445 | .97    | 9.662043 | 5.55   | 0.337957 | 20 |
| 41 | .620763  | 4.58   | .958387  | .97    | .662376  | 5.55   | .337624  | 19 |
| 42 | .621038  | 4.58   | .958329  | .97    | .662709  | 5.55   | .337291  | 18 |
| 43 | .621313  | 4.57   | .958271  | .97    | .663042  | 5.55   | .336958  | 17 |
| 44 | .621587  | 4.57   | .958213  | .93    | .663375  | 5.55   | .336625  | 16 |
| 45 | 9.621861 | 4.57   | 9.958154 | .93    | 9.663707 | 5.53   | 0.336293 | 15 |
| 46 | .622135  | 4.57   | .958096  | .97    | .664039  | 5.53   | .335961  | 14 |
| 47 | .622409  | 4.57   | .958038  | .97    | .664371  | 5.53   | .335629  | 13 |
| 48 | .622682  | 4.55   | .957979  | .97    | .664703  | 5.53   | .335297  | 12 |
| 49 | .622956  | 4.55   | .957921  | .97    | .665035  | 5.52   | .334965  | 11 |
| 50 | 9.623229 | 4.55   | 9.957863 | .98    | 9.665366 | 5.53   | 0.334634 | 10 |
| 51 | .623502  | 4.53   | .957804  | .97    | .665698  | 5.52   | .334302  | 9  |
| 52 | .623774  | 4.55   | .957746  | .98    | .666029  | 5.52   | .333971  | 8  |
| 53 | .624047  | 4.53   | .957687  | .98    | .666360  | 5.52   | .333640  | 7  |
| 54 | .624319  | 4.53   | .957628  | .98    | .666691  | 5.52   | .333309  | 6  |
| 55 | 9.624591 | 4.53   | 9.957570 | .98    | 9.667021 | 5.50   | 0.332979 | 5  |
| 56 | .624863  | 4.53   | .957511  | .93    | .667352  | 5.52   | .332648  | 4  |
| 57 | .625135  | 4.53   | .957452  | .98    | .667682  | 5.50   | .332318  | 3  |
| 58 | .625406  | 4.52   | .957393  | .97    | .668013  | 5.52   | .331987  | 2  |
| 59 | .625677  | 4.52   | .957335  | .97    | .668343  | 5.50   | .331657  | 1  |
| 60 | 9.625948 | 4.52   | 9.957276 | .98    | 9.668673 | 5.50   | 0.331327 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     |    |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.625948 | 4.52    | 9.957276 | .98     | 9.668673 | 5.48    | 0.331327 | 60 |
| 1  | .626219  | 4.52    | .957217  | .98     | .669002  | 5.50    | .330998  | 59 |
| 2  | .626490  | 4.50    | .957158  | .98     | .669332  | 5.48    | .330668  | 58 |
| 3  | .626760  | 4.50    | .957099  | .98     | .669661  | 5.50    | .330339  | 57 |
| 4  | .627030  | 4.50    | .957040  | .98     | .669991  | 5.48    | .330009  | 56 |
| 5  | 9.627300 | 4.50    | 9.956981 | 1.00    | 9.670320 | 5.48    | 0.329680 | 55 |
| 6  | .627570  | 4.50    | .956921  | .98     | .670649  | 5.47    | .329351  | 54 |
| 7  | .627840  | 4.48    | .956862  | .98     | .670977  | 5.47    | .329023  | 53 |
| 8  | .628109  | 4.48    | .956803  | .98     | .671306  | 5.48    | .328694  | 52 |
| 9  | .628378  | 4.48    | .956744  | 1.00    | .671635  | 5.47    | .328365  | 51 |
| 10 | 9.628647 | 4.48    | 9.956684 | .98     | 9.671963 | 5.47    | 0.328037 | 50 |
| 11 | .628916  | 4.48    | .956625  | .98     | .672291  | 5.47    | .327709  | 49 |
| 12 | .629185  | 4.47    | .956566  | 1.00    | .672619  | 5.47    | .327381  | 48 |
| 13 | .629453  | 4.47    | .956506  | .98     | .672947  | 5.47    | .327053  | 47 |
| 14 | .629721  | 4.47    | .956447  | 1.00    | .673274  | 5.47    | .326726  | 46 |
| 15 | 9.629989 | 4.47    | 9.956387 | 1.00    | 9.673602 | 5.47    | 0.326398 | 45 |
| 16 | .630257  | 4.45    | .956327  | .98     | .673929  | 5.45    | .326071  | 44 |
| 17 | .630524  | 4.45    | .956268  | .98     | .674257  | 5.47    | .325743  | 43 |
| 18 | .630792  | 4.47    | .956208  | 1.00    | .674584  | 5.45    | .325416  | 42 |
| 19 | .631059  | 4.45    | .956148  | .98     | .674911  | 5.43    | .325089  | 41 |
| 20 | 9.631326 | 4.45    | 9.956089 | 1.00    | 9.675237 | 5.45    | 0.324763 | 40 |
| 21 | .631593  | 4.43    | .956029  | 1.00    | .675564  | 5.43    | .324436  | 39 |
| 22 | .631859  | 4.43    | .955969  | 1.00    | .675890  | 5.45    | .324110  | 38 |
| 23 | .632125  | 4.43    | .955909  | 1.00    | .676217  | 5.45    | .323783  | 37 |
| 24 | .632392  | 4.43    | .955849  | 1.00    | .676543  | 5.43    | .323457  | 36 |
| 25 | 9.632658 | 4.42    | 9.955789 | 1.00    | 9.676869 | 5.43    | 0.323131 | 35 |
| 26 | .632923  | 4.43    | .955729  | 1.00    | .677194  | 5.42    | .322806  | 34 |
| 27 | .633189  | 4.42    | .955669  | 1.00    | .677520  | 5.43    | .322480  | 33 |
| 28 | .633454  | 4.42    | .955609  | 1.02    | .677846  | 5.42    | .322154  | 32 |
| 29 | .633719  | 4.42    | .955548  | 1.00    | .678171  | 5.42    | .321829  | 31 |
| 30 | 9.633984 | 4.42    | 9.955488 | 1.00    | 9.678496 | 5.42    | 0.321504 | 30 |
| 31 | .634249  | 4.42    | .955428  | 1.00    | .678821  | 5.42    | .321179  | 29 |
| 32 | .634514  | 4.40    | .955368  | 1.02    | .679146  | 5.42    | .320854  | 28 |
| 33 | .634778  | 4.40    | .955307  | 1.00    | .679471  | 5.40    | .320529  | 27 |
| 34 | .635042  | 4.40    | .955247  | 1.02    | .679795  | 5.42    | .320205  | 26 |
| 35 | 9.635306 | 4.40    | 9.955186 | 1.00    | 9.680120 | 5.40    | 0.319880 | 25 |
| 36 | .635570  | 4.40    | .955126  | 1.02    | .680444  | 5.40    | .319556  | 24 |
| 37 | .635834  | 4.40    | .955065  | 1.00    | .680768  | 5.40    | .319232  | 23 |
| 38 | .636097  | 4.38    | .955005  | 1.00    | .681092  | 5.40    | .318908  | 22 |
| 39 | .636360  | 4.38    | .954944  | 1.02    | .681416  | 5.40    | .318584  | 21 |
| 40 | 9.636623 | 4.38    | 9.954883 | 1.00    | 9.681740 | 5.38    | 0.318260 | 20 |
| 41 | .636886  | 4.37    | .954823  | 1.02    | .682063  | 5.40    | .317937  | 19 |
| 42 | .637148  | 4.38    | .954762  | 1.02    | .682387  | 5.38    | .317613  | 18 |
| 43 | .637411  | 4.37    | .954701  | 1.02    | .682710  | 5.38    | .317290  | 17 |
| 44 | .637673  | 4.37    | .954640  | 1.02    | .683033  | 5.38    | .316967  | 16 |
| 45 | 9.637935 | 4.37    | 9.954579 | 1.02    | 9.683356 | 5.38    | 0.316644 | 15 |
| 46 | .638197  | 4.35    | .954518  | 1.02    | .683679  | 5.38    | .316321  | 14 |
| 47 | .638458  | 4.35    | .954457  | 1.02    | .684001  | 5.37    | .315999  | 13 |
| 48 | .638720  | 4.37    | .954396  | 1.02    | .684324  | 5.38    | .315676  | 12 |
| 49 | .638981  | 4.35    | .954335  | 1.02    | .684646  | 5.37    | .315354  | 11 |
| 50 | 9.639242 | 4.35    | 9.954274 | 1.02    | 9.684968 | 5.37    | 0.315032 | 10 |
| 51 | .639503  | 4.35    | .954213  | 1.02    | .685290  | 5.37    | .314710  | 9  |
| 52 | .639764  | 4.33    | .954152  | 1.03    | .685612  | 5.37    | .314388  | 8  |
| 53 | .640024  | 4.33    | .954090  | 1.02    | .685934  | 5.35    | .314066  | 7  |
| 54 | .640284  | 4.33    | .954029  | 1.02    | .686255  | 5.35    | .313745  | 6  |
| 55 | 9.640544 | 4.33    | 9.953968 | 1.03    | 9.686577 | 5.35    | 0.313423 | 5  |
| 56 | .640804  | 4.33    | .953906  | 1.02    | .686898  | 5.35    | .313102  | 4  |
| 57 | .641064  | 4.33    | .953845  | 1.03    | .687219  | 5.35    | .312781  | 3  |
| 58 | .641324  | 4.32    | .953783  | 1.02    | .687540  | 5.35    | .312460  | 2  |
| 59 | .641583  | 4.32    | .953722  | 1.02    | .687861  | 5.35    | .312139  | 1  |
| 60 | 9.641842 | 4.32    | 9.953660 | 1.03    | 9.688182 | 5.35    | 0.311818 | 0  |
|    | Cos.     | D. 1''. | Sin.     | D. 1''. | Cot.     | D. 1''. | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.641842 | 4.32   | 9.953660 | 1.02   | 9.688182 | 5.33   | 0.311818 | 60 |
| 1  | .642101  | 4.32   | .953599  | 1.03   | .688502  | 5.35   | .311498  | 59 |
| 2  | .642360  | 4.30   | .953537  | 1.03   | .688823  | 5.33   | .311177  | 58 |
| 3  | .642618  | 4.30   | .953475  | 1.03   | .689143  | 5.33   | .310857  | 57 |
| 4  | .642877  | 4.30   | .953413  | 1.02   | .689463  | 5.33   | .310537  | 56 |
| 5  | 9.643135 | 4.30   | 9.953352 | 1.03   | 9.689783 | 5.33   | 0.310217 | 55 |
| 6  | .643393  | 4.28   | .953290  | 1.03   | .690103  | 5.33   | .309897  | 54 |
| 7  | .643650  | 4.28   | .953228  | 1.03   | .690423  | 5.33   | .309577  | 53 |
| 8  | .643908  | 4.30   | .953166  | 1.03   | .690742  | 5.32   | .309258  | 52 |
| 9  | .644165  | 4.28   | .953104  | 1.03   | .691062  | 5.33   | .308938  | 51 |
| 10 |          | 4.30   |          | 1.03   |          | 5.32   |          |    |
| 11 | 9.644423 | 4.28   | 9.953042 | 1.03   | 9.691381 | 5.32   | 0.308619 | 50 |
| 12 | .644680  | 4.27   | .952980  | 1.03   | .691700  | 5.32   | .308300  | 49 |
| 13 | .644936  | 4.28   | .952918  | 1.05   | .692019  | 5.32   | .307981  | 48 |
| 14 | .645193  | 4.28   | .952855  | 1.03   | .692338  | 5.30   | .307662  | 47 |
| 15 | .645450  | 4.27   | .952793  | 1.03   | .692656  | 5.32   | .307344  | 46 |
| 16 | 9.645706 | 4.27   | 9.952731 | 1.03   | 9.692975 | 5.30   | 0.307025 | 45 |
| 17 | .645962  | 4.27   | .952669  | 1.03   | .693293  | 5.30   | .306707  | 44 |
| 18 | .646218  | 4.27   | .952606  | 1.05   | .693612  | 5.32   | .306388  | 43 |
| 19 | .646474  | 4.25   | .952544  | 1.03   | .693930  | 5.30   | .306070  | 42 |
| 20 | .646729  | 4.25   | .952481  | 1.03   | .694248  | 5.30   | .305752  | 41 |
| 21 |          | 4.27   |          | 1.05   |          | 5.28   |          |    |
| 22 | 9.646984 | 4.23   | 9.952419 | 1.03   | 9.694566 | 5.30   | 0.305434 | 40 |
| 23 | .647240  | 4.23   | .952356  | 1.03   | .694883  | 5.28   | .305117  | 39 |
| 24 | .647494  | 4.25   | .952294  | 1.05   | .695201  | 5.28   | .304799  | 38 |
| 25 | .647749  | 4.25   | .952231  | 1.05   | .695518  | 5.28   | .304482  | 37 |
| 26 | .648004  | 4.23   | .952168  | 1.05   | .695836  | 5.30   | .304164  | 36 |
| 27 | 9.648258 | 4.23   | 9.952106 | 1.03   | 9.696153 | 5.28   | 0.303847 | 35 |
| 28 | .648512  | 4.23   | .952043  | 1.05   | .696470  | 5.28   | .303530  | 34 |
| 29 | .648766  | 4.23   | .951980  | 1.05   | .696787  | 5.27   | .303213  | 33 |
| 30 | .649020  | 4.23   | .951917  | 1.05   | .697103  | 5.27   | .302897  | 32 |
| 31 | .649274  | 4.22   | .951854  | 1.05   | .697420  | 5.27   | .302580  | 31 |
| 32 |          | 4.23   |          | 1.05   |          | 5.28   |          |    |
| 33 | 9.649527 | 4.22   | 9.951791 | 1.05   | 9.697736 | 5.28   | 0.302264 | 30 |
| 34 | .649781  | 4.22   | .951728  | 1.05   | .698053  | 5.27   | .301947  | 29 |
| 35 | .650034  | 4.22   | .951665  | 1.05   | .698369  | 5.27   | .301631  | 28 |
| 36 | .650287  | 4.20   | .951602  | 1.05   | .698685  | 5.27   | .301315  | 27 |
| 37 | 9.650539 | 4.22   | 9.951539 | 1.05   | 9.699001 | 5.25   | .300999  | 26 |
| 38 | .650792  | 4.20   | .951476  | 1.07   | .699316  | 5.27   | .300684  | 25 |
| 39 | .651044  | 4.20   | .951412  | 1.07   | .699632  | 5.27   | .300368  | 24 |
| 40 | .651297  | 4.22   | .951349  | 1.05   | .699947  | 5.25   | .300053  | 23 |
| 41 | .651549  | 4.20   | .951286  | 1.05   | .700263  | 5.27   | .299737  | 22 |
| 42 | .651800  | 4.18   | .951222  | 1.07   | .700578  | 5.25   | .299422  | 21 |
| 43 |          | 4.20   |          | 1.05   |          | 5.25   |          |    |
| 44 | 9.652052 | 4.20   | 9.951159 | 1.05   | 9.700893 | 5.25   | 0.299107 | 20 |
| 45 | .652304  | 4.18   | .951096  | 1.07   | .701208  | 5.25   | .298792  | 19 |
| 46 | .652555  | 4.18   | .951032  | 1.07   | .701523  | 5.25   | .298477  | 18 |
| 47 | .652806  | 4.18   | .950968  | 1.05   | .701837  | 5.23   | .298163  | 17 |
| 48 | .653057  | 4.18   | .950905  | 1.05   | .702152  | 5.25   | .297848  | 16 |
| 49 | 9.653308 | 4.17   | 9.950841 | 1.07   | 9.702466 | 5.23   | 0.297534 | 15 |
| 50 | .653558  | 4.17   | .950778  | 1.05   | .702781  | 5.25   | .297219  | 14 |
| 51 | .653808  | 4.17   | .950714  | 1.07   | .703095  | 5.23   | .296905  | 13 |
| 52 | .654059  | 4.18   | .950650  | 1.07   | .703409  | 5.23   | .296591  | 12 |
| 53 | .654309  | 4.17   | .950586  | 1.07   | .703722  | 5.22   | .296278  | 11 |
| 54 |          | 4.15   |          | 1.07   |          | 5.23   |          |    |
| 55 | 9.654558 | 4.17   | 9.950522 | 1.07   | 9.704036 | 5.23   | 0.295964 | 10 |
| 56 | .654808  | 4.17   | .950458  | 1.07   | .704350  | 5.22   | .295650  | 9  |
| 57 | .655058  | 4.15   | .950394  | 1.07   | .704663  | 5.22   | .295337  | 8  |
| 58 | .655307  | 4.15   | .950330  | 1.07   | .704976  | 5.22   | .295024  | 7  |
| 59 | .655556  | 4.15   | .950266  | 1.07   | .705290  | 5.23   | .294710  | 6  |
| 60 | 9.655805 | 4.15   | 9.950202 | 1.07   | 9.705603 | 5.22   | 0.294397 | 5  |
| 1  | .656054  | 4.13   | .950138  | 1.07   | .705916  | 5.20   | .294084  | 4  |
| 2  | .656302  | 4.15   | .950074  | 1.07   | .706228  | 5.20   | .293772  | 3  |
| 3  | .656551  | 4.15   | .950010  | 1.07   | .706541  | 5.22   | .293459  | 2  |
| 4  | .656799  | 4.13   | .949945  | 1.08   | .706854  | 5.22   | .293146  | 1  |
| 5  | 9.657047 | 4.13   | 9.949881 | 1.07   | 9.707166 | 5.20   | 0.292834 | 0  |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.657047 | 4.13   | 9.949881 | 1.08   | 9.707166 |        | 0.292834 | 60 |
| 1  | .657295  | 4.12   | .949816  | 1.07   | .707478  | 5.20   | .292522  | 59 |
| 2  | .657542  | 4.13   | .949752  | 1.07   | .707790  | 5.20   | .292210  | 58 |
| 3  | .657790  | 4.12   | .949688  | 1.08   | .708102  | 5.20   | .291898  | 57 |
| 4  | .658037  | 1.12   | .949623  | 1.08   | .708414  | 5.20   | .291586  | 56 |
| 5  | 9.658284 | 4.12   | 9.949558 | 1.07   | 9.708726 | 5.18   | 0.291274 | 55 |
| 6  | .658531  | 4.12   | .949494  | 1.08   | .709037  | 5.20   | .290963  | 54 |
| 7  | .658778  | 4.12   | .949429  | 1.08   | .709349  | 5.20   | .290651  | 53 |
| 8  | .659025  | 4.12   | .949364  | 1.08   | .709660  | 5.18   | .290340  | 52 |
| 9  | .659271  | 4.10   | .949300  | 1.07   | .709971  | 5.18   | .290029  | 51 |
| 10 | 9.659517 | 4.10   | 9.949235 | 1.08   | 9.710282 | 5.18   | 0.289718 | 50 |
| 11 | .659763  | 4.10   | .949170  | 1.08   | .710593  | 5.18   | .289407  | 49 |
| 12 | .660009  | 4.10   | .949105  | 1.08   | .710904  | 5.18   | .289096  | 48 |
| 13 | .660255  | 4.10   | .949040  | 1.08   | .711215  | 5.18   | .288785  | 47 |
| 14 | .660501  | 4.08   | .948975  | 1.08   | .711525  | 5.17   | .288474  | 46 |
| 15 | 9.660746 | 4.08   | 9.948910 | 1.08   | 9.711836 | 5.18   | 0.288164 | 45 |
| 16 | .660991  | 4.08   | .948845  | 1.08   | .712146  | 5.17   | .287854  | 44 |
| 17 | .661236  | 4.08   | .948780  | 1.08   | .712456  | 5.17   | .287544  | 43 |
| 18 | .661481  | 4.08   | .948715  | 1.08   | .712766  | 5.17   | .287234  | 42 |
| 19 | .661726  | 4.07   | .948650  | 1.10   | .713076  | 5.17   | .286924  | 41 |
| 20 | 9.661970 | 4.07   | 9.948584 | 1.08   | 9.713386 | 5.17   | 0.286614 | 40 |
| 21 | .662214  | 4.08   | .948519  | 1.08   | .713696  | 5.15   | .286304  | 39 |
| 22 | .662459  | 4.07   | .948454  | 1.10   | .714005  | 5.15   | .285995  | 38 |
| 23 | .662703  | 4.05   | .948388  | 1.08   | .714314  | 5.15   | .285686  | 37 |
| 24 | .662946  | 4.05   | .948323  | 1.08   | .714624  | 5.17   | .285376  | 36 |
| 25 | 9.663190 | 4.07   | 9.948257 | 1.10   | 9.714933 | 5.15   | 0.285067 | 35 |
| 26 | .663433  | 4.05   | .948192  | 1.08   | .715242  | 5.15   | .284758  | 34 |
| 27 | .663677  | 4.05   | .948126  | 1.10   | .715551  | 5.15   | .284449  | 33 |
| 28 | .663920  | 4.05   | .948060  | 1.08   | .715860  | 5.15   | .284140  | 32 |
| 29 | .664163  | 4.05   | .947995  | 1.10   | .716168  | 5.13   | .283832  | 31 |
| 30 | 9.664406 | 4.03   | 9.947929 | 1.10   | 9.716477 | 5.13   | 0.283523 | 30 |
| 31 | .664648  | 4.03   | .947863  | 1.10   | .716785  | 5.13   | .283215  | 29 |
| 32 | .664891  | 4.05   | .947797  | 1.10   | .717093  | 5.13   | .282907  | 28 |
| 33 | .665133  | 4.03   | .947731  | 1.10   | .717401  | 5.13   | .282599  | 27 |
| 34 | .665375  | 4.03   | .947665  | 1.08   | .717709  | 5.13   | .282291  | 26 |
| 35 | 9.665617 | 4.03   | 9.947600 | 1.12   | 9.718017 | 5.13   | 0.281983 | 25 |
| 36 | .665859  | 4.02   | .947533  | 1.10   | .718325  | 5.13   | .281675  | 24 |
| 37 | .666100  | 4.03   | .947467  | 1.10   | .718633  | 5.13   | .281367  | 23 |
| 38 | .666342  | 4.03   | .947401  | 1.10   | .718940  | 5.12   | .281060  | 22 |
| 39 | .666583  | 4.02   | .947335  | 1.10   | .719248  | 5.13   | .280752  | 21 |
| 40 | 9.666824 | 4.02   | 9.947269 | 1.10   | 9.719555 | 5.12   | 0.280445 | 20 |
| 41 | .667065  | 4.00   | .947203  | 1.12   | .719862  | 5.12   | .280138  | 19 |
| 42 | .667305  | 4.02   | .947136  | 1.10   | .720169  | 5.12   | .279831  | 18 |
| 43 | .667546  | 4.00   | .947070  | 1.10   | .720476  | 5.12   | .279524  | 17 |
| 44 | .667786  | 4.00   | .947004  | 1.12   | .720783  | 5.12   | .279217  | 16 |
| 45 | 9.668027 | 4.02   | 9.946937 | 1.10   | 9.721089 | 5.10   | 0.278911 | 15 |
| 46 | .668267  | 4.00   | .946871  | 1.10   | .721396  | 5.12   | .278604  | 14 |
| 47 | .668506  | 3.98   | .946804  | 1.12   | .721702  | 5.10   | .278298  | 13 |
| 48 | .668746  | 4.00   | .946738  | 1.12   | .722009  | 5.12   | .277991  | 12 |
| 49 | .668986  | 3.98   | .946671  | 1.12   | .722315  | 5.10   | .277685  | 11 |
| 50 | 9.669225 | 3.98   | 9.946604 | 1.10   | 9.722621 | 5.10   | 0.277379 | 10 |
| 51 | .669464  | 3.98   | .946538  | 1.12   | .722927  | 5.08   | .277073  | 9  |
| 52 | .669703  | 3.98   | .946471  | 1.12   | .723232  | 5.10   | .276768  | 8  |
| 53 | .669942  | 3.98   | .946404  | 1.12   | .723538  | 5.10   | .276462  | 7  |
| 54 | .670181  | 3.97   | .946337  | 1.12   | .723844  | 5.08   | .276156  | 6  |
| 55 | 9.670419 | 3.98   | 9.946270 | 1.12   | 9.724149 | 5.08   | 0.275851 | 5  |
| 56 | .670658  | 3.97   | .946203  | 1.12   | .724454  | 5.10   | .275546  | 4  |
| 57 | .670896  | 3.97   | .946136  | 1.12   | .724760  | 5.08   | .275240  | 3  |
| 58 | .671134  | 3.97   | .946069  | 1.12   | .725065  | 5.08   | .274935  | 2  |
| 59 | .671372  | 3.97   | .946002  | 1.12   | .725370  | 5.08   | .274630  | 1  |
| 60 | 9.671609 | 3.95   | 9.945935 | 1.12   | 9.725674 | 5.07   | 0.274326 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     | M. |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.671609 | 3.97    | 9.945935 | 1.12    | 9.725674 | 5.08    | 0.274326 | 60 |
| 1  | .671847  | 3.95    | .945868  | 1.13    | .725979  | 5.08    | .274021  | 59 |
| 2  | .672084  | 3.95    | .945800  | 1.12    | .726284  | 5.07    | .273716  | 58 |
| 3  | .672321  | 3.95    | .945733  | 1.12    | .726588  | 5.07    | .273412  | 57 |
| 4  | .672558  | 3.95    | .945666  | 1.13    | .726892  | 5.07    | .273108  | 56 |
| 5  | 9.672795 | 3.95    | 9.945598 | 1.12    | 9.727197 | 5.08    | 0.272803 | 55 |
| 6  | .673032  | 3.95    | .945531  | 1.12    | .727501  | 5.07    | .272499  | 54 |
| 7  | .673268  | 3.93    | .945464  | 1.13    | .727805  | 5.07    | .272195  | 53 |
| 8  | .673505  | 3.95    | .945396  | 1.13    | .728109  | 5.07    | .271891  | 52 |
| 9  | .673741  | 3.93    | .945328  | 1.12    | .728412  | 5.05    | .271588  | 51 |
| 10 | 9.673977 | 3.93    | 9.945261 | 1.13    | 9.728716 | 5.07    | 0.271284 | 50 |
| 11 | .674213  | 3.92    | .945193  | 1.13    | .729020  | 5.05    | .270980  | 49 |
| 12 | .674448  | 3.92    | .945125  | 1.12    | .729323  | 5.05    | .270677  | 48 |
| 13 | .674684  | 3.93    | .945058  | 1.13    | .729626  | 5.05    | .270374  | 47 |
| 14 | .674919  | 3.92    | .944990  | 1.13    | .729929  | 5.05    | .270071  | 46 |
| 15 | 9.675155 | 3.92    | 9.944922 | 1.13    | 9.730233 | 5.03    | 0.269767 | 45 |
| 16 | .675390  | 3.90    | .944854  | 1.13    | .730535  | 5.05    | .269465  | 44 |
| 17 | .675624  | 3.92    | .944786  | 1.13    | .730838  | 5.05    | .269162  | 43 |
| 18 | .675859  | 3.92    | .944718  | 1.13    | .731141  | 5.05    | .268859  | 42 |
| 19 | .676094  | 3.90    | .944650  | 1.13    | .731444  | 5.03    | .268556  | 41 |
| 20 | 9.676328 | 3.90    | 9.944582 | 1.13    | 9.731746 | 5.03    | 0.268254 | 40 |
| 21 | .676562  | 3.90    | .944514  | 1.13    | .732048  | 5.05    | .267952  | 39 |
| 22 | .676796  | 3.90    | .944446  | 1.15    | .732351  | 5.03    | .267649  | 38 |
| 23 | .677030  | 3.90    | .944377  | 1.13    | .732653  | 5.03    | .267347  | 37 |
| 24 | .677264  | 3.90    | .944309  | 1.13    | .732955  | 5.03    | .267045  | 36 |
| 25 | 9.677498 | 3.88    | 9.944241 | 1.15    | 9.733257 | 5.02    | 0.266743 | 35 |
| 26 | .677731  | 3.88    | .944172  | 1.13    | .733558  | 5.03    | .266442  | 34 |
| 27 | .677964  | 3.88    | .944104  | 1.13    | .733860  | 5.03    | .266140  | 33 |
| 28 | .678197  | 3.88    | .944036  | 1.15    | .734162  | 5.02    | .265838  | 32 |
| 29 | .678430  | 3.88    | .943967  | 1.13    | .734463  | 5.02    | .265537  | 31 |
| 30 | 9.678663 | 3.87    | 9.943899 | 1.15    | 9.734764 | 5.03    | 0.265236 | 30 |
| 31 | .678895  | 3.88    | .943830  | 1.15    | .735066  | 5.02    | .264934  | 29 |
| 32 | .679128  | 3.87    | .943761  | 1.13    | .735367  | 5.02    | .264633  | 28 |
| 33 | .679360  | 3.87    | .943693  | 1.15    | .735668  | 5.02    | .264332  | 27 |
| 34 | .679592  | 3.87    | .943624  | 1.15    | .735969  | 5.02    | .264031  | 26 |
| 35 | 9.679824 | 3.87    | 9.943555 | 1.15    | 9.736269 | 5.02    | 0.263731 | 25 |
| 36 | .680056  | 3.87    | .943486  | 1.15    | .736570  | 5.00    | .263430  | 24 |
| 37 | .680288  | 3.85    | .943417  | 1.15    | .736870  | 5.02    | .263130  | 23 |
| 38 | .680519  | 3.85    | .943348  | 1.15    | .737171  | 5.02    | .262829  | 22 |
| 39 | .680750  | 3.85    | .943279  | 1.15    | .737471  | 5.00    | .262529  | 21 |
| 40 | 9.680982 | 3.85    | 9.943210 | 1.15    | 9.737771 | 5.00    | 0.262229 | 20 |
| 41 | .681213  | 3.83    | .943141  | 1.15    | .738071  | 5.00    | .261929  | 19 |
| 42 | .681443  | 3.83    | .943072  | 1.15    | .738371  | 5.00    | .261629  | 18 |
| 43 | .681674  | 3.85    | .943003  | 1.15    | .738671  | 5.00    | .261329  | 17 |
| 44 | .681905  | 3.83    | .942934  | 1.17    | .738971  | 5.00    | .261029  | 16 |
| 45 | 9.682135 | 3.83    | 9.942864 | 1.15    | 9.739271 | 4.98    | 0.260729 | 15 |
| 46 | .682365  | 3.83    | .942795  | 1.15    | .739570  | 5.00    | .260430  | 14 |
| 47 | .682595  | 3.83    | .942726  | 1.17    | .739870  | 5.00    | .260130  | 13 |
| 48 | .682825  | 3.83    | .942656  | 1.15    | .740169  | 4.98    | .259831  | 12 |
| 49 | .683055  | 3.82    | .942587  | 1.17    | .740468  | 4.98    | .259532  | 11 |
| 50 | 9.683284 | 3.83    | 9.942517 | 1.15    | 9.740767 | 4.98    | 0.259233 | 10 |
| 51 | .683514  | 3.82    | .942448  | 1.17    | .741066  | 4.98    | .258934  | 9  |
| 52 | .683743  | 3.82    | .942378  | 1.17    | .741365  | 4.98    | .258635  | 8  |
| 53 | .683972  | 3.82    | .942308  | 1.15    | .741664  | 4.97    | .258336  | 7  |
| 54 | .684201  | 3.82    | .942239  | 1.17    | .741962  | 4.98    | .258038  | 6  |
| 55 | 9.684430 | 3.82    | 9.942169 | 1.17    | 9.742261 | 4.97    | 0.257739 | 5  |
| 56 | .684658  | 3.80    | .942099  | 1.17    | .742559  | 4.98    | .257441  | 4  |
| 57 | .684887  | 3.82    | .942029  | 1.17    | .742858  | 4.97    | .257142  | 3  |
| 58 | .685115  | 3.80    | .941959  | 1.17    | .743156  | 4.97    | .256844  | 2  |
| 59 | .685343  | 3.80    | .941889  | 1.17    | .743454  | 4.97    | .256546  | 1  |
| 60 | 9.685571 | 3.80    | 9.941819 | 1.17    | 9.743752 | 4.97    | 0.256248 | 0  |



| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.685571 | 3.80   | 9.941819 | 1.17   | 9.743752 | 4.97   | 0.256248 | 60 |
| 1  | .685799  | 3.80   | .941749  | 1.17   | .744050  | 4.97   | .255950  | 59 |
| 2  | .686027  | 3.78   | .941679  | 1.17   | .744348  | 4.97   | .255652  | 58 |
| 3  | .686254  | 3.80   | .941609  | 1.17   | .744645  | 4.95   | .255355  | 57 |
| 4  | .686482  | 3.78   | .941539  | 1.17   | .744943  | 4.95   | .255057  | 56 |
| 5  | 9.686709 | 3.78   | 9.941469 | 1.18   | 9.745240 | 4.97   | 0.254760 | 55 |
| 6  | .686936  | 3.78   | .941398  | 1.18   | .745538  | 4.97   | .254462  | 54 |
| 7  | .687163  | 3.78   | .941328  | 1.17   | .745835  | 4.95   | .254165  | 53 |
| 8  | .687389  | 3.77   | .941258  | 1.17   | .746132  | 4.95   | .253868  | 52 |
| 9  | .687616  | 3.78   | .941187  | 1.18   | .746429  | 4.95   | .253571  | 51 |
| 10 | 9.687843 | 3.77   | 9.941117 | 1.18   | 9.746726 | 4.95   | 0.253274 | 50 |
| 11 | .688069  | 3.77   | .941046  | 1.18   | .747023  | 4.93   | .252977  | 49 |
| 12 | .688295  | 3.77   | .940975  | 1.17   | .747319  | 4.95   | .252681  | 48 |
| 13 | .688521  | 3.77   | .940905  | 1.18   | .747616  | 4.95   | .252384  | 47 |
| 14 | .688747  | 3.77   | .940834  | 1.18   | .747913  | 4.95   | .252087  | 46 |
| 15 | 9.688972 | 3.75   | 9.940763 | 1.18   | 9.748209 | 4.93   | 0.251791 | 45 |
| 16 | .689198  | 3.77   | .940693  | 1.17   | .748505  | 4.93   | .251495  | 44 |
| 17 | .689423  | 3.75   | .940622  | 1.18   | .748801  | 4.93   | .251199  | 43 |
| 18 | .689648  | 3.75   | .940551  | 1.18   | .749097  | 4.93   | .250903  | 42 |
| 19 | .689873  | 3.75   | .940480  | 1.18   | .749393  | 4.93   | .250607  | 41 |
| 20 | 9.690098 | 3.75   | 9.940409 | 1.18   | 9.749689 | 4.93   | 0.250311 | 40 |
| 21 | .690323  | 3.75   | .940338  | 1.18   | .749985  | 4.93   | .250015  | 39 |
| 22 | .690548  | 3.73   | .940267  | 1.18   | .750281  | 4.92   | .249719  | 38 |
| 23 | .690772  | 3.73   | .940196  | 1.18   | .750576  | 4.92   | .249424  | 37 |
| 24 | .690996  | 3.73   | .940125  | 1.18   | .750872  | 4.93   | .249128  | 36 |
| 25 | 9.691220 | 3.73   | 9.940054 | 1.20   | 9.751167 | 4.92   | 0.248833 | 35 |
| 26 | .691444  | 3.73   | .939982  | 1.18   | .751462  | 4.92   | .248538  | 34 |
| 27 | .691668  | 3.73   | .939911  | 1.18   | .751757  | 4.92   | .248243  | 33 |
| 28 | .691892  | 3.72   | .939840  | 1.20   | .752052  | 4.92   | .247948  | 32 |
| 29 | .692115  | 3.73   | .939768  | 1.18   | .752347  | 4.92   | .247653  | 31 |
| 30 | 9.692339 | 3.72   | 9.939697 | 1.20   | 9.752642 | 4.92   | 0.247358 | 30 |
| 31 | .692562  | 3.72   | .939625  | 1.18   | .752937  | 4.90   | .247063  | 29 |
| 32 | .692785  | 3.72   | .939554  | 1.20   | .753231  | 4.92   | .246769  | 28 |
| 33 | .693008  | 3.72   | .939482  | 1.20   | .753526  | 4.90   | .246474  | 27 |
| 34 | .693231  | 3.72   | .939410  | 1.18   | .753820  | 4.90   | .246180  | 26 |
| 35 | 9.693453 | 3.70   | 9.939339 | 1.20   | 9.754115 | 4.92   | 0.245885 | 25 |
| 36 | .693676  | 3.72   | .939267  | 1.20   | .754409  | 4.90   | .245591  | 24 |
| 37 | .693898  | 3.70   | .939195  | 1.20   | .754703  | 4.90   | .245297  | 23 |
| 38 | .694120  | 3.70   | .939123  | 1.18   | .754997  | 4.90   | .245003  | 22 |
| 39 | .694342  | 3.70   | .939052  | 1.20   | .755291  | 4.90   | .244709  | 21 |
| 40 | 9.694564 | 3.70   | 9.938980 | 1.20   | 9.755585 | 4.88   | 0.244415 | 20 |
| 41 | .694786  | 3.68   | .938908  | 1.20   | .755878  | 4.90   | .244122  | 19 |
| 42 | .695007  | 3.70   | .938836  | 1.22   | .756172  | 4.88   | .243828  | 18 |
| 43 | .695229  | 3.68   | .938763  | 1.20   | .756465  | 4.90   | .243535  | 17 |
| 44 | .695450  | 3.68   | .938691  | 1.20   | .756759  | 4.88   | .243241  | 16 |
| 45 | 9.695671 | 3.68   | 9.938619 | 1.20   | 9.757052 | 4.88   | 0.242948 | 15 |
| 46 | .695892  | 3.68   | .938547  | 1.20   | .757345  | 4.88   | .242655  | 14 |
| 47 | .696113  | 3.68   | .938475  | 1.22   | .757638  | 4.88   | .242362  | 13 |
| 48 | .696334  | 3.67   | .938402  | 1.20   | .757931  | 4.88   | .242069  | 12 |
| 49 | .696554  | 3.68   | .938330  | 1.20   | .758224  | 4.88   | .241776  | 11 |
| 50 | 9.696775 | 3.67   | 9.938258 | 1.22   | 9.758517 | 4.88   | 0.241483 | 10 |
| 51 | .696995  | 3.67   | .938185  | 1.20   | .758810  | 4.87   | .241190  | 9  |
| 52 | .697215  | 3.67   | .938113  | 1.22   | .759102  | 4.88   | .240898  | 8  |
| 53 | .697435  | 3.65   | .938040  | 1.22   | .759395  | 4.87   | .240605  | 7  |
| 54 | .697654  | 3.67   | .937967  | 1.20   | .759687  | 4.87   | .240313  | 6  |
| 55 | 9.697874 | 3.67   | 9.937895 | 1.22   | 9.759979 | 4.88   | 0.240021 | 5  |
| 56 | .698094  | 3.65   | .937822  | 1.22   | .760272  | 4.87   | .239728  | 4  |
| 57 | .698313  | 3.65   | .937749  | 1.22   | .760564  | 4.87   | .239436  | 3  |
| 58 | .698532  | 3.65   | .937676  | 1.20   | .760856  | 4.87   | .239144  | 2  |
| 59 | .698751  | 3.65   | .937604  | 1.22   | .761148  | 4.87   | .238852  | 1  |
| 60 | 9.698970 | 3.65   | 9.937531 | 1.22   | 9.761439 | 4.85   | 0.238561 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.698970 | 3.65   | 9.937531 | 1.22   | 9.761439 | 4.87   | 0.238561 | 60 |
| 1  | .699189  | 3.63   | .937458  | 1.22   | .761731  | 4.87   | .238269  | 59 |
| 2  | .699407  | 3.65   | .937385  | 1.22   | .762023  | 4.85   | .237977  | 58 |
| 3  | .699626  | 3.63   | .937312  | 1.22   | .762314  | 4.87   | .237686  | 57 |
| 4  | .699844  | 3.63   | .937238  | 1.23   | .762606  | 4.87   | .237394  | 56 |
| 5  | 9.700062 | 3.63   | 9.937165 | 1.22   | 9.762897 | 4.85   | 0.237103 | 55 |
| 6  | .700280  | 3.63   | .937092  | 1.22   | .763188  | 4.85   | .236812  | 54 |
| 7  | .700498  | 3.63   | .937019  | 1.22   | .763479  | 4.85   | .236521  | 53 |
| 8  | .700716  | 3.62   | .936946  | 1.23   | .763770  | 4.85   | .236230  | 52 |
| 9  | .700933  | 3.63   | .936872  | 1.22   | .764061  | 4.85   | .235939  | 51 |
| 10 | 9.701151 | 3.62   | 9.936799 | 1.23   | 9.764352 | 4.85   | 0.235648 | 50 |
| 11 | .701368  | 3.62   | .936725  | 1.22   | .764643  | 4.83   | .235357  | 49 |
| 12 | .701585  | 3.62   | .936652  | 1.23   | .764933  | 4.85   | .235067  | 48 |
| 13 | .701802  | 3.62   | .936578  | 1.22   | .765224  | 4.85   | .234776  | 47 |
| 14 | .702019  | 3.62   | .936505  | 1.23   | .765514  | 4.83   | .234486  | 46 |
| 15 | 9.702236 | 3.60   | 9.936431 | 1.23   | 9.765805 | 4.83   | 0.234195 | 45 |
| 16 | .702452  | 3.62   | .936357  | 1.22   | .766095  | 4.83   | .233905  | 44 |
| 17 | .702669  | 3.60   | .936284  | 1.23   | .766385  | 4.83   | .233615  | 43 |
| 18 | .702885  | 3.60   | .936210  | 1.23   | .766675  | 4.83   | .233325  | 42 |
| 19 | .703101  | 3.60   | .936136  | 1.23   | .766965  | 4.83   | .233035  | 41 |
| 20 | 9.703317 | 3.60   | 9.936062 | 1.23   | 9.767255 | 4.83   | 0.232745 | 40 |
| 21 | .703533  | 3.60   | .935988  | 1.23   | .767545  | 4.82   | .232455  | 39 |
| 22 | .703749  | 3.58   | .935914  | 1.23   | .767834  | 4.82   | .232166  | 38 |
| 23 | .703964  | 3.58   | .935840  | 1.23   | .768124  | 4.83   | .231876  | 37 |
| 24 | .704179  | 3.60   | .935766  | 1.23   | .768414  | 4.82   | .231586  | 36 |
| 25 | 9.704395 | 3.58   | 9.935692 | 1.23   | 9.768703 | 4.82   | 0.231297 | 35 |
| 26 | .704610  | 3.58   | .935618  | 1.23   | .768992  | 4.82   | .231008  | 34 |
| 27 | .704825  | 3.58   | .935543  | 1.25   | .769281  | 4.82   | .230719  | 33 |
| 28 | .705040  | 3.58   | .935469  | 1.23   | .769571  | 4.83   | .230429  | 32 |
| 29 | .705254  | 3.58   | .935395  | 1.25   | .769860  | 4.80   | .230140  | 31 |
| 30 | 9.705469 | 3.57   | 9.935320 | 1.23   | 9.770148 | 4.82   | 0.229852 | 30 |
| 31 | .705683  | 3.58   | .935246  | 1.25   | .770437  | 4.82   | .229563  | 29 |
| 32 | .705898  | 3.57   | .935171  | 1.23   | .770726  | 4.82   | .229274  | 28 |
| 33 | .706112  | 3.57   | .935097  | 1.25   | .771015  | 4.80   | .228985  | 27 |
| 34 | .706326  | 3.57   | .935022  | 1.23   | .771303  | 4.80   | .228697  | 26 |
| 35 | 9.706539 | 3.55   | 9.934948 | 1.25   | 9.771592 | 4.82   | 0.228408 | 25 |
| 36 | .706753  | 3.57   | .934873  | 1.25   | .771880  | 4.80   | .228120  | 24 |
| 37 | .706967  | 3.57   | .934798  | 1.25   | .772168  | 4.82   | .227832  | 23 |
| 38 | .707180  | 3.55   | .934723  | 1.23   | .772457  | 4.80   | .227543  | 22 |
| 39 | .707393  | 3.55   | .934649  | 1.25   | .772745  | 4.80   | .227255  | 21 |
| 40 | 9.707606 | 3.55   | 9.934574 | 1.25   | 9.773033 | 4.80   | 0.226967 | 20 |
| 41 | .707819  | 3.55   | .934499  | 1.25   | .773321  | 4.78   | .226679  | 19 |
| 42 | .708032  | 3.55   | .934424  | 1.25   | .773608  | 4.80   | .226392  | 18 |
| 43 | .708245  | 3.55   | .934349  | 1.25   | .773896  | 4.80   | .226104  | 17 |
| 44 | .708458  | 3.53   | .934274  | 1.25   | .774184  | 4.78   | .225816  | 16 |
| 45 | 9.708670 | 3.53   | 9.934199 | 1.27   | 9.774471 | 4.80   | 0.225529 | 15 |
| 46 | .708882  | 3.53   | .934123  | 1.25   | .774759  | 4.78   | .225241  | 14 |
| 47 | .709094  | 3.53   | .934048  | 1.25   | .775046  | 4.78   | .224954  | 13 |
| 48 | .709306  | 3.53   | .933973  | 1.25   | .775333  | 4.80   | .224667  | 12 |
| 49 | .709518  | 3.53   | .933898  | 1.27   | .775621  | 4.78   | .224379  | 11 |
| 50 | 9.709730 | 3.52   | 9.933822 | 1.25   | 9.775908 | 4.78   | 0.224092 | 10 |
| 51 | .709941  | 3.53   | .933747  | 1.27   | .776195  | 4.78   | .223805  | 9  |
| 52 | .710153  | 3.52   | .933671  | 1.25   | .776482  | 4.77   | .223518  | 8  |
| 53 | .710364  | 3.52   | .933596  | 1.27   | .776768  | 4.78   | .223232  | 7  |
| 54 | .710575  | 3.52   | .933520  | 1.25   | .777055  | 4.78   | .222945  | 6  |
| 55 | 9.710786 | 3.52   | 9.933445 | 1.27   | 9.777342 | 4.77   | 0.222658 | 5  |
| 56 | .710997  | 3.52   | .933369  | 1.27   | .777628  | 4.77   | .222372  | 4  |
| 57 | .711208  | 3.52   | .933293  | 1.27   | .777915  | 4.78   | .222085  | 3  |
| 58 | .711419  | 3.50   | .933217  | 1.27   | .778201  | 4.78   | .221799  | 2  |
| 59 | .711629  | 3.50   | .933141  | 1.25   | .778488  | 4.77   | .221512  | 1  |
| 60 | 9.711839 | 3.50   | 9.933066 |        | 9.778774 |        | 0.221226 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.711839 | 3.52   | 9.933066 | 1.27   | 9.778774 | 4.77   | 0.221226 | 60 |
| 1  | .712050  | 3.50   | .932990  | 1.27   | .779060  | 4.77   | .220940  | 59 |
| 2  | .712260  | 3.48   | .932914  | 1.27   | .779346  | 4.77   | .220654  | 58 |
| 3  | .712469  | 3.50   | .932838  | 1.27   | .779632  | 4.77   | .220368  | 57 |
| 4  | .712679  | 3.50   | .932762  | 1.28   | .779918  | 4.77   | .220082  | 56 |
| 5  | 9.712889 | 3.48   | 9.932685 | 1.27   | 9.780203 | 4.75   | 0.219797 | 55 |
| 6  | .713098  | 3.48   | .932609  | 1.27   | .780489  | 4.77   | .219511  | 54 |
| 7  | .713308  | 3.50   | .932533  | 1.27   | .780775  | 4.77   | .219225  | 53 |
| 8  | .713517  | 3.48   | .932457  | 1.27   | .781060  | 4.75   | .218940  | 52 |
| 9  | .713726  | 3.48   | .932380  | 1.28   | .781346  | 4.77   | .218654  | 51 |
| 10 | 9.713935 | 3.48   | 9.932304 | 1.27   | 9.781631 | 4.75   | 0.218369 | 50 |
| 11 | .714144  | 3.47   | .932228  | 1.28   | .781916  | 4.75   | .218084  | 49 |
| 12 | .714352  | 3.48   | .932151  | 1.27   | .782201  | 4.75   | .217799  | 48 |
| 13 | .714561  | 3.48   | .932075  | 1.28   | .782486  | 4.75   | .217514  | 47 |
| 14 | .714769  | 3.47   | .931998  | 1.28   | .782771  | 4.75   | .217229  | 46 |
| 15 | 9.714978 | 3.48   | 9.931921 | 1.28   | 9.783056 | 4.75   | 0.216944 | 45 |
| 16 | .715186  | 3.47   | .931845  | 1.28   | .783341  | 4.75   | .216659  | 44 |
| 17 | .715394  | 3.47   | .931768  | 1.28   | .783626  | 4.75   | .216374  | 43 |
| 18 | .715602  | 3.47   | .931691  | 1.28   | .783911  | 4.73   | .216090  | 42 |
| 19 | .715809  | 3.45   | .931614  | 1.28   | .784195  | 4.75   | .215805  | 41 |
| 20 | 9.716017 | 3.47   | 9.931537 | 1.28   | 9.784479 | 4.73   | 0.215521 | 40 |
| 21 | .716224  | 3.45   | .931460  | 1.28   | .784764  | 4.75   | .215236  | 39 |
| 22 | .716432  | 3.45   | .931383  | 1.28   | .785048  | 4.73   | .214952  | 38 |
| 23 | .716639  | 3.45   | .931306  | 1.28   | .785332  | 4.73   | .214668  | 37 |
| 24 | .716846  | 3.45   | .931229  | 1.28   | .785616  | 4.73   | .214384  | 36 |
| 25 | 9.717053 | 3.43   | 9.931152 | 1.28   | 9.785900 | 4.73   | 0.214100 | 35 |
| 26 | .717259  | 3.43   | .931075  | 1.28   | .786184  | 4.73   | .213816  | 34 |
| 27 | .717466  | 3.45   | .930998  | 1.28   | .786468  | 4.73   | .213532  | 33 |
| 28 | .717673  | 3.45   | .930921  | 1.28   | .786752  | 4.73   | .213248  | 32 |
| 29 | .717879  | 3.43   | .930843  | 1.28   | .787036  | 4.73   | .212964  | 31 |
| 30 | 9.718085 | 3.43   | 9.930766 | 1.30   | 9.787319 | 4.73   | 0.212681 | 30 |
| 31 | .718291  | 3.43   | .930688  | 1.28   | .787603  | 4.72   | .212397  | 29 |
| 32 | .718497  | 3.43   | .930611  | 1.30   | .787886  | 4.73   | .212114  | 28 |
| 33 | .718703  | 3.43   | .930533  | 1.28   | .788170  | 4.72   | .211830  | 27 |
| 34 | .718909  | 3.43   | .930456  | 1.30   | .788453  | 4.72   | .211547  | 26 |
| 35 | 9.719114 | 3.42   | 9.930378 | 1.30   | 9.788736 | 4.72   | 0.211264 | 25 |
| 36 | .719320  | 3.42   | .930300  | 1.30   | .789019  | 4.72   | .210981  | 24 |
| 37 | .719525  | 3.42   | .930223  | 1.28   | .789302  | 4.72   | .210698  | 23 |
| 38 | .719730  | 3.42   | .930145  | 1.30   | .789585  | 4.72   | .210415  | 22 |
| 39 | .719935  | 3.42   | .930067  | 1.30   | .789868  | 4.72   | .210132  | 21 |
| 40 | 9.720140 | 3.42   | 9.929989 | 1.30   | 9.790151 | 4.72   | 0.209849 | 20 |
| 41 | .720345  | 3.40   | .929911  | 1.30   | .790434  | 4.70   | .209566  | 19 |
| 42 | .720549  | 3.42   | .929833  | 1.30   | .790716  | 4.72   | .209284  | 18 |
| 43 | .720754  | 3.42   | .929755  | 1.30   | .790999  | 4.72   | .209001  | 17 |
| 44 | .720958  | 3.40   | .929677  | 1.30   | .791281  | 4.70   | .208719  | 16 |
| 45 | 9.721162 | 3.40   | 9.929599 | 1.30   | 9.791563 | 4.72   | 0.208437 | 15 |
| 46 | .721366  | 3.40   | .929521  | 1.32   | .791846  | 4.70   | .208154  | 14 |
| 47 | .721570  | 3.40   | .929444  | 1.30   | .792128  | 4.70   | .207872  | 13 |
| 48 | .721774  | 3.40   | .929366  | 1.30   | .792410  | 4.70   | .207590  | 12 |
| 49 | .721978  | 3.38   | .929286  | 1.32   | .792692  | 4.70   | .207308  | 11 |
| 50 | 9.722181 | 3.40   | 9.929207 | 1.30   | 9.792974 | 4.70   | 0.207026 | 10 |
| 51 | .722385  | 3.38   | .929129  | 1.32   | .793256  | 4.70   | .206744  | 9  |
| 52 | .722588  | 3.38   | .929050  | 1.30   | .793538  | 4.68   | .206462  | 8  |
| 53 | .722791  | 3.38   | .928972  | 1.32   | .793819  | 4.70   | .206181  | 7  |
| 54 | .722994  | 3.38   | .928893  | 1.30   | .794101  | 4.70   | .205899  | 6  |
| 55 | 9.723197 | 3.38   | 9.928815 | 1.32   | 9.794383 | 4.68   | 0.205617 | 5  |
| 56 | .723400  | 3.38   | .928736  | 1.32   | .794664  | 4.70   | .205336  | 4  |
| 57 | .723603  | 3.38   | .928657  | 1.32   | .794946  | 4.70   | .205054  | 3  |
| 58 | .723805  | 3.37   | .928578  | 1.32   | .795227  | 4.68   | .204773  | 2  |
| 59 | .724007  | 3.37   | .928499  | 1.32   | .795508  | 4.68   | .204492  | 1  |
| 60 | 9.724210 | 3.38   | 9.928420 | 1.32   | 9.795789 | 4.68   | 0.204211 | 0  |

| M. | Sin.     | D. 1". | Cos.     | D. 1"  | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.724210 | 3.37   | 9.928420 | 1.30   | 9.795789 | 4.68   | 0.204211 | 60 |
| 1  | .724412  | 3.37   | .928342  | 1.32   | .796070  | 4.68   | .203930  | 59 |
| 2  | .724614  | 3.37   | .928263  | 1.33   | .796351  | 4.68   | .203649  | 58 |
| 3  | .724816  | 3.37   | .928183  | 1.33   | .796632  | 4.68   | .203368  | 57 |
| 4  | .725017  | 3.35   | .928104  | 1.32   | .796913  | 4.68   | .203087  | 56 |
| 5  | 9.725219 | 3.35   | 9.928025 | 1.32   | 9.797194 | 4.67   | 0.202806 | 55 |
| 6  | .725420  | 3.37   | .927946  | 1.32   | .797474  | 4.68   | .202526  | 54 |
| 7  | .725622  | 3.37   | .927867  | 1.32   | .797755  | 4.68   | .202245  | 53 |
| 8  | .725823  | 3.35   | .927787  | 1.33   | .798036  | 4.68   | .201964  | 52 |
| 9  | .726024  | 3.35   | .927708  | 1.32   | .798316  | 4.67   | .201684  | 51 |
| 10 | 9.726225 | 3.35   | 9.927629 | 1.33   | 9.798596 | 4.68   | 0.201404 | 50 |
| 11 | .726426  | 3.33   | .927549  | 1.32   | .798877  | 4.67   | .201123  | 49 |
| 12 | .726626  | 3.33   | .927470  | 1.33   | .799157  | 4.67   | .200843  | 48 |
| 13 | .726827  | 3.33   | .927390  | 1.33   | .799437  | 4.67   | .200563  | 47 |
| 14 | .727027  | 3.33   | .927310  | 1.32   | .799717  | 4.67   | .200283  | 46 |
| 15 | 9.727228 | 3.35   | 9.927231 | 1.33   | 9.799997 | 4.67   | 0.200003 | 45 |
| 16 | .727428  | 3.33   | .927151  | 1.33   | .800277  | 4.67   | .199723  | 44 |
| 17 | .727628  | 3.33   | .927071  | 1.33   | .800557  | 4.67   | .199443  | 43 |
| 18 | .727828  | 3.33   | .926991  | 1.33   | .800836  | 4.65   | .199164  | 42 |
| 19 | .728027  | 3.32   | .926911  | 1.33   | .801116  | 4.67   | .198884  | 41 |
| 20 | 9.728227 | 3.33   | 9.926831 | 1.33   | 9.801396 | 4.65   | 0.198604 | 40 |
| 21 | .728427  | 3.32   | .926751  | 1.33   | .801676  | 4.67   | .198325  | 39 |
| 22 | .728626  | 3.32   | .926671  | 1.33   | .801955  | 4.65   | .198045  | 38 |
| 23 | .728825  | 3.32   | .926591  | 1.33   | .802234  | 4.65   | .197766  | 37 |
| 24 | .729024  | 3.32   | .926511  | 1.33   | .802513  | 4.65   | .197487  | 36 |
| 25 | 9.729223 | 3.32   | 9.926431 | 1.33   | 9.802792 | 4.65   | 0.197208 | 35 |
| 26 | .729422  | 3.32   | .926351  | 1.35   | .803072  | 4.67   | .196928  | 34 |
| 27 | .729621  | 3.32   | .926270  | 1.33   | .803351  | 4.65   | .196649  | 33 |
| 28 | .729820  | 3.30   | .926190  | 1.33   | .803630  | 4.65   | .196370  | 32 |
| 29 | .730018  | 3.32   | .926110  | 1.35   | .803909  | 4.63   | .196091  | 31 |
| 30 | 9.730217 | 3.30   | 9.926029 | 1.33   | 9.804187 | 4.65   | 0.195813 | 30 |
| 31 | .730415  | 3.30   | .925949  | 1.35   | .804466  | 4.65   | .195534  | 29 |
| 32 | .730613  | 3.30   | .925868  | 1.33   | .804745  | 4.63   | .195255  | 28 |
| 33 | .730811  | 3.30   | .925788  | 1.33   | .805023  | 4.63   | .194977  | 27 |
| 34 | .731009  | 3.28   | .925707  | 1.35   | .805302  | 4.65   | .194698  | 26 |
| 35 | 9.731206 | 3.30   | 9.925626 | 1.35   | 9.805580 | 4.65   | 0.194420 | 25 |
| 36 | .731404  | 3.30   | .925545  | 1.33   | .805859  | 4.63   | .194141  | 24 |
| 37 | .731602  | 3.30   | .925465  | 1.33   | .806137  | 4.63   | .193863  | 23 |
| 38 | .731799  | 3.28   | .925384  | 1.35   | .806415  | 4.63   | .193585  | 22 |
| 39 | .731996  | 3.28   | .925303  | 1.35   | .806693  | 4.63   | .193307  | 21 |
| 40 | 9.732193 | 3.28   | 9.925222 | 1.35   | 9.806971 | 4.63   | 0.193029 | 20 |
| 41 | .732390  | 3.28   | .925141  | 1.35   | .807249  | 4.63   | .192751  | 19 |
| 42 | .732587  | 3.28   | .925060  | 1.35   | .807527  | 4.63   | .192473  | 18 |
| 43 | .732784  | 3.27   | .924979  | 1.37   | .807805  | 4.63   | .192195  | 17 |
| 44 | .732980  | 3.27   | .924897  | 1.35   | .808083  | 4.63   | .191917  | 16 |
| 45 | 9.733177 | 3.28   | 9.924816 | 1.35   | 9.808361 | 4.63   | 0.191639 | 15 |
| 46 | .733373  | 3.27   | .924735  | 1.35   | .808638  | 4.62   | .191362  | 14 |
| 47 | .733569  | 3.27   | .924654  | 1.35   | .808916  | 4.63   | .191084  | 13 |
| 48 | .733765  | 3.27   | .924572  | 1.37   | .809193  | 4.62   | .190807  | 12 |
| 49 | .733961  | 3.27   | .924491  | 1.35   | .809471  | 4.63   | .190529  | 11 |
| 50 | 9.734157 | 3.27   | 9.924409 | 1.37   | 9.809748 | 4.62   | 0.190252 | 10 |
| 51 | .734353  | 3.27   | .924328  | 1.37   | .810025  | 4.62   | .189975  | 9  |
| 52 | .734549  | 3.25   | .924246  | 1.37   | .810302  | 4.62   | .189698  | 8  |
| 53 | .734744  | 3.25   | .924164  | 1.37   | .810580  | 4.63   | .189420  | 7  |
| 54 | .734939  | 3.25   | .924083  | 1.35   | .810857  | 4.62   | .189143  | 6  |
| 55 | 9.735135 | 3.27   | 9.924001 | 1.37   | 9.811134 | 4.62   | 0.188866 | 5  |
| 56 | .735330  | 3.25   | .923919  | 1.37   | .811410  | 4.62   | .188590  | 4  |
| 57 | .735525  | 3.25   | .923837  | 1.37   | .811687  | 4.62   | .188313  | 3  |
| 58 | .735719  | 3.23   | .923755  | 1.37   | .811964  | 4.62   | .188036  | 2  |
| 59 | .735914  | 3.25   | .923673  | 1.37   | .812241  | 4.62   | .187759  | 1  |
| 60 | 9.736109 | 3.25   | 9.923591 | 1.37   | 9.812517 | 4.60   | 0.187483 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.736109 | 3.23   | 9.923591 | 1.37   | 9.812517 | 4.62   | 0.187483 | 60 |
| 1  | .736303  | 3.25   | .923509  | 1.37   | .812794  | 4.60   | .187206  | 59 |
| 2  | .736498  | 3.23   | .923427  | 1.37   | .813070  | 4.60   | .186930  | 58 |
| 3  | .736692  | 3.23   | .923345  | 1.37   | .813347  | 4.62   | .186653  | 57 |
| 4  | .736886  | 3.23   | .923263  | 1.37   | .813623  | 4.60   | .186377  | 56 |
| 5  | 9.737080 | 3.23   | 9.923181 | 1.38   | 9.813899 | 4.62   | 0.186101 | 55 |
| 6  | .737274  | 3.22   | .923098  | 1.37   | .814176  | 4.60   | .185824  | 54 |
| 7  | .737467  | 3.22   | .923016  | 1.37   | .814452  | 4.60   | .185548  | 53 |
| 8  | .737661  | 3.23   | .922933  | 1.38   | .814728  | 4.60   | .185272  | 52 |
| 9  | .737855  | 3.22   | .922851  | 1.38   | .815004  | 4.60   | .184996  | 51 |
| 10 | 9.738048 | 3.22   | 9.922768 | 1.37   | 9.815280 | 4.58   | 0.184720 | 50 |
| 11 | .738241  | 3.22   | .922686  | 1.38   | .815555  | 4.60   | .184445  | 49 |
| 12 | .738434  | 3.22   | .922603  | 1.38   | .815831  | 4.60   | .184169  | 48 |
| 13 | .738627  | 3.22   | .922520  | 1.37   | .816107  | 4.58   | .183893  | 47 |
| 14 | .738820  | 3.22   | .922438  | 1.38   | .816382  | 4.60   | .183618  | 46 |
| 15 | 9.739013 | 3.22   | 9.922355 | 1.38   | 9.816658 | 4.60   | 0.183342 | 45 |
| 16 | .739206  | 3.22   | .922272  | 1.38   | .816933  | 4.58   | .183067  | 44 |
| 17 | .739398  | 3.20   | .922189  | 1.38   | .817209  | 4.60   | .182791  | 43 |
| 18 | .739590  | 3.20   | .922106  | 1.38   | .817484  | 4.58   | .182516  | 42 |
| 19 | .739783  | 3.20   | .922023  | 1.38   | .817759  | 4.60   | .182241  | 41 |
| 20 | 9.739975 | 3.20   | 9.921940 | 1.38   | 9.818035 | 4.58   | 0.181965 | 40 |
| 21 | .740167  | 3.20   | .921857  | 1.38   | .818310  | 4.58   | .181690  | 39 |
| 22 | .740359  | 3.18   | .921774  | 1.38   | .818585  | 4.58   | .181415  | 38 |
| 23 | .740550  | 3.20   | .921691  | 1.40   | .818860  | 4.58   | .181140  | 37 |
| 24 | .740742  | 3.20   | .921607  | 1.38   | .819135  | 4.58   | .180865  | 36 |
| 25 | 9.740934 | 3.20   | 9.921524 | 1.38   | 9.819410 | 4.58   | 0.180590 | 35 |
| 26 | .741125  | 3.18   | .921441  | 1.40   | .819684  | 4.57   | .180316  | 34 |
| 27 | .741316  | 3.20   | .921357  | 1.38   | .819959  | 4.58   | .180041  | 33 |
| 28 | .741508  | 3.18   | .921274  | 1.40   | .820234  | 4.57   | .179766  | 32 |
| 29 | .741699  | 3.17   | .921190  | 1.38   | .820508  | 4.58   | .179492  | 31 |
| 30 | 9.741889 | 3.18   | 9.921107 | 1.40   | 9.820783 | 4.57   | 0.179217 | 30 |
| 31 | .742080  | 3.18   | .921023  | 1.40   | .821057  | 4.58   | .178943  | 29 |
| 32 | .742271  | 3.18   | .920939  | 1.38   | .821332  | 4.57   | .178668  | 28 |
| 33 | .742462  | 3.17   | .920856  | 1.40   | .821606  | 4.57   | .178394  | 27 |
| 34 | .742652  | 3.17   | .920772  | 1.40   | .821880  | 4.57   | .178120  | 26 |
| 35 | 9.742842 | 3.18   | 9.920688 | 1.40   | 9.822154 | 4.58   | 0.177846 | 25 |
| 36 | .743033  | 3.17   | .920604  | 1.40   | .822429  | 4.58   | .177571  | 24 |
| 37 | .743223  | 3.17   | .920520  | 1.40   | .822703  | 4.57   | .177297  | 23 |
| 38 | .743413  | 3.17   | .920436  | 1.40   | .822977  | 4.57   | .177023  | 22 |
| 39 | .743602  | 3.15   | .920352  | 1.40   | .823251  | 4.57   | .176749  | 21 |
| 40 | 9.743792 | 3.17   | 9.920268 | 1.40   | 9.823524 | 4.57   | 0.176476 | 20 |
| 41 | .743982  | 3.15   | .920184  | 1.42   | .823798  | 4.57   | .176202  | 19 |
| 42 | .744171  | 3.17   | .920099  | 1.40   | .824072  | 4.55   | .175928  | 18 |
| 43 | .744361  | 3.15   | .920015  | 1.40   | .824345  | 4.57   | .175655  | 17 |
| 44 | .744550  | 3.15   | .919931  | 1.42   | .824619  | 4.57   | .175381  | 16 |
| 45 | 9.744739 | 3.15   | 9.919846 | 1.40   | 9.824893 | 4.57   | 0.175107 | 15 |
| 46 | .744928  | 3.15   | .919762  | 1.40   | .825166  | 4.55   | .174834  | 14 |
| 47 | .745117  | 3.15   | .919677  | 1.42   | .825439  | 4.55   | .174561  | 13 |
| 48 | .745306  | 3.15   | .919593  | 1.40   | .825713  | 4.57   | .174287  | 12 |
| 49 | .745494  | 3.15   | .919508  | 1.42   | .825986  | 4.55   | .174014  | 11 |
| 50 | 9.745683 | 3.13   | 9.919424 | 1.42   | 9.826259 | 4.55   | 0.173741 | 10 |
| 51 | .745871  | 3.15   | .919339  | 1.42   | .826532  | 4.55   | .173468  | 9  |
| 52 | .746060  | 3.13   | .919254  | 1.42   | .826805  | 4.55   | .173195  | 8  |
| 53 | .746248  | 3.13   | .919169  | 1.42   | .827078  | 4.55   | .172922  | 7  |
| 54 | .746436  | 3.13   | .919085  | 1.42   | .827351  | 4.55   | .172649  | 6  |
| 55 | 9.746624 | 3.13   | 9.919000 | 1.42   | 9.827624 | 4.55   | 0.172376 | 5  |
| 56 | .746812  | 3.12   | .918915  | 1.42   | .827897  | 4.55   | .172103  | 4  |
| 57 | .746999  | 3.13   | .918830  | 1.42   | .828170  | 4.55   | .171830  | 3  |
| 58 | .747187  | 3.13   | .918745  | 1.42   | .828442  | 4.55   | .171558  | 2  |
| 59 | .747374  | 3.12   | .918659  | 1.43   | .828715  | 4.55   | .171285  | 1  |
| 60 | 9.747562 | 3.13   | 9.918574 | 1.42   | 9.828987 | 4.53   | 0.171013 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.747562 | 3.12   | 9.918574 | 1.42   | 9.828987 | 4.55   | 0.171013 | 60 |
| 1  | .747749  | 3.12   | .918489  | 1.42   | .829260  | 4.53   | .170740  | 59 |
| 2  | .747936  | 3.12   | .918404  | 1.43   | .829532  | 4.55   | .170468  | 58 |
| 3  | .748123  | 3.12   | .918318  | 1.42   | .829805  | 4.53   | .170195  | 57 |
| 4  | .748310  | 3.12   | .918233  | 1.43   | .830077  | 4.53   | .169923  | 56 |
| 5  | 9.748497 | 3.10   | 9.918147 | 1.42   | 9.830349 | 4.53   | 0.169651 | 55 |
| 6  | .748683  | 3.10   | .918062  | 1.42   | .830621  | 4.53   | .169379  | 54 |
| 7  | .748870  | 3.12   | .917976  | 1.43   | .830893  | 4.53   | .169107  | 53 |
| 8  | .749056  | 3.10   | .917891  | 1.42   | .831165  | 4.53   | .168835  | 52 |
| 9  | .749243  | 3.10   | .917805  | 1.43   | .831437  | 4.53   | .168563  | 51 |
| 10 | 9.749429 | 3.10   | 9.917719 | 1.42   | 9.831709 | 4.53   | 0.168291 | 50 |
| 11 | .749615  | 3.10   | .917634  | 1.43   | .831981  | 4.53   | .168019  | 49 |
| 12 | .749801  | 3.10   | .917548  | 1.43   | .832253  | 4.53   | .167747  | 48 |
| 13 | .749987  | 3.08   | .917462  | 1.43   | .832525  | 4.52   | .167475  | 47 |
| 14 | .750172  | 3.10   | .917376  | 1.43   | .832796  | 4.52   | .167204  | 46 |
| 15 | 9.750358 | 3.08   | 9.917290 | 1.43   | 9.833068 | 4.53   | 0.166932 | 45 |
| 16 | .750543  | 3.10   | .917204  | 1.43   | .833339  | 4.53   | .166661  | 44 |
| 17 | .750729  | 3.08   | .917118  | 1.43   | .833611  | 4.52   | .166389  | 43 |
| 18 | .750914  | 3.08   | .917032  | 1.43   | .833882  | 4.52   | .166118  | 42 |
| 19 | .751099  | 3.08   | .916946  | 1.45   | .834154  | 4.52   | .165846  | 41 |
| 20 | 9.751284 | 3.08   | 9.916859 | 1.43   | 9.834425 | 4.52   | 0.165575 | 40 |
| 21 | .751469  | 3.08   | .916773  | 1.43   | .834696  | 4.52   | .165303  | 39 |
| 22 | .751654  | 3.08   | .916687  | 1.45   | .834967  | 4.52   | .165033  | 38 |
| 23 | .751839  | 3.07   | .916600  | 1.43   | .835238  | 4.52   | .164762  | 37 |
| 24 | .752023  | 3.08   | .916514  | 1.45   | .835509  | 4.52   | .164491  | 36 |
| 25 | 9.752208 | 3.07   | 9.916427 | 1.43   | 9.835780 | 4.52   | 0.164220 | 35 |
| 26 | .752392  | 3.07   | .916341  | 1.45   | .836051  | 4.52   | .163949  | 34 |
| 27 | .752576  | 3.07   | .916254  | 1.45   | .836322  | 4.52   | .163678  | 33 |
| 28 | .752760  | 3.07   | .916167  | 1.43   | .836593  | 4.52   | .163407  | 32 |
| 29 | .752944  | 3.07   | .916081  | 1.45   | .836864  | 4.50   | .163136  | 31 |
| 30 | 9.753128 | 3.07   | 9.915994 | 1.45   | 9.837134 | 4.52   | 0.162866 | 30 |
| 31 | .753312  | 3.05   | .915907  | 1.45   | .837405  | 4.50   | .162595  | 29 |
| 32 | .753495  | 3.07   | .915820  | 1.45   | .837675  | 4.52   | .162325  | 28 |
| 33 | .753679  | 3.05   | .915733  | 1.45   | .837946  | 4.50   | .162054  | 27 |
| 34 | .753862  | 3.05   | .915646  | 1.45   | .838216  | 4.50   | .161784  | 26 |
| 35 | 9.754046 | 3.05   | 9.915559 | 1.45   | 9.838487 | 4.52   | 0.161513 | 25 |
| 36 | .754229  | 3.05   | .915472  | 1.45   | .838757  | 4.50   | .161243  | 24 |
| 37 | .754412  | 3.05   | .915385  | 1.47   | .839027  | 4.50   | .160973  | 23 |
| 38 | .754595  | 3.05   | .915297  | 1.45   | .839297  | 4.52   | .160703  | 22 |
| 39 | .754778  | 3.03   | .915210  | 1.45   | .839568  | 4.50   | .160432  | 21 |
| 40 | 9.754960 | 3.05   | 9.915123 | 1.47   | 9.839838 | 4.50   | 0.160162 | 20 |
| 41 | .755143  | 3.05   | .915035  | 1.45   | .840108  | 4.50   | .159892  | 19 |
| 42 | .755326  | 3.03   | .914948  | 1.47   | .840378  | 4.50   | .159622  | 18 |
| 43 | .755508  | 3.03   | .914860  | 1.45   | .840648  | 4.48   | .159352  | 17 |
| 44 | .755690  | 3.03   | .914773  | 1.47   | .840917  | 4.50   | .159083  | 16 |
| 45 | 9.755872 | 3.03   | 9.914685 | 1.45   | 9.841187 | 4.50   | 0.158813 | 15 |
| 46 | .756054  | 3.03   | .914598  | 1.47   | .841457  | 4.50   | .158543  | 14 |
| 47 | .756236  | 3.03   | .914510  | 1.47   | .841727  | 4.48   | .158273  | 13 |
| 48 | .756418  | 3.03   | .914422  | 1.47   | .841996  | 4.50   | .158003  | 12 |
| 49 | .756600  | 3.03   | .914334  | 1.47   | .842266  | 4.48   | .157734  | 11 |
| 50 | 9.756782 | 3.02   | 9.914246 | 1.47   | 9.842535 | 4.50   | 0.157465 | 10 |
| 51 | .756963  | 3.02   | .914158  | 1.47   | .842805  | 4.48   | .157195  | 9  |
| 52 | .757144  | 3.03   | .914070  | 1.47   | .843074  | 4.48   | .156926  | 8  |
| 53 | .757326  | 3.02   | .913982  | 1.47   | .843343  | 4.48   | .156657  | 7  |
| 54 | .757507  | 3.02   | .913894  | 1.47   | .843612  | 4.48   | .156388  | 6  |
| 55 | 9.757688 | 3.02   | 9.913806 | 1.47   | 9.843882 | 4.50   | 0.156118 | 5  |
| 56 | .757869  | 3.02   | .913718  | 1.47   | .844151  | 4.48   | .155849  | 4  |
| 57 | .758050  | 3.00   | .913630  | 1.48   | .844420  | 4.48   | .155580  | 3  |
| 58 | .758230  | 3.02   | .913541  | 1.47   | .844689  | 4.48   | .155311  | 2  |
| 59 | .758411  | 3.00   | .913453  | 1.47   | .844958  | 4.48   | .155042  | 1  |
| 60 | 9.758591 | 3.00   | 9.913365 | 1.47   | 9.845227 | 4.48   | 0.154773 | 0  |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.758591 | 3.02   | 9.913365 | 1.48   | 9.845227 | 4.48   | 0.154773 | 60 |
| 1  | .758772  | 3.00   | .913276  | 1.48   | .845496  | 4.47   | .154504  | 59 |
| 2  | .758952  | 3.00   | .913187  | 1.47   | .845764  | 4.48   | .154236  | 58 |
| 3  | .759132  | 3.00   | .913099  | 1.48   | .846033  | 4.48   | .153967  | 57 |
| 4  | .759312  | 3.00   | .913010  | 1.47   | .846302  | 4.48   | .153698  | 56 |
| 5  | 9.759492 | 3.00   | 9.912922 | 1.47   | 9.846570 | 4.47   | 0.153430 | 55 |
| 6  | .759672  | 3.00   | .912833  | 1.48   | .846839  | 4.48   | .153161  | 54 |
| 7  | .759852  | 3.00   | .912744  | 1.48   | .847108  | 4.48   | .152892  | 53 |
| 8  | .760031  | 3.00   | .912655  | 1.48   | .847376  | 4.47   | .152624  | 52 |
| 9  | .760211  | 2.98   | .912566  | 1.48   | .847644  | 4.48   | .152356  | 51 |
| 10 | 9.760390 | 2.98   | 9.912477 | 1.48   | 9.847913 | 4.47   | 0.152087 | 50 |
| 11 | .760569  | 2.98   | .912388  | 1.48   | .848181  | 4.47   | .151819  | 49 |
| 12 | .760748  | 2.98   | .912299  | 1.48   | .848449  | 4.47   | .151551  | 48 |
| 13 | .760927  | 2.98   | .912210  | 1.48   | .848717  | 4.47   | .151283  | 47 |
| 14 | .761106  | 2.98   | .912121  | 1.48   | .848986  | 4.48   | .151014  | 46 |
| 15 | 9.761285 | 2.98   | 9.912031 | 1.50   | 9.849254 | 4.47   | 0.150746 | 45 |
| 16 | .761464  | 2.98   | .911942  | 1.48   | .849522  | 4.47   | .150478  | 44 |
| 17 | .761642  | 2.97   | .911853  | 1.48   | .849790  | 4.47   | .150210  | 43 |
| 18 | .761821  | 2.97   | .911763  | 1.48   | .850057  | 4.45   | .149943  | 42 |
| 19 | .761999  | 2.97   | .911674  | 1.50   | .850325  | 4.47   | .149675  | 41 |
| 20 | 9.762177 | 2.98   | 9.911584 | 1.48   | 9.850593 | 4.47   | 0.149407 | 40 |
| 21 | .762356  | 2.97   | .911495  | 1.50   | .850861  | 4.47   | .149139  | 39 |
| 22 | .762534  | 2.97   | .911405  | 1.50   | .851129  | 4.47   | .148871  | 38 |
| 23 | .762712  | 2.97   | .911315  | 1.50   | .851396  | 4.45   | .148604  | 37 |
| 24 | .762889  | 2.95   | .911226  | 1.48   | .851664  | 4.47   | .148336  | 36 |
| 25 | 9.763067 | 2.97   | 9.911136 | 1.50   | 9.851931 | 4.45   | 0.148069 | 35 |
| 26 | .763245  | 2.97   | .911046  | 1.50   | .852199  | 4.47   | .147801  | 34 |
| 27 | .763422  | 2.95   | .910956  | 1.50   | .852466  | 4.45   | .147534  | 33 |
| 28 | .763600  | 2.97   | .910866  | 1.50   | .852733  | 4.45   | .147267  | 32 |
| 29 | .763777  | 2.95   | .910776  | 1.50   | .853001  | 4.47   | .147009  | 31 |
| 30 | 9.763954 | 2.95   | 9.910686 | 1.50   | 9.853268 | 4.45   | 0.146742 | 30 |
| 31 | .764131  | 2.95   | .910596  | 1.50   | .853535  | 4.45   | .146475  | 29 |
| 32 | .764308  | 2.95   | .910506  | 1.52   | .853802  | 4.45   | .146208  | 28 |
| 33 | .764485  | 2.95   | .910415  | 1.50   | .854069  | 4.45   | .145941  | 27 |
| 34 | .764662  | 2.93   | .910325  | 1.50   | .854336  | 4.45   | .145674  | 26 |
| 35 | 9.764838 | 2.93   | 9.910235 | 1.52   | 9.854603 | 4.45   | 0.145407 | 25 |
| 36 | .765015  | 2.95   | .910144  | 1.52   | .854870  | 4.45   | .145140  | 24 |
| 37 | .765191  | 2.93   | .910054  | 1.50   | .855137  | 4.45   | .144873  | 23 |
| 38 | .765367  | 2.95   | .909963  | 1.50   | .855404  | 4.45   | .144606  | 22 |
| 39 | .765544  | 2.93   | .909873  | 1.52   | .855671  | 4.45   | .144339  | 21 |
| 40 | 9.765720 | 2.93   | 9.909782 | 1.52   | 9.855938 | 4.43   | 0.144072 | 20 |
| 41 | .765896  | 2.93   | .909691  | 1.50   | .856204  | 4.43   | .143805  | 19 |
| 42 | .766072  | 2.92   | .909601  | 1.52   | .856471  | 4.45   | .143538  | 18 |
| 43 | .766247  | 2.92   | .909510  | 1.52   | .856737  | 4.43   | .143271  | 17 |
| 44 | .766423  | 2.93   | .909419  | 1.52   | .857004  | 4.45   | .143004  | 16 |
| 45 | 9.766598 | 2.92   | 9.909328 | 1.52   | 9.857270 | 4.43   | 0.142737 | 15 |
| 46 | .766774  | 2.92   | .909237  | 1.52   | .857537  | 4.45   | .142470  | 14 |
| 47 | .766949  | 2.92   | .909146  | 1.52   | .857803  | 4.43   | .142203  | 13 |
| 48 | .767124  | 2.92   | .909055  | 1.52   | .858069  | 4.43   | .141936  | 12 |
| 49 | .767300  | 2.93   | .908964  | 1.52   | .858336  | 4.45   | .141669  | 11 |
| 50 | 9.767475 | 2.90   | 9.908873 | 1.52   | 9.858602 | 4.43   | 0.141402 | 10 |
| 51 | .767649  | 2.92   | .908781  | 1.53   | .858868  | 4.43   | .141135  | 9  |
| 52 | .767824  | 2.92   | .908690  | 1.52   | .859134  | 4.43   | .140868  | 8  |
| 53 | .767999  | 2.90   | .908599  | 1.53   | .859400  | 4.43   | .140601  | 7  |
| 54 | .768173  | 2.92   | .908507  | 1.52   | .859666  | 4.43   | .140334  | 6  |
| 55 | 9.768348 | 2.90   | 9.908416 | 1.53   | 9.859932 | 4.43   | 0.140067 | 5  |
| 56 | .768522  | 2.92   | .908324  | 1.53   | .860198  | 4.43   | .139800  | 4  |
| 57 | .768697  | 2.92   | .908233  | 1.52   | .860464  | 4.43   | .139533  | 3  |
| 58 | .768871  | 2.90   | .908141  | 1.53   | .860730  | 4.43   | .139266  | 2  |
| 59 | .769045  | 2.90   | .908049  | 1.53   | .860995  | 4.42   | .139000  | 1  |
| 60 | 9.769219 | 2.90   | 9.907958 | 1.52   | 9.861261 | 4.43   | 0.138733 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot      | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.769219 | 2.90   | 9.907958 |        | 9.861261 |        | 0.138739 | 60 |
| 1  | .769393  | 2.88   | .907866  | 1.53   | .861527  | 4.43   | .138473  | 59 |
| 2  | .769566  | 2.90   | .907774  | 1.53   | .861792  | 4.42   | .138208  | 58 |
| 3  | .769740  | 2.90   | .907682  | 1.53   | .862058  | 4.43   | .137942  | 57 |
| 4  | .769913  | 2.88   | .907590  | 1.53   | .862323  | 4.42   | .137677  | 56 |
| 5  | 9.770087 | 2.90   | 9.907498 | 1.53   | 9.862589 | 4.43   | 0.137411 | 55 |
| 6  | .770260  | 2.88   | .907406  | 1.53   | .862854  | 4.42   | .137146  | 54 |
| 7  | .770433  | 2.88   | .907314  | 1.53   | .863119  | 4.42   | .136881  | 53 |
| 8  | .770606  | 2.88   | .907222  | 1.55   | .863385  | 4.43   | .136615  | 52 |
| 9  | .770779  | 2.88   | .907129  | 1.53   | .863650  | 4.42   | .136350  | 51 |
| 10 | 9.770952 | 2.88   | 9.907037 | 1.53   | 9.863915 | 4.42   | 0.136085 | 50 |
| 11 | .771125  | 2.88   | .906945  | 1.55   | .864180  | 4.42   | .135820  | 49 |
| 12 | .771298  | 2.87   | .906852  | 1.53   | .864445  | 4.42   | .135555  | 48 |
| 13 | .771470  | 2.88   | .906760  | 1.55   | .864710  | 4.42   | .135290  | 47 |
| 14 | .771643  | 2.87   | .906667  | 1.53   | .864975  | 4.42   | .135025  | 46 |
| 15 | 9.771815 | 2.87   | 9.906575 | 1.55   | 9.865240 | 4.42   | 0.134760 | 45 |
| 16 | .771987  | 2.87   | .906482  | 1.55   | .865505  | 4.42   | .134495  | 44 |
| 17 | .772159  | 2.87   | .906389  | 1.55   | .865770  | 4.42   | .134230  | 43 |
| 18 | .772331  | 2.87   | .906296  | 1.53   | .866035  | 4.42   | .133965  | 42 |
| 19 | .772503  | 2.87   | .906204  | 1.55   | .866300  | 4.40   | .133700  | 41 |
| 20 | 9.772675 | 2.87   | 9.906111 | 1.55   | 9.866564 | 4.42   | 0.133436 | 40 |
| 21 | .772847  | 2.85   | .906018  | 1.55   | .866829  | 4.42   | .133171  | 39 |
| 22 | .773018  | 2.85   | .905925  | 1.55   | .867094  | 4.42   | .132906  | 38 |
| 23 | .773190  | 2.85   | .905832  | 1.55   | .867358  | 4.40   | .132642  | 37 |
| 24 | .773361  | 2.87   | .905739  | 1.57   | .867623  | 4.42   | .132377  | 36 |
| 25 | 9.773533 | 2.85   | 9.905645 | 1.55   | 9.867887 | 4.42   | 0.132113 | 35 |
| 26 | .773704  | 2.85   | .905552  | 1.55   | .868152  | 4.40   | .131848  | 34 |
| 27 | .773875  | 2.85   | .905459  | 1.55   | .868416  | 4.40   | .131584  | 33 |
| 28 | .774046  | 2.85   | .905366  | 1.57   | .868680  | 4.40   | .131320  | 32 |
| 29 | .774217  | 2.85   | .905272  | 1.55   | .868945  | 4.42   | .131055  | 31 |
| 30 | 9.774388 | 2.83   | 9.905179 | 1.57   | 9.869209 | 4.40   | 0.130791 | 30 |
| 31 | .774558  | 2.85   | .905085  | 1.55   | .869473  | 4.40   | .130527  | 29 |
| 32 | .774729  | 2.83   | .904992  | 1.57   | .869737  | 4.40   | .130263  | 28 |
| 33 | .774899  | 2.85   | .904898  | 1.57   | .870001  | 4.40   | .129999  | 27 |
| 34 | .775070  | 2.83   | .904804  | 1.55   | .870265  | 4.40   | .129735  | 26 |
| 35 | 9.775240 | 2.83   | 9.904711 | 1.57   | 9.870529 | 4.40   | 0.129471 | 25 |
| 36 | .775410  | 2.83   | .904617  | 1.57   | .870793  | 4.40   | .129207  | 24 |
| 37 | .775580  | 2.83   | .904523  | 1.57   | .871057  | 4.40   | .128943  | 23 |
| 38 | .775750  | 2.83   | .904429  | 1.57   | .871321  | 4.40   | .128679  | 22 |
| 39 | .775920  | 2.83   | .904335  | 1.57   | .871585  | 4.40   | .128415  | 21 |
| 40 | 9.776090 | 2.82   | 9.904241 | 1.57   | 9.871849 | 4.38   | 0.128151 | 20 |
| 41 | .776259  | 2.83   | .904147  | 1.57   | .872112  | 4.40   | .127888  | 19 |
| 42 | .776429  | 2.82   | .904053  | 1.57   | .872376  | 4.40   | .127624  | 18 |
| 43 | .776598  | 2.82   | .903959  | 1.58   | .872640  | 4.40   | .127360  | 17 |
| 44 | .776768  | 2.82   | .903864  | 1.57   | .872903  | 4.38   | .127097  | 16 |
| 45 | 9.776937 | 2.82   | 9.903770 | 1.57   | 9.873167 | 4.40   | 0.126833 | 15 |
| 46 | .777106  | 2.82   | .903676  | 1.58   | .873430  | 4.40   | .126570  | 14 |
| 47 | .777275  | 2.82   | .903581  | 1.57   | .873694  | 4.38   | .126306  | 13 |
| 48 | .777444  | 2.82   | .903487  | 1.58   | .873957  | 4.38   | .126043  | 12 |
| 49 | .777613  | 2.80   | .903392  | 1.57   | .874220  | 4.40   | .125780  | 11 |
| 50 | 9.777781 | 2.82   | 9.903298 | 1.58   | 9.874484 | 4.38   | 0.125516 | 10 |
| 51 | .777950  | 2.82   | .903203  | 1.58   | .874747  | 4.38   | .125253  | 9  |
| 52 | .778119  | 2.80   | .903108  | 1.57   | .875010  | 4.38   | .124990  | 8  |
| 53 | .778287  | 2.80   | .903014  | 1.58   | .875273  | 4.40   | .124727  | 7  |
| 54 | .778455  | 2.82   | .902919  | 1.58   | .875537  | 4.38   | .124463  | 6  |
| 55 | 9.778624 | 2.80   | 9.902824 | 1.58   | 9.875800 | 4.38   | 0.124200 | 5  |
| 56 | .778792  | 2.80   | .902729  | 1.58   | .876063  | 4.38   | .123937  | 4  |
| 57 | .778960  | 2.80   | .902634  | 1.58   | .876326  | 4.38   | .123674  | 3  |
| 58 | .779128  | 2.78   | .902539  | 1.58   | .876589  | 4.38   | .123411  | 2  |
| 59 | .779295  | 2.80   | .902444  | 1.58   | .876852  | 4.38   | .123148  | 1  |
| 60 | 9.779463 |        | 9.902349 |        | 9.877114 | 4.37   | 0.122886 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |



| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     |    |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.779463 | 2.80    | 9.902349 | 1.60    | 9.877114 | 4.38    | 0.122886 | 60 |
| 1  | .779931  | 2.78    | .902253  | 1.58    | .877377  | 4.38    | .122623  | 59 |
| 2  | .779798  | 2.80    | .902158  | 1.58    | .877640  | 4.38    | .122360  | 58 |
| 3  | .779666  | 2.78    | .902063  | 1.60    | .877903  | 4.38    | .122097  | 57 |
| 4  | .780133  | 2.78    | .901967  | 1.60    | .878165  | 4.37    | .121835  | 56 |
| 5  | 9.780300 | 2.78    | 9.901872 | 1.58    | 9.878428 | 4.38    | 0.121572 | 55 |
| 6  | .780467  | 2.78    | .901776  | 1.58    | .878691  | 4.38    | .121309  | 54 |
| 7  | .780634  | 2.78    | .901681  | 1.58    | .878953  | 4.37    | .121047  | 53 |
| 8  | .780801  | 2.78    | .901585  | 1.60    | .879216  | 4.38    | .120784  | 52 |
| 9  | .780968  | 2.77    | .901490  | 1.58    | .879478  | 4.37    | .120522  | 51 |
| 10 | 9.781134 | 2.78    | 9.901394 | 1.60    | 9.879741 | 4.37    | 0.120259 | 50 |
| 11 | .781301  | 2.78    | .901298  | 1.60    | .880003  | 4.37    | .119997  | 49 |
| 12 | .781468  | 2.77    | .901202  | 1.60    | .880265  | 4.37    | .119735  | 48 |
| 13 | .781634  | 2.77    | .901106  | 1.60    | .880528  | 4.38    | .119472  | 47 |
| 14 | .781800  | 2.77    | .901010  | 1.60    | .880790  | 4.37    | .119210  | 46 |
| 15 | 9.781966 | 2.77    | 9.900914 | 1.60    | 9.881052 | 4.37    | 0.118948 | 45 |
| 16 | .782132  | 2.77    | .900818  | 1.60    | .881314  | 4.37    | .118686  | 44 |
| 17 | .782298  | 2.77    | .900722  | 1.60    | .881577  | 4.38    | .118423  | 43 |
| 18 | .782464  | 2.77    | .900626  | 1.60    | .881839  | 4.37    | .118161  | 42 |
| 19 | .782630  | 2.77    | .900529  | 1.62    | .882101  | 4.37    | .117899  | 41 |
| 20 | 9.782796 | 2.75    | 9.900433 | 1.60    | 9.882363 | 4.37    | 0.117637 | 40 |
| 21 | .782961  | 2.77    | .900337  | 1.62    | .882625  | 4.37    | .117375  | 39 |
| 22 | .783127  | 2.75    | .900240  | 1.60    | .882887  | 4.37    | .117113  | 38 |
| 23 | .783292  | 2.75    | .900144  | 1.62    | .883148  | 4.35    | .116852  | 37 |
| 24 | .783458  | 2.77    | .900047  | 1.60    | .883410  | 4.37    | .116590  | 36 |
| 25 | 9.783623 | 2.75    | 9.899951 | 1.60    | 9.883672 | 4.37    | 0.116328 | 35 |
| 26 | .783788  | 2.75    | .899854  | 1.62    | .883934  | 4.37    | .116066  | 34 |
| 27 | .783953  | 2.75    | .899757  | 1.62    | .884196  | 4.37    | .115804  | 33 |
| 28 | .784118  | 2.75    | .899660  | 1.60    | .884457  | 4.35    | .115543  | 32 |
| 29 | .784282  | 2.75    | .899564  | 1.62    | .884719  | 4.37    | .115281  | 31 |
| 30 | 9.784447 | 2.75    | 9.899467 | 1.62    | 9.884980 | 4.37    | 0.115020 | 30 |
| 31 | .784612  | 2.73    | .899370  | 1.62    | .885242  | 4.37    | .114758  | 29 |
| 32 | .784776  | 2.75    | .899273  | 1.62    | .885504  | 4.37    | .114496  | 28 |
| 33 | .784941  | 2.75    | .899176  | 1.62    | .885765  | 4.35    | .114235  | 27 |
| 34 | .785105  | 2.73    | .899078  | 1.63    | .886026  | 4.35    | .113974  | 26 |
| 35 | 9.785269 | 2.73    | 9.898981 | 1.62    | 9.886288 | 4.37    | 0.113712 | 25 |
| 36 | .785433  | 2.73    | .898884  | 1.62    | .886549  | 4.35    | .113451  | 24 |
| 37 | .785597  | 2.73    | .898787  | 1.63    | .886811  | 4.37    | .113189  | 23 |
| 38 | .785761  | 2.73    | .898689  | 1.62    | .887072  | 4.35    | .112928  | 22 |
| 39 | .785925  | 2.73    | .898592  | 1.63    | .887333  | 4.35    | .112667  | 21 |
| 40 | 9.786089 | 2.72    | 9.898494 | 1.62    | 9.887594 | 4.35    | 0.112406 | 20 |
| 41 | .786252  | 2.73    | .898397  | 1.63    | .887855  | 4.35    | .112145  | 19 |
| 42 | .786416  | 2.72    | .898299  | 1.62    | .888116  | 4.35    | .111884  | 18 |
| 43 | .786579  | 2.72    | .898202  | 1.63    | .888378  | 4.37    | .111622  | 17 |
| 44 | .786742  | 2.73    | .898104  | 1.63    | .888639  | 4.35    | .111361  | 16 |
| 45 | 9.786906 | 2.73    | 9.898006 | 1.63    | 9.888900 | 4.35    | 0.111100 | 15 |
| 46 | .787069  | 2.72    | .897908  | 1.63    | .889161  | 4.35    | .110839  | 14 |
| 47 | .787232  | 2.72    | .897810  | 1.63    | .889421  | 4.35    | .110579  | 13 |
| 48 | .787395  | 2.72    | .897712  | 1.63    | .889682  | 4.33    | .110318  | 12 |
| 49 | .787557  | 2.72    | .897614  | 1.63    | .889943  | 4.35    | .110057  | 11 |
| 50 | 9.787720 | 2.72    | 9.897516 | 1.63    | 9.890204 | 4.35    | 0.109796 | 10 |
| 51 | .787883  | 2.70    | .897418  | 1.63    | .890465  | 4.33    | .109535  | 9  |
| 52 | .788045  | 2.72    | .897320  | 1.63    | .890725  | 4.35    | .109275  | 8  |
| 53 | .788208  | 2.70    | .897222  | 1.65    | .890986  | 4.35    | .109014  | 7  |
| 54 | .788370  | 2.70    | .897123  | 1.63    | .891247  | 4.35    | .108753  | 6  |
| 55 | 9.788532 | 2.70    | 9.897025 | 1.65    | 9.891507 | 4.33    | 0.108493 | 5  |
| 56 | .788694  | 2.70    | .896926  | 1.65    | .891768  | 4.35    | .108232  | 4  |
| 57 | .788856  | 2.70    | .896828  | 1.63    | .892028  | 4.33    | .107972  | 3  |
| 58 | .789018  | 2.70    | .896729  | 1.65    | .892289  | 4.35    | .107711  | 2  |
| 59 | .789180  | 2.70    | .896631  | 1.63    | .892549  | 4.33    | .107451  | 1  |
| 60 | 9.789342 | 2.70    | 9.896532 | 1.65    | 9.892810 | 4.35    | 0.107190 | 0  |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.789342 | 2.70   | 9.896532 | 1.65   | 9.892810 | 4.33   | 0.107190 | 60 |
| 1  | .789504  | 2.68   | .896433  | 1.63   | .893070  | 4.35   | .106630  | 59 |
| 2  | .789665  | 2.70   | .896335  | 1.65   | .893331  | 4.33   | .106669  | 58 |
| 3  | .789827  | 2.68   | .896236  | 1.65   | .893591  | 4.33   | .106409  | 57 |
| 4  | .789988  | 2.68   | .896137  | 1.65   | .893851  | 4.33   | .106149  | 56 |
| 5  | 9.790149 | 2.68   | 9.896038 | 1.65   | 9.894111 | 4.33   | 0.105889 | 55 |
| 6  | .790310  | 2.68   | .895939  | 1.65   | .894372  | 4.35   | .105628  | 54 |
| 7  | .790471  | 2.68   | .895840  | 1.65   | .894632  | 4.33   | .105368  | 53 |
| 8  | .790632  | 2.68   | .895741  | 1.65   | .894892  | 4.33   | .105108  | 52 |
| 9  | .790793  | 2.68   | .895641  | 1.65   | .895152  | 4.33   | .104848  | 51 |
| 10 | 9.790954 | 2.68   | 9.895542 | 1.65   | 9.895412 | 4.33   | 0.104588 | 50 |
| 11 | .791115  | 2.67   | .895443  | 1.67   | .895672  | 4.33   | .104328  | 49 |
| 12 | .791275  | 2.68   | .895343  | 1.65   | .895932  | 4.33   | .104068  | 48 |
| 13 | .791436  | 2.67   | .895244  | 1.65   | .896192  | 4.33   | .103808  | 47 |
| 14 | .791596  | 2.68   | .895145  | 1.65   | .896452  | 4.33   | .103548  | 46 |
| 15 | 9.791757 | 2.67   | 9.895045 | 1.67   | 9.896712 | 4.32   | 0.103288 | 45 |
| 16 | .791917  | 2.67   | .894945  | 1.65   | .896971  | 4.33   | .103029  | 44 |
| 17 | .792077  | 2.67   | .894846  | 1.67   | .897231  | 4.33   | .102769  | 43 |
| 18 | .792237  | 2.67   | .894746  | 1.67   | .897491  | 4.33   | .102509  | 42 |
| 19 | .792397  | 2.67   | .894646  | 1.67   | .897751  | 4.32   | .102249  | 41 |
| 20 | 9.792557 | 2.65   | 9.894546 | 1.67   | 9.898010 | 4.33   | 0.101990 | 40 |
| 21 | .792716  | 2.67   | .894446  | 1.67   | .898270  | 4.33   | .101730  | 39 |
| 22 | .792876  | 2.65   | .894346  | 1.67   | .898530  | 4.33   | .101470  | 38 |
| 23 | .793035  | 2.65   | .894246  | 1.67   | .898789  | 4.32   | .101211  | 37 |
| 24 | .793195  | 2.67   | .894146  | 1.67   | .899049  | 4.33   | .100951  | 36 |
| 25 | 9.793354 | 2.67   | 9.894046 | 1.67   | 9.899308 | 4.33   | 0.100692 | 35 |
| 26 | .793514  | 2.65   | .893946  | 1.67   | .899568  | 4.32   | .100432  | 34 |
| 27 | .793673  | 2.65   | .893846  | 1.67   | .899827  | 4.32   | .100173  | 33 |
| 28 | .793832  | 2.65   | .893745  | 1.68   | .900087  | 4.33   | .099913  | 32 |
| 29 | .793991  | 2.65   | .893645  | 1.68   | .900346  | 4.32   | .099654  | 31 |
| 30 | 9.794150 | 2.63   | 9.893544 | 1.67   | 9.900605 | 4.32   | 0.099395 | 30 |
| 31 | .794308  | 2.65   | .893444  | 1.68   | .900864  | 4.33   | .099136  | 29 |
| 32 | .794467  | 2.65   | .893343  | 1.67   | .901124  | 4.32   | .098876  | 28 |
| 33 | .794626  | 2.63   | .893243  | 1.68   | .901383  | 4.32   | .098617  | 27 |
| 34 | .794784  | 2.63   | .893142  | 1.68   | .901642  | 4.32   | .098358  | 26 |
| 35 | 9.794942 | 2.63   | 9.893041 | 1.68   | 9.901901 | 4.32   | 0.098099 | 25 |
| 36 | .795101  | 2.65   | .892940  | 1.68   | .902160  | 4.32   | .097840  | 24 |
| 37 | .795259  | 2.63   | .892839  | 1.68   | .902420  | 4.33   | .097580  | 23 |
| 38 | .795417  | 2.63   | .892739  | 1.68   | .902679  | 4.32   | .097321  | 22 |
| 39 | .795575  | 2.63   | .892638  | 1.70   | .902938  | 4.32   | .097062  | 21 |
| 40 | 9.795733 | 2.63   | 9.892536 | 1.68   | 9.903197 | 4.32   | 0.096803 | 20 |
| 41 | .795891  | 2.63   | .892435  | 1.68   | .903456  | 4.30   | .096544  | 19 |
| 42 | .796049  | 2.62   | .892334  | 1.68   | .903714  | 4.32   | .096286  | 18 |
| 43 | .796206  | 2.63   | .892233  | 1.68   | .903973  | 4.32   | .096027  | 17 |
| 44 | .796364  | 2.62   | .892132  | 1.68   | .904232  | 4.32   | .095768  | 16 |
| 45 | 9.796521 | 2.63   | 9.892030 | 1.70   | 9.904491 | 4.32   | 0.095509 | 15 |
| 46 | .796679  | 2.62   | .891929  | 1.70   | .904750  | 4.30   | .095250  | 14 |
| 47 | .796836  | 2.62   | .891827  | 1.68   | .905008  | 4.32   | .094991  | 13 |
| 48 | .796993  | 2.62   | .891726  | 1.70   | .905267  | 4.32   | .094732  | 12 |
| 49 | .797150  | 2.62   | .891624  | 1.68   | .905526  | 4.32   | .094474  | 11 |
| 50 | 9.797307 | 2.62   | 9.891523 | 1.70   | 9.905785 | 4.30   | 0.094215 | 10 |
| 51 | .797464  | 2.62   | .891421  | 1.70   | .906043  | 4.32   | .093957  | 9  |
| 52 | .797621  | 2.60   | .891319  | 1.70   | .906302  | 4.30   | .093698  | 8  |
| 53 | .797777  | 2.62   | .891217  | 1.70   | .906560  | 4.32   | .093440  | 7  |
| 54 | .797934  | 2.62   | .891115  | 1.70   | .906819  | 4.30   | .093181  | 6  |
| 55 | 9.798091 | 2.60   | 9.891013 | 1.70   | 9.907077 | 4.32   | 0.092923 | 5  |
| 56 | .798247  | 2.60   | .890911  | 1.70   | .907336  | 4.30   | .092664  | 4  |
| 57 | .798403  | 2.62   | .890809  | 1.70   | .907594  | 4.30   | .092405  | 3  |
| 58 | .798560  | 2.60   | .890707  | 1.70   | .907853  | 4.32   | .092147  | 2  |
| 59 | .798716  | 2.60   | .890605  | 1.70   | .908111  | 4.30   | .091889  | 1  |
| 60 | 9.798872 | 2.60   | 9.890503 | 1.70   | 9.908369 | 4.30   | 0.091631 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M  |

| M. | Sin      | D. 1'' | Cos.     | D. 1'' | Tan      | D. 1'' | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.798872 | 2.60   | 9.890503 | 1.72   | 9.908369 | 4.32   | 0.091631 | 60 |
| 1  | .799028  | 2.60   | .890400  | 1.70   | .908628  | 4.30   | .091372  | 59 |
| 2  | .799184  | 2.58   | .890298  | 1.72   | .908886  | 4.30   | .091114  | 58 |
| 3  | .799339  | 2.60   | .890195  | 1.70   | .909144  | 4.30   | .090856  | 57 |
| 4  | .799495  | 2.60   | .890093  | 1.72   | .909402  | 4.30   | .090598  | 56 |
| 5  | 9.799651 | 2.60   | 9.889990 | 1.70   | 9.909660 | 4.30   | 0.090340 | 55 |
| 6  | .799806  | 2.58   | .889888  | 1.72   | .909918  | 4.30   | .090082  | 54 |
| 7  | .799962  | 2.58   | .889785  | 1.72   | .910177  | 4.30   | .089823  | 53 |
| 8  | .800117  | 2.58   | .889682  | 1.72   | .910435  | 4.30   | .089565  | 52 |
| 9  | .800272  | 2.58   | .889579  | 1.70   | .910693  | 4.30   | .089307  | 51 |
| 10 | 9.800427 | 2.58   | 9.889477 | 1.72   | 9.910951 | 4.30   | 0.089049 | 50 |
| 11 | .800582  | 2.58   | .889374  | 1.72   | .911209  | 4.30   | .088791  | 49 |
| 12 | .800737  | 2.58   | .889271  | 1.72   | .911467  | 4.30   | .088533  | 48 |
| 13 | .800892  | 2.58   | .889168  | 1.72   | .911725  | 4.30   | .088275  | 47 |
| 14 | .801047  | 2.57   | .889064  | 1.73   | .911982  | 4.28   | .088018  | 46 |
| 15 | 9.801201 | 2.58   | 9.888961 | 1.72   | 9.912240 | 4.30   | 0.087760 | 45 |
| 16 | .801356  | 2.58   | .888858  | 1.72   | .912498  | 4.30   | .087502  | 44 |
| 17 | .801511  | 2.58   | .888755  | 1.72   | .912756  | 4.30   | .087244  | 43 |
| 18 | .801665  | 2.57   | .888651  | 1.73   | .913014  | 4.30   | .086986  | 42 |
| 19 | .801819  | 2.57   | .888548  | 1.72   | .913271  | 4.28   | .086729  | 41 |
| 20 | 9.801973 | 2.58   | 9.888444 | 1.72   | 9.913529 | 4.30   | 0.086471 | 40 |
| 21 | .802128  | 2.57   | .888341  | 1.73   | .913787  | 4.28   | .086213  | 39 |
| 22 | .802282  | 2.57   | .888237  | 1.72   | .914044  | 4.30   | .085956  | 38 |
| 23 | .802436  | 2.55   | .888134  | 1.73   | .914302  | 4.30   | .085698  | 37 |
| 24 | .802589  | 2.57   | .888030  | 1.73   | .914560  | 4.28   | .085440  | 36 |
| 25 | 9.802743 | 2.57   | 9.887926 | 1.73   | 9.914817 | 4.30   | 0.085183 | 35 |
| 26 | .802897  | 2.57   | .887822  | 1.73   | .915075  | 4.30   | .084925  | 34 |
| 27 | .803050  | 2.55   | .887718  | 1.73   | .915332  | 4.28   | .084668  | 33 |
| 28 | .803204  | 2.57   | .887614  | 1.73   | .915590  | 4.30   | .084410  | 32 |
| 29 | .803357  | 2.55   | .887510  | 1.73   | .915847  | 4.28   | .084153  | 31 |
| 30 | 9.803511 | 2.55   | 9.887406 | 1.73   | 9.916104 | 4.30   | 0.083896 | 30 |
| 31 | .803664  | 2.55   | .887302  | 1.73   | .916362  | 4.28   | .083638  | 29 |
| 32 | .803817  | 2.55   | .887198  | 1.73   | .916619  | 4.30   | .083381  | 28 |
| 33 | .803970  | 2.55   | .887093  | 1.73   | .916877  | 4.28   | .083123  | 27 |
| 34 | .804123  | 2.55   | .886989  | 1.73   | .917134  | 4.28   | .082866  | 26 |
| 35 | 9.804276 | 2.53   | 9.886885 | 1.75   | 9.917391 | 4.28   | 0.082609 | 25 |
| 36 | .804428  | 2.55   | .886780  | 1.73   | .917648  | 4.30   | .082352  | 24 |
| 37 | .804581  | 2.55   | .886676  | 1.75   | .917906  | 4.28   | .082094  | 23 |
| 38 | .804734  | 2.53   | .886571  | 1.75   | .918163  | 4.28   | .081837  | 22 |
| 39 | .804886  | 2.55   | .886466  | 1.73   | .918420  | 4.28   | .081580  | 21 |
| 40 | 9.805039 | 2.53   | 9.886362 | 1.75   | 9.918677 | 4.28   | 0.081323 | 20 |
| 41 | .805191  | 2.53   | .886257  | 1.75   | .918934  | 4.28   | .081066  | 19 |
| 42 | .805343  | 2.53   | .886152  | 1.75   | .919191  | 4.28   | .080809  | 18 |
| 43 | .805495  | 2.53   | .886047  | 1.75   | .919448  | 4.28   | .080552  | 17 |
| 44 | .805647  | 2.53   | .885942  | 1.75   | .919705  | 4.28   | .080295  | 16 |
| 45 | 9.805799 | 2.53   | 9.885837 | 1.75   | 9.919962 | 4.28   | 0.080038 | 15 |
| 46 | .805951  | 2.53   | .885732  | 1.75   | .920219  | 4.28   | .079781  | 14 |
| 47 | .806103  | 2.53   | .885627  | 1.75   | .920476  | 4.28   | .079524  | 13 |
| 48 | .806254  | 2.52   | .885522  | 1.75   | .920733  | 4.28   | .079267  | 12 |
| 49 | .806406  | 2.52   | .885416  | 1.75   | .920990  | 4.28   | .079010  | 11 |
| 50 | 9.806557 | 2.53   | 9.885311 | 1.77   | 9.921247 | 4.27   | 0.078753 | 10 |
| 51 | .806709  | 2.52   | .885205  | 1.75   | .921503  | 4.28   | .078497  | 9  |
| 52 | .806860  | 2.52   | .885100  | 1.77   | .921760  | 4.28   | .078240  | 8  |
| 53 | .807011  | 2.53   | .884994  | 1.75   | .922017  | 4.28   | .077983  | 7  |
| 54 | .807163  | 2.52   | .884889  | 1.77   | .922274  | 4.27   | .077726  | 6  |
| 55 | 9.807314 | 2.52   | 9.884783 | 1.77   | 9.922530 | 4.27   | 0.077470 | 5  |
| 56 | .807465  | 2.52   | .884677  | 1.77   | .922787  | 4.28   | .077213  | 4  |
| 57 | .807615  | 2.50   | .884572  | 1.75   | .923044  | 4.28   | .076956  | 3  |
| 58 | .807766  | 2.52   | .884466  | 1.77   | .923300  | 4.27   | .076700  | 2  |
| 59 | .807917  | 2.52   | .884360  | 1.77   | .923557  | 4.28   | .076443  | 1  |
| 60 | 9.808067 | 2.50   | 9.884254 | 1.77   | 9.923814 | 4.28   | 0.076186 | 0  |
|    | Cos.     | D. 1'' | Sin.     | D. 1'' | Cot.     | D. 1'' | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.808067 |        | 9.884254 |        | 9.923814 |        | 0.076186 | 60 |
| 1  | .808218  | 2.52   | .884148  | 1.77   | .924070  | 4.27   | .075930  | 59 |
| 2  | .808368  | 2.50   | .884042  | 1.77   | .924327  | 4.28   | .075673  | 58 |
| 3  | .808519  | 2.52   | .883936  | 1.77   | .924583  | 4.27   | .075417  | 57 |
| 4  | .808669  | 2.50   | .883829  | 1.76   | .924840  | 4.28   | .075160  | 56 |
| 5  | 9.808819 | 2.50   | 9.883723 | 1.77   | 9.925096 | 4.27   | 0.074904 | 55 |
| 6  | .808969  | 2.50   | .883617  | 1.77   | .925352  | 4.27   | .074648  | 54 |
| 7  | .809119  | 2.50   | .883510  | 1.78   | .925609  | 4.28   | .074391  | 53 |
| 8  | .809269  | 2.50   | .883404  | 1.77   | .925865  | 4.27   | .074135  | 52 |
| 9  | .809419  | 2.50   | .883297  | 1.78   | .926122  | 4.28   | .073878  | 51 |
| 10 | 9.809569 |        | 9.883191 |        | 9.926378 |        | 0.073622 | 50 |
| 11 | .809718  | 2.48   | .883084  | 1.78   | .926634  | 4.27   | .073366  | 49 |
| 12 | .809868  | 2.50   | .882977  | 1.78   | .926890  | 4.27   | .073110  | 48 |
| 13 | .810017  | 2.48   | .882871  | 1.77   | .927147  | 4.28   | .072853  | 47 |
| 14 | .810167  | 2.50   | .882764  | 1.78   | .927403  | 4.27   | .072597  | 46 |
| 15 | 9.810316 | 2.48   | 9.882657 | 1.78   | 9.927659 | 4.27   | 0.072341 | 45 |
| 16 | .810465  | 2.48   | .882550  | 1.78   | .927915  | 4.27   | .072085  | 44 |
| 17 | .810614  | 2.48   | .882443  | 1.78   | .928171  | 4.27   | .071829  | 43 |
| 18 | .810763  | 2.48   | .882336  | 1.78   | .928427  | 4.27   | .071573  | 42 |
| 19 | .810912  | 2.48   | .882229  | 1.80   | .928684  | 4.28   | .071316  | 41 |
| 20 | 9.811061 | 2.48   | 9.882121 | 1.78   | 9.928940 | 4.27   | 0.071060 | 40 |
| 21 | .811210  | 2.47   | .882014  | 1.78   | .929196  | 4.27   | .070804  | 39 |
| 22 | .811358  | 2.47   | .881907  | 1.78   | .929452  | 4.27   | .070548  | 38 |
| 23 | .811507  | 2.48   | .881799  | 1.80   | .929708  | 4.27   | .070292  | 37 |
| 24 | .811655  | 2.47   | .881692  | 1.78   | .929964  | 4.27   | .070036  | 36 |
| 25 | 9.811804 | 2.48   | 9.881584 | 1.80   | 9.930220 | 4.27   | 0.069780 | 35 |
| 26 | .811952  | 2.47   | .881477  | 1.78   | .930475  | 4.25   | .069525  | 34 |
| 27 | .812100  | 2.47   | .881369  | 1.80   | .930731  | 4.27   | .069269  | 33 |
| 28 | .812248  | 2.47   | .881261  | 1.80   | .930987  | 4.27   | .069013  | 32 |
| 29 | .812396  | 2.47   | .881153  | 1.80   | .931243  | 4.27   | .068757  | 31 |
| 30 | 9.812544 | 2.47   | 9.881046 | 1.80   | 9.931499 | 4.27   | 0.068501 | 30 |
| 31 | .812692  | 2.47   | .880938  | 1.80   | .931755  | 4.25   | .068245  | 29 |
| 32 | .812840  | 2.47   | .880830  | 1.80   | .932010  | 4.25   | .067990  | 28 |
| 33 | .812988  | 2.47   | .880722  | 1.80   | .932266  | 4.27   | .067734  | 27 |
| 34 | .813135  | 2.45   | .880613  | 1.82   | .932522  | 4.27   | .067478  | 26 |
| 35 | 9.813283 | 2.45   | 9.880505 | 1.80   | 9.932778 | 4.27   | 0.067222 | 25 |
| 36 | .813430  | 2.47   | .880397  | 1.80   | .933033  | 4.25   | .066967  | 24 |
| 37 | .813578  | 2.45   | .880289  | 1.80   | .933289  | 4.27   | .066711  | 23 |
| 38 | .813725  | 2.45   | .880180  | 1.82   | .933545  | 4.27   | .066455  | 22 |
| 39 | .813872  | 2.45   | .880072  | 1.80   | .933800  | 4.25   | .066200  | 21 |
| 40 | 9.814019 | 2.45   | 9.879963 | 1.82   | 9.934056 | 4.27   | 0.065944 | 20 |
| 41 | .814166  | 2.45   | .879855  | 1.80   | .934311  | 4.25   | .065689  | 19 |
| 42 | .814313  | 2.45   | .879746  | 1.82   | .934567  | 4.27   | .065433  | 18 |
| 43 | .814460  | 2.45   | .879637  | 1.80   | .934822  | 4.25   | .065178  | 17 |
| 44 | .814607  | 2.45   | .879529  | 1.80   | .935078  | 4.27   | .064922  | 16 |
| 45 | 9.814753 | 2.43   | 9.879420 | 1.82   | 9.935333 | 4.25   | 0.064667 | 15 |
| 46 | .814900  | 2.45   | .879311  | 1.82   | .935589  | 4.27   | .064411  | 14 |
| 47 | .815046  | 2.43   | .879202  | 1.82   | .935844  | 4.25   | .064156  | 13 |
| 48 | .815193  | 2.45   | .879093  | 1.82   | .936100  | 4.27   | .063900  | 12 |
| 49 | .815339  | 2.43   | .878984  | 1.82   | .936355  | 4.25   | .063645  | 11 |
| 50 | 9.815485 | 2.43   | 9.878875 | 1.80   | 9.936611 | 4.27   | 0.063389 | 10 |
| 51 | .815632  | 2.43   | .878766  | 1.83   | .936866  | 4.25   | .063134  | 9  |
| 52 | .815778  | 2.43   | .878656  | 1.83   | .937121  | 4.27   | .062879  | 8  |
| 53 | .815924  | 2.43   | .878547  | 1.82   | .937377  | 4.27   | .062623  | 7  |
| 54 | .816069  | 2.42   | .878438  | 1.82   | .937632  | 4.25   | .062368  | 6  |
| 55 | 9.816215 | 2.43   | 9.878328 | 1.83   | 9.937887 | 4.25   | 0.062113 | 5  |
| 56 | .816361  | 2.43   | .878219  | 1.82   | .938142  | 4.25   | .061858  | 4  |
| 57 | .816507  | 2.43   | .878109  | 1.83   | .938398  | 4.27   | .061602  | 3  |
| 58 | .816652  | 2.42   | .877999  | 1.83   | .938653  | 4.25   | .061347  | 2  |
| 59 | .816798  | 2.42   | .877890  | 1.82   | .938908  | 4.25   | .061092  | 1  |
| 60 | 9.816943 | 2.42   | 9.877780 | 1.83   | 9.939163 | 4.25   | 0.060837 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     | M. |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.816943 | 2.42   | 9.877780 | 1.83   | 9.939163 | 4.25   | 0.060837 | 60 |
| 1  | .817088  | 2.42   | .877670  | 1.83   | .939418  | 4.25   | .060582  | 59 |
| 2  | .817233  | 2.42   | .877560  | 1.83   | .939673  | 4.25   | .060327  | 58 |
| 3  | .817379  | 2.42   | .877450  | 1.83   | .939928  | 4.25   | .060072  | 57 |
| 4  | .817524  | 2.40   | .877340  | 1.83   | .940183  | 4.25   | .059817  | 56 |
| 5  | 9.817668 | 2.42   | 9.877230 | 1.83   | 9.940439 | 4.25   | 0.059561 | 55 |
| 6  | .817813  | 2.42   | .877120  | 1.83   | .940694  | 4.25   | .059306  | 54 |
| 7  | .817958  | 2.42   | .877010  | 1.85   | .940949  | 4.25   | .059051  | 53 |
| 8  | .818103  | 2.42   | .876899  | 1.83   | .941204  | 4.25   | .058796  | 52 |
| 9  | .818247  | 2.42   | .876789  | 1.85   | .941459  | 4.23   | .058541  | 51 |
| 10 | 9.818392 | 2.40   | 9.876678 | 1.83   | 9.941713 | 4.25   | 0.058287 | 50 |
| 11 | .818536  | 2.42   | .876568  | 1.85   | .941968  | 4.25   | .058032  | 49 |
| 12 | .818681  | 2.40   | .876457  | 1.83   | .942223  | 4.25   | .057777  | 48 |
| 13 | .818825  | 2.40   | .876347  | 1.85   | .942478  | 4.25   | .057522  | 47 |
| 14 | .818969  | 2.40   | .876236  | 1.85   | .942733  | 4.25   | .057267  | 46 |
| 15 | 9.819113 | 2.40   | 9.876125 | 1.85   | 9.942988 | 4.25   | 0.057012 | 45 |
| 16 | .819257  | 2.40   | .876014  | 1.83   | .943243  | 4.25   | .056757  | 44 |
| 17 | .819401  | 2.40   | .875904  | 1.85   | .943498  | 4.25   | .056502  | 43 |
| 18 | .819545  | 2.40   | .875793  | 1.85   | .943752  | 4.23   | .056248  | 42 |
| 19 | .819689  | 2.38   | .875682  | 1.85   | .944007  | 4.25   | .055993  | 41 |
| 20 | 9.819832 | 2.40   | 9.875571 | 1.87   | 9.944262 | 4.25   | 0.055738 | 40 |
| 21 | .819976  | 2.40   | .875459  | 1.85   | .944517  | 4.23   | .055483  | 39 |
| 22 | .820120  | 2.38   | .875348  | 1.85   | .944771  | 4.25   | .055229  | 38 |
| 23 | .820263  | 2.38   | .875237  | 1.85   | .945026  | 4.25   | .054974  | 37 |
| 24 | .820406  | 2.38   | .875126  | 1.87   | .945281  | 4.23   | .054719  | 36 |
| 25 | 9.820550 | 2.38   | 9.875014 | 1.85   | 9.945535 | 4.23   | 0.054465 | 35 |
| 26 | .820693  | 2.38   | .874903  | 1.87   | .945790  | 4.25   | .054210  | 34 |
| 27 | .820836  | 2.38   | .874791  | 1.85   | .946045  | 4.23   | .053955  | 33 |
| 28 | .820979  | 2.38   | .874680  | 1.87   | .946299  | 4.25   | .053701  | 32 |
| 29 | .821122  | 2.38   | .874568  | 1.87   | .946554  | 4.23   | .053446  | 31 |
| 30 | 9.821265 | 2.37   | 9.874456 | 1.87   | 9.946808 | 4.25   | 0.053192 | 30 |
| 31 | .821407  | 2.38   | .874344  | 1.87   | .947063  | 4.25   | .052937  | 29 |
| 32 | .821550  | 2.38   | .874232  | 1.85   | .947318  | 4.23   | .052682  | 28 |
| 33 | .821693  | 2.37   | .874121  | 1.85   | .947572  | 4.25   | .052428  | 27 |
| 34 | .821835  | 2.37   | .874009  | 1.87   | .947827  | 4.25   | .052173  | 26 |
| 35 | 9.821977 | 2.38   | 9.873896 | 1.88   | 9.948081 | 4.23   | 0.051919 | 25 |
| 36 | .822120  | 2.37   | .873784  | 1.87   | .948335  | 4.25   | .051665  | 24 |
| 37 | .822262  | 2.37   | .873672  | 1.87   | .948590  | 4.23   | .051410  | 23 |
| 38 | .822404  | 2.37   | .873560  | 1.87   | .948844  | 4.23   | .051156  | 22 |
| 39 | .822546  | 2.37   | .873448  | 1.88   | .949099  | 4.23   | .050901  | 21 |
| 40 | 9.822688 | 2.37   | 9.873335 | 1.87   | 9.949353 | 4.25   | 0.050647 | 20 |
| 41 | .822830  | 2.37   | .873223  | 1.88   | .949608  | 4.23   | .050392  | 19 |
| 42 | .822972  | 2.37   | .873110  | 1.87   | .949862  | 4.23   | .050138  | 18 |
| 43 | .823114  | 2.35   | .872998  | 1.88   | .950116  | 4.25   | .049884  | 17 |
| 44 | .823255  | 2.35   | .872885  | 1.88   | .950371  | 4.23   | .049629  | 16 |
| 45 | 9.823397 | 2.37   | 9.872772 | 1.88   | 9.950625 | 4.23   | 0.049375 | 15 |
| 46 | .823539  | 2.37   | .872659  | 1.87   | .950879  | 4.23   | .049121  | 14 |
| 47 | .823680  | 2.35   | .872547  | 1.87   | .951133  | 4.23   | .048867  | 13 |
| 48 | .823821  | 2.35   | .872434  | 1.88   | .951388  | 4.25   | .048612  | 12 |
| 49 | .823963  | 2.35   | .872321  | 1.88   | .951642  | 4.23   | .048358  | 11 |
| 50 | 9.824104 | 2.35   | 9.872208 | 1.88   | 9.951896 | 4.23   | 0.048104 | 10 |
| 51 | .824245  | 2.35   | .872095  | 1.90   | .952150  | 4.25   | .047850  | 9  |
| 52 | .824386  | 2.35   | .871981  | 1.88   | .952405  | 4.23   | .047595  | 8  |
| 53 | .824527  | 2.35   | .871868  | 1.88   | .952659  | 4.23   | .047341  | 7  |
| 54 | .824668  | 2.35   | .871755  | 1.88   | .952913  | 4.23   | .047087  | 6  |
| 55 | 9.824808 | 2.35   | 9.871641 | 1.90   | 9.953167 | 4.23   | 0.046833 | 5  |
| 56 | .824949  | 2.35   | .871528  | 1.90   | .953421  | 4.23   | .046579  | 4  |
| 57 | .825090  | 2.35   | .871414  | 1.88   | .953675  | 4.23   | .046325  | 3  |
| 58 | .825230  | 2.35   | .871301  | 1.90   | .953929  | 4.23   | .046071  | 2  |
| 59 | .825371  | 2.35   | .871187  | 1.90   | .954183  | 4.23   | .045817  | 1  |
| 60 | 9.825511 | 2.33   | 9.871073 | 1.90   | 9.954437 | 4.23   | 0.045563 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |

| M. | Sin.     | D. 1''. | Cos.     | D. 1''. | Tan.     | D. 1''. | Cot.     |    |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.825511 |         | 9.871073 | I. 88   | 9.954437 | 4. 23   | 0.045563 | 60 |
| 1  | .825651  | 2. 33   | .870960  | I. 90   | .954691  | 4. 25   | .045309  | 59 |
| 2  | .825791  | 2. 33   | .870846  | I. 90   | .954946  | 4. 23   | .045054  | 58 |
| 3  | .825931  | 2. 33   | .870732  | I. 90   | .955200  | 4. 23   | .044800  | 57 |
| 4  | .826071  | 2. 33   | .870618  | I. 90   | .955454  | 4. 23   | .044546  | 56 |
| 5  | 9.826211 | 2. 33   | 9.870504 | I. 90   | 9.955708 | 4. 23   | 0.044292 | 55 |
| 6  | .826351  | 2. 33   | .870390  | I. 90   | .955961  | 4. 22   | .044039  | 54 |
| 7  | .826491  | 2. 33   | .870276  | I. 92   | .956215  | 4. 23   | .043785  | 53 |
| 8  | .826631  | 2. 32   | .870161  | I. 90   | .956469  | 4. 23   | .043531  | 52 |
| 9  | .826770  | 2. 33   | .870047  | I. 90   | .956723  | 4. 23   | 0.043277 | 51 |
| 10 | 9.826910 | 2. 32   | 9.869933 | I. 92   | 9.956977 | 4. 23   | 0.043023 | 50 |
| 11 | .827049  | 2. 33   | .869818  | I. 90   | .957231  | 4. 23   | .042769  | 49 |
| 12 | .827189  | 2. 32   | .869704  | I. 92   | .957485  | 4. 23   | .042515  | 48 |
| 13 | .827328  | 2. 32   | .869589  | I. 92   | .957739  | 4. 23   | .042261  | 47 |
| 14 | .827467  | 2. 32   | .869474  | I. 90   | .957993  | 4. 23   | .042007  | 46 |
| 15 | 9.827606 | 2. 32   | 9.869360 | I. 92   | 9.958247 | 4. 22   | 0.041753 | 45 |
| 16 | .827745  | 2. 32   | .869245  | I. 92   | .958500  | 4. 23   | .041500  | 44 |
| 17 | .827884  | 2. 32   | .869130  | I. 92   | .958754  | 4. 23   | .041246  | 43 |
| 18 | .828023  | 2. 32   | .869015  | I. 92   | .959008  | 4. 23   | .040992  | 42 |
| 19 | .828162  | 2. 32   | .868900  | I. 92   | .959262  | 4. 23   | .040738  | 41 |
| 20 | 9.828301 | 2. 30   | 9.868785 | I. 92   | 9.959516 | 4. 22   | 0.040484 | 40 |
| 21 | .828439  | 2. 32   | .868670  | I. 92   | .959769  | 4. 23   | .040231  | 39 |
| 22 | .828578  | 2. 30   | .868555  | I. 92   | .960023  | 4. 23   | .039977  | 38 |
| 23 | .828716  | 2. 32   | .868440  | I. 93   | .960277  | 4. 22   | .039723  | 37 |
| 24 | .828855  | 2. 30   | .868324  | I. 92   | .960530  | 4. 23   | .039470  | 36 |
| 25 | 9.828993 | 2. 30   | 9.868209 | I. 93   | 9.960784 | 4. 23   | 0.039216 | 35 |
| 26 | .829131  | 2. 30   | .868093  | I. 93   | .961038  | 4. 23   | .038962  | 34 |
| 27 | .829269  | 2. 30   | .867978  | I. 92   | .961292  | 4. 23   | .038708  | 33 |
| 28 | .829407  | 2. 30   | .867862  | I. 93   | .961545  | 4. 22   | .038455  | 32 |
| 29 | .829545  | 2. 30   | .867747  | I. 93   | .961799  | 4. 22   | .038201  | 31 |
| 30 | 9.829683 | 2. 30   | 9.867631 | I. 93   | 9.962052 | 4. 23   | 0.037948 | 30 |
| 31 | .829821  | 2. 30   | .867515  | I. 93   | .962306  | 4. 23   | .037694  | 29 |
| 32 | .829959  | 2. 30   | .867399  | I. 93   | .962560  | 4. 22   | .037440  | 28 |
| 33 | .830097  | 2. 28   | .867283  | I. 93   | .962813  | 4. 23   | .037187  | 27 |
| 34 | .830234  | 2. 30   | .867167  | I. 93   | .963067  | 4. 23   | .036933  | 26 |
| 35 | 9.830372 | 2. 28   | 9.867051 | I. 93   | 9.963320 | 4. 22   | 0.036680 | 25 |
| 36 | .830509  | 2. 28   | .866935  | I. 93   | .963574  | 4. 23   | .036426  | 24 |
| 37 | .830646  | 2. 30   | .866819  | I. 93   | .963828  | 4. 22   | .036172  | 23 |
| 38 | .830784  | 2. 28   | .866703  | I. 95   | .964081  | 4. 23   | .035919  | 22 |
| 39 | .830921  | 2. 28   | .866586  | I. 93   | .964335  | 4. 22   | .035665  | 21 |
| 40 | 9.831058 | 2. 28   | 9.866470 | I. 95   | 9.964588 | 4. 23   | 0.035412 | 20 |
| 41 | .831195  | 2. 28   | .866353  | I. 93   | .964842  | 4. 22   | .035158  | 19 |
| 42 | .831332  | 2. 28   | .866237  | I. 95   | .965095  | 4. 23   | .034905  | 18 |
| 43 | .831469  | 2. 28   | .866120  | I. 95   | .965349  | 4. 22   | .034651  | 17 |
| 44 | .831606  | 2. 27   | .866004  | I. 93   | .965602  | 4. 22   | .034398  | 16 |
| 45 | 9.831742 | 2. 28   | 9.865887 | I. 95   | 9.965855 | 4. 23   | 0.034145 | 15 |
| 46 | .831879  | 2. 27   | .865770  | I. 95   | .966109  | 4. 22   | .033891  | 14 |
| 47 | .832015  | 2. 28   | .865653  | I. 95   | .966362  | 4. 23   | .033638  | 13 |
| 48 | .832152  | 2. 27   | .865536  | I. 95   | .966616  | 4. 22   | .033384  | 12 |
| 49 | .832288  | 2. 28   | .865419  | I. 95   | .966869  | 4. 23   | .033131  | 11 |
| 50 | 9.832425 | 2. 27   | 9.865302 | I. 95   | 9.967123 | 4. 22   | 0.032877 | 10 |
| 51 | .832561  | 2. 27   | .865185  | I. 95   | .967376  | 4. 22   | .032624  | 9  |
| 52 | .832697  | 2. 27   | .865068  | I. 97   | .967629  | 4. 23   | .032371  | 8  |
| 53 | .832833  | 2. 27   | .864950  | I. 95   | .967883  | 4. 22   | .032117  | 7  |
| 54 | .832969  | 2. 27   | .864833  | I. 95   | .968136  | 4. 22   | .031864  | 6  |
| 55 | 9.833105 | 2. 27   | 9.864716 | I. 95   | 9.968389 | 4. 22   | 0.031611 | 5  |
| 56 | .833241  | 2. 27   | .864598  | I. 97   | .968643  | 4. 23   | .031357  | 4  |
| 57 | .833377  | 2. 25   | .864481  | I. 95   | .968896  | 4. 22   | .031104  | 3  |
| 58 | .833512  | 2. 27   | .864363  | I. 97   | .969149  | 4. 23   | .030851  | 2  |
| 59 | .833648  | 2. 25   | .864245  | I. 97   | .969403  | 4. 22   | .030597  | 1  |
| 60 | 9.833783 |         | 9.864127 |         | 9.969656 |         | 0.030344 | 0  |
|    | Cos.     | D. 1''. | Sin.     | D. 1''. | Cot.     | D. 1''. | Tan.     | M. |

| M. | Sin.     | D. 1''. | Cos      | D. 1''. | Tan.     | D. 1''. | Cot.     |    |
|----|----------|---------|----------|---------|----------|---------|----------|----|
| 0  | 9.833783 | 2.27    | 9.864127 | 1.95    | 9.669656 | 4.22    | 0.030344 | 60 |
| 1  | .833919  | 2.25    | .864010  | 1.97    | .669909  | 4.22    | .030091  | 59 |
| 2  | .834054  | 2.25    | .863892  | 1.97    | .670162  | 4.23    | .029838  | 58 |
| 3  | .834189  | 2.27    | .863774  | 1.97    | .670416  | 4.22    | .029584  | 57 |
| 4  | .834325  | 2.25    | .863656  | 1.97    | .670669  | 4.22    | .029331  | 56 |
| 5  | 9.834460 | 2.25    | 9.863538 | 1.97    | 9.670922 | 4.22    | 0.029078 | 55 |
| 6  | .834595  | 2.25    | .863419  | 1.98    | .671175  | 4.23    | .028825  | 54 |
| 7  | .834730  | 2.25    | .863301  | 1.97    | .671429  | 4.22    | .028571  | 53 |
| 8  | .834865  | 2.23    | .863183  | 1.98    | .671682  | 4.22    | .028318  | 52 |
| 9  | .834999  | 2.25    | .863064  | 1.97    | .671935  | 4.22    | .028065  | 51 |
| 10 | 9.835134 | 2.25    | 9.862946 | 1.98    | 9.672188 | 4.22    | 0.027812 | 50 |
| 11 | .835269  | 2.23    | .862827  | 1.97    | .672441  | 4.23    | .027559  | 49 |
| 12 | .835403  | 2.25    | .862709  | 1.98    | .672695  | 4.22    | .027305  | 48 |
| 13 | .835538  | 2.23    | .862590  | 1.98    | .672948  | 4.22    | .027052  | 47 |
| 14 | .835672  | 2.25    | .862471  | 1.97    | .673201  | 4.22    | .026799  | 46 |
| 15 | 9.835807 | 2.23    | 9.862353 | 1.98    | 9.673454 | 4.22    | 0.026546 | 45 |
| 16 | .835941  | 2.23    | .862234  | 1.98    | .673707  | 4.22    | .026293  | 44 |
| 17 | .836075  | 2.23    | .862115  | 1.98    | .673960  | 4.22    | .026040  | 43 |
| 18 | .836209  | 2.23    | .861996  | 1.98    | .674213  | 4.22    | .025787  | 42 |
| 19 | .836343  | 2.23    | .861877  | 1.98    | .674466  | 4.23    | .025534  | 41 |
| 20 | 9.836477 | 2.23    | 9.861758 | 2.00    | 9.674720 | 4.22    | 0.025280 | 40 |
| 21 | .836611  | 2.23    | .861638  | 1.98    | .674973  | 4.22    | .025027  | 39 |
| 22 | .836745  | 2.22    | .861519  | 1.98    | .675226  | 4.22    | .024774  | 38 |
| 23 | .836878  | 2.23    | .861400  | 2.00    | .675479  | 4.22    | .024521  | 37 |
| 24 | .837012  | 2.23    | .861280  | 1.98    | .675732  | 4.22    | .024268  | 36 |
| 25 | 9.837146 | 2.22    | 9.861161 | 2.00    | 9.675985 | 4.22    | 0.024015 | 35 |
| 26 | .837279  | 2.22    | .861041  | 1.98    | .676238  | 4.22    | .023762  | 34 |
| 27 | .837412  | 2.23    | .860922  | 2.00    | .676491  | 4.22    | .023509  | 33 |
| 28 | .837546  | 2.22    | .860802  | 2.00    | .676744  | 4.22    | .023256  | 32 |
| 29 | .837679  | 2.22    | .860682  | 2.00    | .676997  | 4.22    | .023003  | 31 |
| 30 | 9.837812 | 2.22    | 9.860562 | 2.00    | 9.677250 | 4.22    | 0.022750 | 30 |
| 31 | .837945  | 2.22    | .860442  | 2.00    | .677503  | 4.22    | .022497  | 29 |
| 32 | .838078  | 2.22    | .860322  | 2.00    | .677756  | 4.22    | .022244  | 28 |
| 33 | .838211  | 2.22    | .860202  | 2.00    | .678009  | 4.22    | .021991  | 27 |
| 34 | .838344  | 2.22    | .860082  | 2.00    | .678262  | 4.22    | .021738  | 26 |
| 35 | 9.838477 | 2.22    | 9.859962 | 2.00    | 9.678515 | 4.22    | 0.021485 | 25 |
| 36 | .838610  | 2.20    | .859842  | 2.02    | .678768  | 4.22    | .021232  | 24 |
| 37 | .838742  | 2.22    | .859721  | 2.00    | .679021  | 4.22    | .020979  | 23 |
| 38 | .838875  | 2.22    | .859601  | 2.02    | .679274  | 4.22    | .020726  | 22 |
| 39 | .839007  | 2.22    | .859480  | 2.00    | .679527  | 4.22    | .020473  | 21 |
| 40 | 9.839140 | 2.20    | 9.859360 | 2.02    | 9.679780 | 4.22    | 0.020220 | 20 |
| 41 | .839272  | 2.20    | .859239  | 2.00    | .680033  | 4.22    | .019967  | 19 |
| 42 | .839404  | 2.20    | .859119  | 2.02    | .680286  | 4.20    | .019714  | 18 |
| 43 | .839536  | 2.20    | .858998  | 2.02    | .680538  | 4.22    | .019462  | 17 |
| 44 | .839668  | 2.20    | .858877  | 2.02    | .680791  | 4.22    | .019209  | 16 |
| 45 | 9.839800 | 2.20    | 9.858756 | 2.02    | 9.681044 | 4.22    | 0.018956 | 15 |
| 46 | .839932  | 2.20    | .858635  | 2.02    | .681297  | 4.22    | .018703  | 14 |
| 47 | .840064  | 2.20    | .858514  | 2.02    | .681550  | 4.22    | .018450  | 13 |
| 48 | .840196  | 2.20    | .858393  | 2.02    | .681803  | 4.22    | .018197  | 12 |
| 49 | .840328  | 2.18    | .858272  | 2.02    | .682056  | 4.22    | .017944  | 11 |
| 50 | 9.840459 | 2.20    | 9.858151 | 2.03    | 9.682309 | 4.22    | 0.017691 | 10 |
| 51 | .840591  | 2.18    | .858029  | 2.02    | .682562  | 4.20    | .017438  | 9  |
| 52 | .840722  | 2.20    | .857908  | 2.03    | .682814  | 4.22    | .017186  | 8  |
| 53 | .840854  | 2.18    | .857786  | 2.02    | .683067  | 4.22    | .016933  | 7  |
| 54 | .840985  | 2.18    | .857665  | 2.03    | .683320  | 4.22    | .016680  | 6  |
| 55 | 9.841116 | 2.18    | 9.857543 | 2.02    | 9.683573 | 4.22    | 0.016427 | 5  |
| 56 | .841247  | 2.18    | .857422  | 2.03    | .683826  | 4.22    | .016174  | 4  |
| 57 | .841378  | 2.18    | .857300  | 2.03    | .684079  | 4.22    | .015921  | 3  |
| 58 | .841509  | 2.18    | .857178  | 2.03    | .684332  | 4.20    | .015668  | 2  |
| 59 | .841640  | 2.18    | .857056  | 2.03    | .684584  | 4.22    | .015416  | 1  |
| 60 | 9.841771 |         | 9.856934 |         | 9.684837 |         | 0.015163 | 0  |
|    | Cos.     | D. 1''. | Sin.     | D. 1''. | Cot.     | D. 1''. | Tan.     | M. |

| M. | Sin.     | D. 1". | Cos.     | D. 1". | Tan.     | D. 1". | Cot.     |    |
|----|----------|--------|----------|--------|----------|--------|----------|----|
| 0  | 9.841771 | 2.18   | 9.856934 | 2.03   | 9.984837 | 4.22   | 0.015163 | 60 |
| 1  | .841902  | 2.18   | .856812  | 2.03   | .985090  | 4.22   | .014910  | 59 |
| 2  | .842033  | 2.17   | .856690  | 2.03   | .985343  | 4.22   | .014657  | 58 |
| 3  | .842163  | 2.18   | .856568  | 2.03   | .985596  | 4.20   | .014404  | 57 |
| 4  | .842294  | 2.17   | .856446  | 2.05   | .985848  | 4.22   | .014152  | 56 |
| 5  | 9.842424 | 2.18   | 9.856323 | 2.03   | 9.986101 | 4.22   | 0.013899 | 55 |
| 6  | .842555  | 2.17   | .856201  | 2.05   | .986354  | 4.22   | .013646  | 54 |
| 7  | .842685  | 2.17   | .856078  | 2.05   | .986607  | 4.22   | .013393  | 53 |
| 8  | .842815  | 2.17   | .855956  | 2.03   | .986860  | 4.22   | .013140  | 52 |
| 9  | .842946  | 2.17   | .855833  | 2.03   | .987112  | 4.20   | .012888  | 51 |
| 10 | 9.843076 | 2.17   | 9.855711 | 2.05   | 9.987365 | 4.22   | 0.012635 | 50 |
| 11 | .843206  | 2.17   | .855588  | 2.05   | .987618  | 4.22   | .012382  | 49 |
| 12 | .843336  | 2.17   | .855465  | 2.05   | .987871  | 4.20   | .012129  | 48 |
| 13 | .843466  | 2.15   | .855342  | 2.05   | .988123  | 4.22   | .011877  | 47 |
| 14 | .843595  | 2.17   | .855219  | 2.05   | .988376  | 4.22   | .011624  | 46 |
| 15 | 9.843725 | 2.17   | 9.855096 | 2.05   | 9.988629 | 4.22   | 0.011371 | 45 |
| 16 | .843855  | 2.17   | .854973  | 2.05   | .988882  | 4.22   | .011118  | 44 |
| 17 | .843984  | 2.15   | .854850  | 2.05   | .989134  | 4.20   | .010866  | 43 |
| 18 | .844114  | 2.17   | .854727  | 2.05   | .989387  | 4.22   | .010613  | 42 |
| 19 | .844243  | 2.15   | .854603  | 2.07   | .989640  | 4.22   | .010360  | 41 |
| 20 | 9.844372 | 2.17   | 9.854480 | 2.07   | 9.989893 | 4.20   | 0.010107 | 40 |
| 21 | .844502  | 2.15   | .854356  | 2.05   | .990145  | 4.22   | .009855  | 39 |
| 22 | .844631  | 2.15   | .854233  | 2.07   | .990398  | 4.22   | .009602  | 38 |
| 23 | .844760  | 2.15   | .854109  | 2.05   | .990651  | 4.20   | .009349  | 37 |
| 24 | .844889  | 2.15   | .853986  | 2.07   | .990903  | 4.22   | .009097  | 36 |
| 25 | 9.845018 | 2.15   | 9.853862 | 2.07   | 9.991156 | 4.22   | 0.008844 | 35 |
| 26 | .845147  | 2.15   | .853738  | 2.07   | .991409  | 4.22   | .008591  | 34 |
| 27 | .845276  | 2.15   | .853614  | 2.07   | .991662  | 4.20   | .008338  | 33 |
| 28 | .845405  | 2.15   | .853490  | 2.07   | .991914  | 4.22   | .008086  | 32 |
| 29 | .845533  | 2.15   | .853366  | 2.07   | .992167  | 4.22   | .007833  | 31 |
| 30 | 9.845662 | 2.13   | 9.853242 | 2.07   | 9.992420 | 4.20   | 0.007580 | 30 |
| 31 | .845790  | 2.15   | .853118  | 2.07   | .992672  | 4.22   | .007328  | 29 |
| 32 | .845919  | 2.13   | .852994  | 2.08   | .992925  | 4.22   | .007075  | 28 |
| 33 | .846047  | 2.13   | .852869  | 2.07   | .993178  | 4.22   | .006822  | 27 |
| 34 | .846175  | 2.15   | .852745  | 2.08   | .993431  | 4.20   | .006569  | 26 |
| 35 | 9.846304 | 2.13   | 9.852620 | 2.07   | 9.993683 | 4.22   | 0.006317 | 25 |
| 36 | .846432  | 2.13   | .852496  | 2.08   | .993936  | 4.22   | .006064  | 24 |
| 37 | .846560  | 2.13   | .852371  | 2.08   | .994189  | 4.20   | .005811  | 23 |
| 38 | .846688  | 2.13   | .852247  | 2.07   | .994441  | 4.22   | .005559  | 22 |
| 39 | .846816  | 2.13   | .852122  | 2.08   | .994694  | 4.22   | .005306  | 21 |
| 40 | 9.846944 | 2.12   | 9.851997 | 2.08   | 9.994947 | 4.20   | 0.005053 | 20 |
| 41 | .847071  | 2.13   | .851872  | 2.08   | .995199  | 4.22   | .004801  | 19 |
| 42 | .847199  | 2.13   | .851747  | 2.08   | .995452  | 4.22   | .004548  | 18 |
| 43 | .847327  | 2.12   | .851622  | 2.08   | .995705  | 4.20   | .004295  | 17 |
| 44 | .847454  | 2.13   | .851497  | 2.08   | .995957  | 4.22   | .004043  | 16 |
| 45 | 9.847582 | 2.12   | 9.851372 | 2.10   | 9.996210 | 4.22   | 0.003790 | 15 |
| 46 | .847709  | 2.12   | .851246  | 2.08   | .996463  | 4.20   | .003537  | 14 |
| 47 | .847836  | 2.12   | .851121  | 2.08   | .996715  | 4.22   | .003285  | 13 |
| 48 | .847964  | 2.12   | .850996  | 2.10   | .996968  | 4.22   | .003032  | 12 |
| 49 | .848091  | 2.12   | .850870  | 2.08   | .997221  | 4.20   | .002779  | 11 |
| 50 | 9.848218 | 2.12   | 9.850745 | 2.10   | 9.997473 | 4.22   | 0.002527 | 10 |
| 51 | .848345  | 2.12   | .850619  | 2.10   | .997726  | 4.22   | .002274  | 9  |
| 52 | .848472  | 2.12   | .850493  | 2.08   | .997979  | 4.20   | .002021  | 8  |
| 53 | .848599  | 2.12   | .850368  | 2.10   | .998231  | 4.22   | .001769  | 7  |
| 54 | .848726  | 2.10   | .850242  | 2.10   | .998484  | 4.22   | .001516  | 6  |
| 55 | 9.848852 | 2.12   | 9.850116 | 2.10   | 9.998737 | 4.20   | 0.001263 | 5  |
| 56 | .848979  | 2.12   | .849990  | 2.10   | .998989  | 4.22   | .001011  | 4  |
| 57 | .849106  | 2.10   | .849864  | 2.10   | .999242  | 4.22   | .000758  | 3  |
| 58 | .849232  | 2.12   | .849738  | 2.12   | .999495  | 4.20   | .000505  | 2  |
| 59 | .849359  | 2.10   | .849611  | 2.10   | .999747  | 4.22   | .000253  | 1  |
| 60 | 9.849485 |        | 9.849485 |        | 0.000000 |        | 0.000000 | 0  |
|    | Cos.     | D. 1". | Sin.     | D. 1". | Cot.     | D. 1". | Tan.     | M. |



第十七表 正矢外割對數表

| 0° |          |          |          |          | 1° |          |         |          |         |
|----|----------|----------|----------|----------|----|----------|---------|----------|---------|
| M. | Vers.    | D. 1''.  | Exsec.   | D. 1''.  | M. | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0  | ∞        |          | ∞        |          | 0  | 6.182714 |         | 6.182780 |         |
| 1  | 2.626422 |          | 2.626422 |          | 1  | .197071  | 239.28  | .197139  | 239.32  |
| 2  | 3.228482 | 10034.33 | 3.228482 | 10034.33 | 2  | .211194  | 235.38  | .211264  | 235.42  |
| 3  | .580665  | 5869.72  | .580665  | 5869.72  | 3  | .225091  | 231.62  | .225164  | 231.67  |
| 4  | .830542  | 4164.62  | .830542  | 4164.62  | 4  | .238770  | 227.98  | .238845  | 228.02  |
| 5  | 4.024362 | 3230.33  | 4.024362 | 3230.33  | 5  | 6.252236 | 224.43  | 6.252314 | 224.48  |
| 6  | .182725  | 2639.38  | .182725  | 2639.38  | 6  | .265497  | 221.02  | .265577  | 221.05  |
| 7  | .316618  | 2231.55  | .316618  | 2231.57  | 7  | .278558  | 217.68  | .278641  | 217.73  |
| 8  | .432602  | 1933.07  | .432603  | 1933.07  | 8  | .291426  | 214.47  | .291511  | 214.50  |
| 9  | .534907  | 1705.08  | .534908  | 1705.08  | 9  | .304106  | 211.33  | .304193  | 211.37  |
|    |          | 1525.25  |          | 1525.27  |    |          | 208.28  |          | 208.33  |
| 10 | 4.626422 |          | 4.626424 |          | 10 | 6.316603 |         | 6.316693 |         |
| 11 | .709207  | 1379.75  | .709209  | 1379.75  | 11 | .328923  | 205.37  | .329016  | 205.38  |
| 12 | .784784  | 1259.62  | .784787  | 1259.63  | 12 | .341071  | 202.43  | .341167  | 202.52  |
| 13 | .854308  | 1158.73  | .854312  | 1158.75  | 13 | .353052  | 199.68  | .353150  | 199.72  |
| 14 | .918678  | 1072.83  | .918681  | 1072.82  | 14 | .364869  | 196.95  | .364970  | 197.00  |
| 15 | 4.978604 | 998.77   | 4.978608 | 998.78   | 15 | 6.376528 | 194.32  | 6.376631 | 194.35  |
| 16 | 5.034661 | 934.28   | 5.034666 | 934.30   | 16 | .388032  | 191.73  | .388138  | 191.78  |
| 17 | .087319  | 877.63   | .087325  | 877.65   | 17 | .399386  | 189.23  | .399494  | 189.27  |
| 18 | .136966  | 827.45   | .136972  | 827.45   | 18 | 4.10593  | 186.78  | 4.10705  | 186.85  |
| 19 | .183928  | 782.70   | .183935  | 782.72   | 19 | .421657  | 184.40  | .421772  | 184.45  |
|    |          | 742.55   |          | 742.55   |    |          | 182.10  |          | 182.13  |
| 20 | 5.228481 |          | 5.228488 |          | 20 | 6.432583 |         | 6.432700 |         |
| 21 | .270859  | 706.30   | .270868  | 706.33   | 21 | .443372  | 179.82  | .443493  | 179.88  |
| 22 | .311266  | 673.45   | .311275  | 673.45   | 22 | .454029  | 177.62  | .454153  | 177.67  |
| 23 | .349876  | 643.50   | .349886  | 643.52   | 23 | .464557  | 175.47  | .464684  | 175.52  |
| 24 | .386843  | 616.12   | .386854  | 616.13   | 24 | .474959  | 173.37  | .475089  | 173.42  |
| 25 | 5.422300 | 590.95   | 5.422312 | 590.97   | 25 | 6.485238 | 171.32  | 6.485371 | 171.37  |
| 26 | .456367  | 567.78   | .456379  | 567.78   | 26 | .495396  | 169.30  | .495532  | 169.35  |
| 27 | .489148  | 546.35   | .489161  | 546.37   | 27 | .505438  | 167.37  | .505577  | 167.42  |
| 28 | .520736  | 526.47   | .520750  | 526.48   | 28 | .515364  | 165.43  | .515506  | 165.48  |
| 29 | .551216  | 508.00   | .551231  | 508.02   | 29 | .525178  | 163.57  | .525324  | 163.63  |
|    |          | 490.77   |          | 490.80   |    |          | 161.73  |          | 161.78  |
| 30 | 5.580662 |          | 5.580679 |          | 30 | 6.534882 |         | 6.535031 |         |
| 31 | .609143  | 474.68   | .609160  | 474.68   | 31 | .544480  | 159.97  | .544632  | 159.97  |
| 32 | .636719  | 459.60   | .636738  | 459.63   | 32 | .553972  | 158.20  | .554128  | 158.27  |
| 33 | .663447  | 445.47   | .663467  | 445.48   | 33 | .563362  | 156.50  | .563521  | 156.55  |
| 34 | .689377  | 432.17   | .689398  | 432.18   | 34 | .572651  | 154.82  | .572813  | 154.87  |
| 35 | 5.714555 | 419.63   | 5.714577 | 419.65   | 35 | 6.581842 | 153.18  | 6.582008 | 153.25  |
| 36 | .739023  | 407.80   | .739047  | 407.83   | 36 | .590936  | 151.57  | .591106  | 151.63  |
| 37 | .762821  | 396.63   | .762847  | 396.67   | 37 | .599937  | 150.02  | .600110  | 150.07  |
| 38 | .785985  | 386.07   | .786012  | 386.08   | 38 | .608845  | 148.47  | .609021  | 148.52  |
| 39 | .808547  | 376.03   | .808575  | 376.05   | 39 | .617663  | 146.97  | .617843  | 147.03  |
|    |          | 366.50   |          | 366.53   |    |          | 145.48  |          | 145.53  |
| 40 | 5.830537 |          | 5.830567 |          | 40 | 6.626392 |         | 6.626575 |         |
| 41 | .851985  | 357.47   | .852016  | 357.48   | 41 | .635034  | 144.03  | .635221  | 144.10  |
| 42 | .872915  | 348.83   | .872948  | 348.87   | 42 | .643591  | 142.62  | .643782  | 142.68  |
| 43 | .893353  | 340.63   | .893387  | 340.65   | 43 | .652064  | 141.22  | .652259  | 141.28  |
| 44 | .913322  | 332.82   | .913357  | 332.83   | 44 | .660456  | 139.87  | .660655  | 139.93  |
| 45 | 5.932841 | 325.32   | 5.932878 | 325.35   | 45 | 6.668767 | 138.52  | 6.668970 | 138.58  |
| 46 | .951931  | 318.17   | .951970  | 318.20   | 46 | .677000  | 137.22  | .677206  | 137.27  |
| 47 | .970611  | 311.33   | .970652  | 311.37   | 47 | .685155  | 135.92  | .685365  | 135.97  |
| 48 | .988898  | 304.78   | .988940  | 304.80   | 48 | .693234  | 134.65  | .693448  | 134.72  |
| 49 | 6.006807 | 298.48   | 6.006851 | 298.52   | 49 | .701239  | 133.42  | .701457  | 133.48  |
|    |          | 292.47   |          | 292.50   |    |          | 132.20  |          | 132.27  |
| 50 | 6.024355 |          | 6.024401 |          | 50 | 6.709171 |         | 6.709393 |         |
| 51 | .041555  | 286.67   | .041602  | 286.68   | 51 | .717030  | 130.98  | .717257  | 131.07  |
| 52 | .058421  | 281.10   | .058470  | 281.13   | 52 | .724820  | 129.82  | .725050  | 129.88  |
| 53 | .074965  | 275.73   | .075017  | 275.78   | 53 | .732540  | 128.67  | .732775  | 128.75  |
| 54 | .091201  | 270.60   | .091254  | 270.62   | 54 | .740192  | 127.53  | .740431  | 127.60  |
| 55 | 6.107138 | 265.62   | 6.107194 | 265.67   | 55 | 6.747777 | 126.42  | 6.748020 | 126.48  |
| 56 | .122789  | 260.85   | .122846  | 260.87   | 56 | .755297  | 125.33  | .755544  | 125.40  |
| 57 | .138162  | 256.22   | .138222  | 256.27   | 57 | .762752  | 124.25  | .763004  | 124.33  |
| 58 | .153268  | 251.77   | .153330  | 251.80   | 58 | .770144  | 123.20  | .770400  | 123.27  |
| 59 | .168116  | 247.47   | .168180  | 247.50   | 59 | .777473  | 122.15  | .777733  | 122.22  |
| 60 | 6.182714 | 243.30   | 6.182780 | 243.33   | 60 | 6.784741 | 121.13  | 6.785005 | 121.20  |

| 2° |          |         |          |         | 3° |          |         |          |         |
|----|----------|---------|----------|---------|----|----------|---------|----------|---------|
| M. | Vers.    | D. r''. | Exsec.   | D. r''. | M. | Vers.    | D. r''. | Exsec.   | D. r''. |
| 0  | 6.784741 | 120.12  | 6.785005 | 120.20  | 0  | 7.136868 | 80.18   | 7.137464 | 80.28   |
| 1  | .791948  | 119.13  | .792217  | 119.22  | 1  | .141679  | 79.75   | .142281  | 79.85   |
| 2  | .799096  | 118.17  | .799370  | 118.23  | 2  | .146404  | 79.30   | .147072  | 79.42   |
| 3  | .806186  | 117.22  | .806464  | 117.28  | 3  | .151222  | 78.87   | .151837  | 79.00   |
| 4  | .813219  | 116.25  | .813501  | 116.35  | 4  | .155954  | 78.45   | .156577  | 78.55   |
| 5  | 6.820194 | 115.35  | 6.820482 | 115.40  | 5  | 7.160661 | 78.02   | 7.161290 | 78.13   |
| 6  | .827115  | 114.42  | .827406  | 114.52  | 6  | .165342  | 77.60   | .165978  | 77.72   |
| 7  | .833980  | 113.53  | .834277  | 113.60  | 7  | .169998  | 77.20   | .170641  | 77.30   |
| 8  | .840792  | 112.65  | .841093  | 112.73  | 8  | .174630  | 76.77   | .175279  | 76.90   |
| 9  | .847551  | 111.77  | .847857  | 111.85  | 9  | .179236  | 76.38   | .179893  | 76.50   |
| 10 | 6.854257 | 110.92  | 6.854568 | 111.00  | 10 | 7.183819 | 75.97   | 7.184483 | 76.08   |
| 11 | .860912  | 110.08  | .861228  | 110.15  | 11 | .188377  | 75.58   | .189048  | 75.68   |
| 12 | .867517  | 109.23  | .867837  | 109.32  | 12 | .192912  | 75.18   | .193589  | 75.32   |
| 13 | .874071  | 108.43  | .874396  | 108.52  | 13 | .197423  | 74.78   | .198109  | 74.90   |
| 14 | .880577  | 107.62  | .880907  | 107.70  | 14 | .201910  | 74.42   | .202602  | 74.53   |
| 15 | 6.887034 | 106.82  | 6.887369 | 106.90  | 15 | 7.206375 | 74.03   | 7.207074 | 74.15   |
| 16 | .893443  | 106.05  | .893783  | 106.13  | 16 | .210817  | 73.65   | .211523  | 73.77   |
| 17 | .899806  | 105.27  | .900151  | 105.35  | 17 | .215236  | 73.28   | .215959  | 73.40   |
| 18 | .906122  | 104.52  | .906472  | 104.60  | 18 | .219633  | 72.90   | .220353  | 73.03   |
| 19 | .912393  | 103.75  | .912748  | 103.85  | 19 | .224007  | 72.55   | .224735  | 72.67   |
| 20 | 6.918618 | 103.03  | 6.918979 | 103.10  | 20 | 7.228360 | 72.18   | 7.229095 | 72.30   |
| 21 | .924800  | 102.28  | .925165  | 102.38  | 21 | .232691  | 71.82   | .233433  | 71.95   |
| 22 | .930937  | 101.58  | .931308  | 101.67  | 22 | .237000  | 71.47   | .237750  | 71.60   |
| 23 | .937032  | 100.87  | .937408  | 100.95  | 23 | .241288  | 71.12   | .242046  | 71.23   |
| 24 | .943084  | 100.17  | .943465  | 100.25  | 24 | .245555  | 70.77   | .246320  | 70.90   |
| 25 | 6.949094 | 99.48   | 6.949480 | 99.57   | 25 | 7.249801 | 70.43   | 7.250574 | 70.55   |
| 26 | .955063  | 98.80   | .955454  | 98.90   | 26 | .254027  | 70.08   | .254807  | 70.20   |
| 27 | .960991  | 98.13   | .961388  | 98.22   | 27 | .258232  | 69.73   | .259019  | 69.88   |
| 28 | .966879  | 97.47   | .967281  | 97.57   | 28 | .262416  | 69.42   | .263212  | 69.53   |
| 29 | .972727  | 96.82   | .973135  | 96.90   | 29 | .266581  | 69.08   | .267384  | 69.22   |
| 30 | 6.978536 | 96.17   | 6.978949 | 96.27   | 30 | 7.270726 | 68.75   | 7.271537 | 68.87   |
| 31 | .984306  | 95.55   | .984725  | 95.63   | 31 | .274851  | 68.42   | .275669  | 68.57   |
| 32 | .990039  | 94.90   | .990463  | 95.02   | 32 | .278956  | 68.12   | .279783  | 68.23   |
| 33 | .995733  | 94.30   | .996164  | 94.38   | 33 | .283043  | 67.78   | .283877  | 67.92   |
| 34 | 7.001391 | 93.68   | 7.001827 | 93.78   | 34 | .287110  | 67.47   | .287952  | 67.58   |
| 35 | 7.007012 | 93.08   | 7.007454 | 93.17   | 35 | 7.291158 | 67.15   | 7.292007 | 67.30   |
| 36 | .012597  | 92.48   | .013044  | 92.58   | 36 | .295187  | 66.83   | .296045  | 66.97   |
| 37 | .018146  | 91.90   | .018599  | 92.00   | 37 | .299197  | 66.55   | .300063  | 66.67   |
| 38 | .023660  | 91.32   | .024119  | 91.42   | 38 | .303190  | 66.23   | .304063  | 66.37   |
| 39 | .029139  | 90.75   | .029604  | 90.83   | 39 | .307164  | 65.92   | .308045  | 66.07   |
| 40 | 7.034584 | 90.18   | 7.035054 | 90.28   | 40 | 7.311119 | 65.63   | 7.312009 | 65.77   |
| 41 | .039995  | 89.62   | .040471  | 89.72   | 41 | .315057  | 65.33   | .315955  | 65.47   |
| 42 | .045372  | 89.07   | .045854  | 89.17   | 42 | .318977  | 65.05   | .319883  | 65.18   |
| 43 | .050716  | 88.53   | .051204  | 88.63   | 43 | .322880  | 64.75   | .323794  | 64.88   |
| 44 | .056028  | 87.98   | .056522  | 88.08   | 44 | .326765  | 64.45   | .327687  | 64.60   |
| 45 | 7.061307 | 87.45   | 7.061807 | 87.57   | 45 | 7.330632 | 64.18   | 7.331563 | 64.32   |
| 46 | .066554  | 86.93   | .067061  | 87.02   | 46 | .334483  | 63.88   | .335422  | 64.03   |
| 47 | .071770  | 86.40   | .072282  | 86.52   | 47 | .338316  | 63.62   | .339264  | 63.75   |
| 48 | .076954  | 85.90   | .077473  | 86.00   | 48 | .342133  | 63.33   | .343089  | 63.47   |
| 49 | .082108  | 85.40   | .082633  | 85.50   | 49 | .345933  | 63.05   | .346897  | 63.20   |
| 50 | 7.087232 | 84.88   | 7.087763 | 84.98   | 50 | 7.349716 | 62.78   | 7.350689 | 62.92   |
| 51 | .092325  | 84.40   | .092862  | 84.50   | 51 | .353483  | 62.50   | .354464  | 62.65   |
| 52 | .097389  | 83.90   | .097932  | 84.02   | 52 | .357233  | 62.25   | .358223  | 62.38   |
| 53 | .102423  | 83.42   | .102973  | 83.53   | 53 | .360968  | 62.00   | .361966  | 62.12   |
| 54 | .107428  | 82.95   | .107985  | 83.05   | 54 | .364686  | 61.77   | .365693  | 61.85   |
| 55 | 7.112405 | 82.47   | 7.112968 | 82.57   | 55 | 7.368389 | 61.45   | 7.369404 | 61.60   |
| 56 | .117353  | 82.00   | .117922  | 82.12   | 56 | .372076  | 61.18   | .373100  | 61.33   |
| 57 | .122273  | 81.53   | .122849  | 81.65   | 57 | .375747  | 60.93   | .376780  | 61.07   |
| 58 | .127165  | 81.08   | .127748  | 81.18   | 58 | .379403  | 60.67   | .380444  | 60.83   |
| 59 | .132030  | 80.63   | .132619  | 80.75   | 59 | .383043  | 60.42   | .384094  | 60.57   |
| 60 | 7.136868 |         | 7.137464 |         | 60 | 7.386668 |         | 7.387728 |         |

| 4° |          |        |          |        | 5° |          |        |          |        |
|----|----------|--------|----------|--------|----|----------|--------|----------|--------|
| M. | Vers.    | D. 1". | Exsec.   | D. 1". | M. | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0  | 7.386668 | 60.17  | 7.387728 | 60.32  | 0  | 7.580389 | 48.15  | 7.582045 | 48.33  |
| 1  | .390278  | 59.93  | .391347  | 60.07  | 1  | .583278  | 47.98  | .584945  | 48.17  |
| 2  | .393874  | 59.67  | .394951  | 59.82  | 2  | .586157  | 47.82  | .587835  | 48.00  |
| 3  | .397454  | 59.43  | .398540  | 59.57  | 3  | .589026  | 47.67  | .590715  | 47.87  |
| 4  | .401020  | 59.18  | .402114  | 59.33  | 4  | .591886  | 47.52  | .593587  | 47.70  |
| 5  | 7.404571 | 58.93  | 7.405674 | 59.10  | 5  | 7.594737 | 47.35  | 7.596449 | 47.53  |
| 6  | .408107  | 58.70  | .409220  | 58.85  | 6  | .597578  | 47.20  | .599301  | 47.38  |
| 7  | .411629  | 58.47  | .412751  | 58.62  | 7  | .600410  | 47.05  | .602144  | 47.25  |
| 8  | .415137  | 58.23  | .416268  | 58.38  | 8  | .603233  | 46.90  | .604979  | 47.08  |
| 9  | .418631  | 58.00  | .419771  | 58.15  | 9  | .606047  | 46.73  | .607804  | 46.92  |
| 10 | 7.422111 | 57.77  | 7.423260 | 57.92  | 10 | 7.608851 | 46.60  | 7.610619 | 46.78  |
| 11 | .425577  | 57.53  | .426735  | 57.70  | 11 | .611647  | 46.43  | .613426  | 46.63  |
| 12 | .429029  | 57.30  | .430197  | 57.45  | 12 | .614433  | 46.30  | .616224  | 46.48  |
| 13 | .432467  | 57.08  | .433644  | 57.25  | 13 | .617211  | 46.15  | .619013  | 46.35  |
| 14 | .435892  | 56.85  | .437079  | 57.00  | 14 | .619980  | 45.98  | .621794  | 46.18  |
| 15 | 7.439303 | 56.63  | 7.440499 | 56.80  | 15 | 7.622739 | 45.87  | 7.624565 | 46.05  |
| 16 | .442701  | 56.42  | .443907  | 56.57  | 16 | .625491  | 45.70  | .627328  | 45.90  |
| 17 | .446086  | 56.20  | .447301  | 56.35  | 17 | .628233  | 45.57  | .630082  | 45.75  |
| 18 | .449458  | 55.97  | .450682  | 56.13  | 18 | .630967  | 45.42  | .632827  | 45.62  |
| 19 | .452816  | 55.77  | .454050  | 55.92  | 19 | .633692  | 45.28  | .635564  | 45.48  |
| 20 | 7.456162 | 55.55  | 7.457405 | 55.72  | 20 | 7.636409 | 45.13  | 7.638293 | 45.33  |
| 21 | .459495  | 55.33  | .460748  | 55.48  | 21 | .639117  | 44.98  | .641013  | 45.18  |
| 22 | .462825  | 55.12  | .464077  | 55.28  | 22 | .641816  | 44.87  | .643724  | 45.07  |
| 23 | .466122  | 54.92  | .467394  | 55.08  | 23 | .644508  | 44.72  | .646428  | 44.90  |
| 24 | .469417  | 54.70  | .470699  | 54.87  | 24 | .647191  | 44.57  | .649122  | 44.78  |
| 25 | 7.472699 | 54.50  | 7.473991 | 54.65  | 25 | 7.649865 | 44.45  | 7.651809 | 44.65  |
| 26 | .475966  | 54.28  | .477270  | 54.47  | 26 | .652532  | 44.30  | .654488  | 44.50  |
| 27 | .479229  | 54.10  | .480538  | 54.25  | 27 | .655190  | 44.17  | .657158  | 44.37  |
| 28 | .482472  | 53.88  | .483793  | 54.05  | 28 | .657840  | 44.05  | .659820  | 44.23  |
| 29 | .485705  | 53.70  | .487036  | 53.85  | 29 | .660483  | 43.90  | .662474  | 44.12  |
| 30 | 7.488927 | 53.48  | 7.490267 | 53.67  | 30 | 7.663117 | 43.77  | 7.665121 | 43.97  |
| 31 | .492136  | 53.28  | .493487  | 53.45  | 31 | .665743  | 43.63  | .667759  | 43.83  |
| 32 | .495333  | 53.10  | .496694  | 53.27  | 32 | .668361  | 43.50  | .670389  | 43.72  |
| 33 | .498519  | 52.90  | .499890  | 53.07  | 33 | .670971  | 43.38  | .673012  | 43.57  |
| 34 | .501693  | 52.72  | .503074  | 52.88  | 34 | .673574  | 43.23  | .675626  | 43.45  |
| 35 | 7.504856 | 52.52  | 7.506247 | 52.68  | 35 | 7.676168 | 43.12  | 7.678233 | 43.33  |
| 36 | .508007  | 52.33  | .509408  | 52.50  | 36 | .678755  | 42.98  | .680833  | 43.18  |
| 37 | .511147  | 52.13  | .512558  | 52.32  | 37 | .681334  | 42.87  | .683424  | 43.07  |
| 38 | .514275  | 51.95  | .515697  | 52.12  | 38 | .683906  | 42.73  | .686008  | 42.95  |
| 39 | .517392  | 51.77  | .518824  | 51.93  | 39 | .686470  | 42.60  | .688585  | 42.82  |
| 40 | 7.520498 | 51.58  | 7.521940 | 51.77  | 40 | 7.689026 | 42.48  | 7.691154 | 42.68  |
| 41 | .523593  | 51.40  | .525046  | 51.57  | 41 | .691575  | 42.35  | .693715  | 42.57  |
| 42 | .526677  | 51.22  | .528140  | 51.38  | 42 | .694116  | 42.23  | .696269  | 42.43  |
| 43 | .529750  | 51.03  | .531223  | 51.22  | 43 | .696650  | 42.12  | .698815  | 42.33  |
| 44 | .532812  | 50.85  | .534296  | 51.02  | 44 | .699177  | 41.98  | .701355  | 42.20  |
| 45 | 7.535863 | 50.68  | 7.537357 | 50.85  | 45 | 7.701696 | 41.87  | 7.703887 | 42.07  |
| 46 | .538904  | 50.50  | .540408  | 50.68  | 46 | .704208  | 41.73  | .706411  | 41.97  |
| 47 | .541934  | 50.32  | .543449  | 50.50  | 47 | .706712  | 41.63  | .708929  | 41.83  |
| 48 | .544953  | 50.15  | .546479  | 50.33  | 48 | .709210  | 41.50  | .711439  | 41.72  |
| 49 | .547962  | 49.98  | .549499  | 50.15  | 49 | .711700  | 41.38  | .713942  | 41.60  |
| 50 | 7.550961 | 49.80  | 7.552508 | 49.98  | 50 | 7.714183 | 41.27  | 7.716438 | 41.48  |
| 51 | .553949  | 49.63  | .555507  | 49.80  | 51 | .716659  | 41.15  | .718927  | 41.37  |
| 52 | .556927  | 49.47  | .558495  | 49.65  | 52 | .719128  | 41.03  | .721409  | 41.25  |
| 53 | .559895  | 49.28  | .561474  | 49.47  | 53 | .721590  | 40.92  | .723884  | 41.13  |
| 54 | .562852  | 49.13  | .564442  | 49.32  | 54 | .724045  | 40.80  | .726352  | 41.02  |
| 55 | 7.565800 | 48.95  | 7.567401 | 49.13  | 55 | 7.726493 | 40.68  | 7.728813 | 40.90  |
| 56 | .568737  | 48.80  | .570349  | 48.98  | 56 | .728934  | 40.57  | .731267  | 40.78  |
| 57 | .571665  | 48.63  | .573288  | 48.82  | 57 | .731368  | 40.47  | .733714  | 40.68  |
| 58 | .574583  | 48.47  | .576217  | 48.65  | 58 | .733796  | 40.33  | .736155  | 40.57  |
| 59 | .577491  | 48.30  | .579136  | 48.48  | 59 | .736216  | 40.23  | .738589  | 40.45  |
| 60 | 7.580389 |        | 7.582045 |        | 60 | 7.738630 |        | 7.741016 |        |

| 6° |          |        |          |          | 7° |          |        |          |          |
|----|----------|--------|----------|----------|----|----------|--------|----------|----------|
| M. | Vers.    | D. 1". | Exsec.   | D. 1".   | M. | Vers.    | D. 1". | Exsec.   | D. 1".   |
| 0  | 7.738630 |        |          | 7.741016 | 0  | 7.872331 |        |          | 7.875630 |
| 1  | .741038  | 40. 3  | .743436  | 40. 33   | 1  | .874444  | 34. 38 | .877708  | 34. 63   |
| 2  | .743438  | 40. 00 | .745850  | 40. 23   | 2  | .876502  | 34. 30 | .879782  | 34. 57   |
| 3  | .745832  | 39. 90 | .748258  | 40. 13   | 3  | .878555  | 34. 22 | .881851  | 34. 48   |
| 4  | .748219  | 39. 78 | .750658  | 40. 00   | 4  | .880603  | 34. 13 | .883915  | 34. 40   |
| 5  | 7.750600 | 39. 68 | 7.753052 | 39. 90   | 5  | .882647  | 34. 07 | 7.885974 | 34. 32   |
| 6  | .752974  | 39. 57 | .755440  | 39. 80   | 6  | .884686  | 33. 98 | .888029  | 34. 25   |
| 7  | .755342  | 39. 47 | .757821  | 39. 68   | 7  | .886720  | 33. 90 | .890078  | 34. 15   |
| 8  | .757703  | 39. 35 | .760190  | 39. 58   | 8  | .888749  | 33. 82 | .892123  | 34. 08   |
| 9  | .760058  | 39. 25 | .762565  | 39. 48   | 9  | .890773  | 33. 73 | .894164  | 34. 02   |
| 10 | 7.762406 | 39. 13 | 7.764927 | 39. 37   | 10 | 7.892793 | 33. 67 | 7.896199 | 33. 92   |
| 11 | .764749  | 39. 05 | .767282  | 39. 25   | 11 | .894808  | 33. 58 | .898230  | 33. 85   |
| 12 | .767034  | 38. 92 | .769632  | 39. 17   | 12 | .896818  | 33. 50 | .900256  | 33. 77   |
| 13 | .769414  | 38. 83 | .771975  | 39. 05   | 13 | .898824  | 33. 43 | .902278  | 33. 70   |
| 14 | .771737  | 38. 72 | .774312  | 38. 95   | 14 | .900825  | 33. 35 | .904295  | 33. 62   |
| 15 | 7.774054 | 38. 62 | 7.776643 | 38. 85   | 15 | 7.902821 | 33. 27 | 7.906307 | 33. 53   |
| 16 | .776305  | 38. 52 | .778908  | 38. 75   | 16 | .904813  | 33. 20 | .908315  | 33. 47   |
| 17 | .778670  | 38. 42 | .781286  | 38. 63   | 17 | .906800  | 33. 12 | .910319  | 33. 40   |
| 18 | .780968  | 38. 30 | .783599  | 38. 55   | 18 | .908783  | 33. 05 | .912317  | 33. 30   |
| 19 | .783261  | 38. 22 | .785905  | 38. 43   | 19 | .910761  | 32. 97 | .914312  | 33. 25   |
| 20 | 7.785547 | 38. 10 | 7.788206 | 38. 35   | 20 | 7.912735 | 32. 90 | 7.916302 | 33. 17   |
| 21 | .787828  | 38. 02 | .790500  | 38. 23   | 21 | .914704  | 32. 82 | .918287  | 33. 08   |
| 22 | .790102  | 37. 90 | .792789  | 38. 15   | 22 | .916668  | 32. 73 | .920268  | 33. 02   |
| 23 | .792371  | 37. 82 | .795071  | 38. 03   | 23 | .918629  | 32. 68 | .922245  | 32. 95   |
| 24 | .794633  | 37. 70 | .797348  | 37. 95   | 24 | .920584  | 32. 58 | .924217  | 32. 87   |
| 25 | 7.796890 | 37. 62 | 7.799619 | 37. 85   | 25 | 7.922536 | 32. 53 | 7.926184 | 32. 78   |
| 26 | .799141  | 37. 52 | .801884  | 37. 75   | 26 | .924483  | 32. 45 | .928148  | 32. 73   |
| 27 | .801385  | 37. 40 | .804143  | 37. 65   | 27 | .926425  | 32. 37 | .930107  | 32. 65   |
| 28 | .803625  | 37. 33 | .806397  | 37. 57   | 28 | .928364  | 32. 32 | .932062  | 32. 58   |
| 29 | .805858  | 37. 22 | .808644  | 37. 45   | 29 | .930297  | 32. 22 | .934012  | 32. 50   |
| 30 | 7.808086 | 37. 13 | 7.810886 | 37. 37   | 30 | 7.932227 | 32. 17 | 7.935958 | 32. 43   |
| 31 | .810308  | 37. 03 | .813123  | 37. 28   | 31 | .934152  | 32. 08 | .937900  | 32. 37   |
| 32 | .812524  | 36. 93 | .815353  | 37. 17   | 32 | .936073  | 32. 02 | .939838  | 32. 30   |
| 33 | .814734  | 36. 83 | .817578  | 37. 08   | 33 | .937990  | 31. 95 | .941772  | 32. 23   |
| 34 | .816939  | 36. 75 | .819798  | 37. 00   | 34 | .939903  | 31. 88 | .943701  | 32. 15   |
| 35 | 7.819139 | 36. 67 | 7.822012 | 36. 90   | 35 | 7.941811 | 31. 80 | 7.945626 | 32. 08   |
| 36 | .821332  | 36. 55 | .824220  | 36. 80   | 36 | .943715  | 31. 73 | .947547  | 32. 02   |
| 37 | .823521  | 36. 48 | .826423  | 36. 72   | 37 | .945615  | 31. 67 | .949404  | 31. 95   |
| 38 | .825703  | 36. 37 | .828620  | 36. 62   | 38 | .947511  | 31. 60 | .951376  | 31. 87   |
| 39 | .827880  | 36. 28 | .830812  | 36. 53   | 39 | .949402  | 31. 52 | .953285  | 31. 82   |
| 40 | 7.830052 | 36. 20 | 7.832999 | 36. 45   | 40 | 7.951290 | 31. 47 | 7.955189 | 31. 73   |
| 41 | .832218  | 36. 10 | .835180  | 36. 35   | 41 | .953173  | 31. 38 | .957090  | 31. 68   |
| 42 | .834379  | 36. 02 | .837356  | 36. 27   | 42 | .955052  | 31. 32 | .958986  | 31. 60   |
| 43 | .836535  | 35. 93 | .839526  | 36. 17   | 43 | .956928  | 31. 27 | .960878  | 31. 53   |
| 44 | .838685  | 35. 83 | .841691  | 36. 08   | 44 | .958799  | 31. 18 | .962767  | 31. 48   |
| 45 | 7.840830 | 35. 75 | 7.843851 | 36. 00   | 45 | 7.960666 | 31. 12 | 7.964651 | 31. 40   |
| 46 | .842969  | 35. 65 | .846005  | 35. 90   | 46 | .962529  | 31. 05 | .966531  | 31. 33   |
| 47 | .845104  | 35. 58 | .848155  | 35. 83   | 47 | .964388  | 30. 98 | .968408  | 31. 28   |
| 48 | .847233  | 35. 48 | .850299  | 35. 73   | 48 | .966243  | 30. 92 | .970280  | 31. 20   |
| 49 | .849357  | 35. 40 | .852437  | 35. 63   | 49 | .968094  | 30. 85 | .972148  | 31. 13   |
| 50 | 7.851475 | 35. 30 | 7.854571 | 35. 57   | 50 | 7.969941 | 30. 78 | 7.974013 | 31. 08   |
| 51 | .853589  | 35. 23 | .856700  | 35. 48   | 51 | .971785  | 30. 73 | .975874  | 31. 02   |
| 52 | .855697  | 35. 13 | .858823  | 35. 38   | 52 | .973624  | 30. 65 | .977730  | 30. 93   |
| 53 | .857800  | 35. 05 | .860942  | 35. 32   | 53 | .975459  | 30. 58 | .979853  | 30. 88   |
| 54 | .859898  | 34. 97 | .863055  | 35. 22   | 54 | .977291  | 30. 53 | .981432  | 30. 82   |
| 55 | 7.861991 | 34. 88 | 7.865163 | 35. 13   | 55 | 7.979118 | 30. 45 | 7.983277 | 30. 75   |
| 56 | .864079  | 34. 80 | .867266  | 35. 05   | 56 | .980942  | 30. 40 | .985119  | 30. 70   |
| 57 | .866162  | 34. 72 | .869365  | 34. 98   | 57 | .982762  | 30. 33 | .989595  | 30. 62   |
| 58 | .868240  | 34. 63 | .871458  | 34. 88   | 58 | .984578  | 30. 27 | .988790  | 30. 57   |
| 59 | .870313  | 34. 55 | .873546  | 34. 80   | 59 | .986391  | 30. 22 | .990620  | 30. 50   |
| 60 | 7.872381 | 34. 47 | 7.875630 | 34. 73   | 60 | 7.988199 | 30. 13 | 7.992446 | 30. 43   |

| 8° |          |        |          |        | 9° |          |        |          |        |
|----|----------|--------|----------|--------|----|----------|--------|----------|--------|
| M. | Vers.    | D. 1". | Exsec.   | D. 1". | M. | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0  | 7.988199 | 30.08  | 7.992446 | 30.38  | 0  | 8.090317 | 26.72  | 8.095697 | 27.05  |
| 1  | .990004  | 30.02  | .994269  | 30.32  | 1  | .091920  | 26.68  | .097320  | 27.02  |
| 2  | .991805  | 29.95  | .996088  | 30.25  | 2  | .093521  | 26.63  | .098941  | 26.97  |
| 3  | .993602  | 29.88  | .997903  | 30.18  | 3  | .095119  | 26.58  | .100559  | 26.92  |
| 4  | .995395  | 29.83  | .999714  | 30.13  | 4  | .096714  | 26.52  | .102174  | 26.87  |
| 5  | 7.997185 | 29.77  | 8.001522 | 30.07  | 5  | 8.098305 | 26.48  | 8.103786 | 26.82  |
| 6  | .998971  | 29.72  | .003326  | 30.00  | 6  | .099894  | 26.43  | .105395  | 26.77  |
| 7  | 8.000754 | 29.63  | .006923  | 29.95  | 7  | .101480  | 26.40  | .107001  | 26.73  |
| 8  | .002532  | 29.60  | .009923  | 29.88  | 8  | .103064  | 26.33  | .108605  | 26.67  |
| 9  | .004308  | 29.52  | .008716  | 29.83  | 9  | .104644  | 26.28  | .110205  | 26.63  |
| 10 | 8.006079 | 29.47  | 8.010506 | 29.77  | 10 | 8.106221 | 26.25  | 8.111803 | 26.58  |
| 11 | .007849  | 29.40  | .012292  | 29.70  | 11 | .107796  | 26.18  | .113398  | 26.53  |
| 12 | .009611  | 29.35  | .014074  | 29.65  | 12 | .109367  | 26.15  | .114990  | 26.48  |
| 13 | .011372  | 29.28  | .015853  | 29.58  | 13 | .110936  | 26.10  | .116579  | 26.45  |
| 14 | .013129  | 29.22  | .017628  | 29.53  | 14 | .112502  | 26.05  | .118166  | 26.38  |
| 15 | 8.014882 | 29.17  | 8.019400 | 29.47  | 15 | 8.114065 | 26.00  | 8.119749 | 26.35  |
| 16 | .016632  | 29.10  | .021168  | 29.42  | 16 | .115625  | 25.95  | .121330  | 26.30  |
| 17 | .018378  | 29.05  | .022933  | 29.35  | 17 | .117182  | 25.92  | .122908  | 26.25  |
| 18 | .020121  | 29.00  | .024694  | 29.30  | 18 | .118737  | 25.87  | .124483  | 26.22  |
| 19 | .021861  | 28.93  | .026452  | 29.23  | 19 | .120289  | 25.82  | .126056  | 26.17  |
| 20 | 8.023597 | 28.87  | 8.028206 | 29.18  | 20 | 8.121838 | 25.77  | 8.127626 | 26.12  |
| 21 | .025329  | 28.82  | .029957  | 29.13  | 21 | .123384  | 25.72  | .129193  | 26.07  |
| 22 | .027058  | 28.75  | .031705  | 29.07  | 22 | .124927  | 25.68  | .130757  | 26.02  |
| 23 | .028783  | 28.70  | .033449  | 29.00  | 23 | .126468  | 25.63  | .132318  | 25.98  |
| 24 | .030505  | 28.65  | .035189  | 28.97  | 24 | .128006  | 25.58  | .133877  | 25.93  |
| 25 | 8.032224 | 28.58  | 8.035927 | 28.90  | 25 | 8.129541 | 25.55  | 8.135433 | 25.90  |
| 26 | .033939  | 28.53  | .038661  | 28.83  | 26 | .131074  | 25.50  | .136987  | 25.85  |
| 27 | .035651  | 28.47  | .040391  | 28.78  | 27 | .132604  | 25.45  | .138538  | 25.80  |
| 28 | .037359  | 28.42  | .042118  | 28.73  | 28 | .134131  | 25.40  | .140086  | 25.75  |
| 29 | .039064  | 28.37  | .043842  | 28.68  | 29 | .135655  | 25.37  | .141631  | 25.72  |
| 30 | 8.040766 | 28.30  | 8.045563 | 28.62  | 30 | 8.137177 | 25.32  | 8.143174 | 25.67  |
| 31 | .042464  | 28.25  | .047280  | 28.57  | 31 | .138696  | 25.27  | .144714  | 25.63  |
| 32 | .044159  | 28.20  | .048994  | 28.50  | 32 | .140212  | 25.23  | .146252  | 25.58  |
| 33 | .045851  | 28.13  | .050704  | 28.47  | 33 | .141726  | 25.18  | .147787  | 25.53  |
| 34 | .047539  | 28.08  | .052412  | 28.40  | 34 | .143237  | 25.13  | .149319  | 25.50  |
| 35 | 8.049224 | 28.03  | 8.054116 | 28.35  | 35 | 8.144745 | 25.10  | 8.150849 | 25.45  |
| 36 | .050906  | 27.98  | .055817  | 28.28  | 36 | .146251  | 25.05  | .152376  | 25.40  |
| 37 | .052585  | 27.92  | .057514  | 28.25  | 37 | .147754  | 25.02  | .153900  | 25.37  |
| 38 | .054260  | 27.87  | .059209  | 28.18  | 38 | .149255  | 24.95  | .155422  | 25.33  |
| 39 | .055932  | 27.82  | .060900  | 28.13  | 39 | .150752  | 24.93  | .156942  | 25.27  |
| 40 | 8.057601 | 27.75  | 8.062588 | 28.08  | 40 | 8.152248 | 24.88  | 8.158458 | 25.25  |
| 41 | .059266  | 27.72  | .064273  | 28.03  | 41 | .153741  | 24.83  | .159973  | 25.18  |
| 42 | .060929  | 27.65  | .065955  | 27.97  | 42 | .155231  | 24.78  | .161484  | 25.17  |
| 43 | .062588  | 27.60  | .067633  | 27.93  | 43 | .156718  | 24.75  | .162994  | 25.10  |
| 44 | .064244  | 27.55  | .069309  | 27.87  | 44 | .158203  | 24.72  | .164500  | 25.07  |
| 45 | 8.065897 | 27.48  | 8.070981 | 27.82  | 45 | 8.159686 | 24.67  | 8.166004 | 25.03  |
| 46 | .067546  | 27.45  | .072650  | 27.77  | 46 | .161166  | 24.62  | .167506  | 24.98  |
| 47 | .069193  | 27.38  | .074316  | 27.72  | 47 | .162643  | 24.58  | .169005  | 24.95  |
| 48 | .070836  | 27.33  | .075979  | 27.67  | 48 | .164118  | 24.53  | .170502  | 24.90  |
| 49 | .072476  | 27.30  | .077639  | 27.60  | 49 | .165590  | 24.50  | .171996  | 24.87  |
| 50 | 8.074111 | 27.23  | 8.079295 | 27.57  | 50 | 8.167060 | 24.45  | 8.173488 | 24.82  |
| 51 | .075748  | 27.18  | .080949  | 27.52  | 51 | .168527  | 24.42  | .174977  | 24.78  |
| 52 | .077379  | 27.13  | .082600  | 27.45  | 52 | .169992  | 24.37  | .176464  | 24.73  |
| 53 | .079007  | 27.07  | .084247  | 27.42  | 53 | .171454  | 24.33  | .177948  | 24.70  |
| 54 | .080631  | 27.03  | .085892  | 27.37  | 54 | .172914  | 24.30  | .179430  | 24.65  |
| 55 | 8.082253 | 26.98  | 8.087534 | 27.30  | 55 | 8.174372 | 24.25  | 8.180909 | 24.62  |
| 56 | .083872  | 26.93  | .089172  | 27.27  | 56 | .175827  | 24.22  | .182386  | 24.58  |
| 57 | .085488  | 26.87  | .090808  | 27.20  | 57 | .177279  | 24.20  | .183861  | 24.53  |
| 58 | .087100  | 26.83  | .092440  | 27.17  | 58 | .178729  | 24.17  | .185333  | 24.53  |
| 59 | .088710  | 26.78  | .094070  | 27.12  | 59 | .180177  | 24.13  | .186803  | 24.50  |
| 60 | 8.090317 | 26.72  | 8.095697 | 27.05  | 60 | 8.181622 | 24.08  | 8.188271 | 24.47  |

| IO° |          |        |          |        | II° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 8.181622 | 24.05  | 8.188271 | 24.42  | 0   | 8.264176 | 21.85  | 8.272229 | 22.27  |
| 1   | .183065  | 24.00  | .189736  | 24.37  | 1   | .265487  | 21.82  | .273565  | 22.22  |
| 2   | .184503  | 23.97  | .191198  | 24.35  | 2   | .266796  | 21.78  | .274898  | 22.20  |
| 3   | .185943  | 23.93  | .192659  | 24.30  | 3   | .268103  | 21.75  | .276230  | 22.17  |
| 4   | .187379  | 23.88  | .194117  | 24.25  | 4   | .269408  | 21.72  | .277560  | 22.13  |
| 5   | 8.188812 | 23.85  | 8.195572 | 24.22  | 5   | 8.270711 | 21.68  | 8.278888 | 22.08  |
| 6   | .190243  | 23.80  | .197025  | 24.18  | 6   | .272012  | 21.65  | .280213  | 22.07  |
| 7   | .191671  | 23.77  | .198476  | 24.15  | 7   | .273311  | 21.62  | .281537  | 22.03  |
| 8   | .193097  | 23.73  | .199925  | 24.10  | 8   | .274608  | 21.58  | .282859  | 22.00  |
| 9   | .194521  | 23.68  | .201371  | 24.07  | 9   | .275903  | 21.57  | .284179  | 21.98  |
| 10  | 8.195942 | 23.65  | 8.202815 | 24.03  | 10  | 8.277197 | 21.52  | 8.285498 | 21.93  |
| 11  | .197301  | 23.62  | .204257  | 23.98  | 11  | .278488  | 21.48  | .286814  | 21.90  |
| 12  | .198778  | 23.57  | .205696  | 23.95  | 12  | .279777  | 21.47  | .288128  | 21.88  |
| 13  | .200192  | 23.53  | .207133  | 23.92  | 13  | .281065  | 21.42  | .289441  | 21.83  |
| 14  | .201604  | 23.50  | .208568  | 23.88  | 14  | .282350  | 21.40  | .290751  | 21.82  |
| 15  | 8.203014 | 23.45  | 8.210001 | 23.83  | 15  | 8.283634 | 21.37  | 8.292060 | 21.78  |
| 16  | .204421  | 23.42  | .211431  | 23.80  | 16  | .284916  | 21.33  | .293367  | 21.75  |
| 17  | .205826  | 23.38  | .212859  | 23.77  | 17  | .286196  | 21.28  | .294672  | 21.72  |
| 18  | .207229  | 23.35  | .214285  | 23.72  | 18  | .287473  | 21.27  | .295975  | 21.68  |
| 19  | .208630  | 23.30  | .215708  | 23.70  | 19  | .288749  | 21.25  | .297276  | 21.67  |
| 20  | 8.210028 | 23.27  | 8.217130 | 23.65  | 20  | 8.290024 | 21.20  | 8.298576 | 21.62  |
| 21  | .211424  | 23.23  | .218549  | 23.62  | 21  | .291296  | 21.17  | .299873  | 21.60  |
| 22  | .212818  | 23.18  | .219966  | 23.57  | 22  | .292566  | 21.15  | .301169  | 21.57  |
| 23  | .214209  | 23.17  | .221380  | 23.55  | 23  | .293835  | 21.10  | .302463  | 21.53  |
| 24  | .215599  | 23.12  | .222793  | 23.50  | 24  | .295101  | 21.08  | .303755  | 21.50  |
| 25  | 8.216986 | 23.08  | 8.224203 | 23.47  | 25  | 8.296366 | 21.05  | 8.305045 | 21.48  |
| 26  | .218371  | 23.03  | .225611  | 23.43  | 26  | .297629  | 21.02  | .306334  | 21.43  |
| 27  | .219753  | 23.00  | .227017  | 23.40  | 27  | .298890  | 20.98  | .307620  | 21.42  |
| 28  | .221133  | 22.98  | .228421  | 23.35  | 28  | .300149  | 20.95  | .308905  | 21.38  |
| 29  | .222512  | 22.93  | .229822  | 23.32  | 29  | .301406  | 20.93  | .310188  | 21.35  |
| 30  | 8.223888 | 22.88  | 8.231221 | 23.30  | 30  | 8.302662 | 20.90  | 8.311469 | 21.33  |
| 31  | .225261  | 22.87  | .232619  | 23.25  | 31  | .303916  | 20.85  | .312749  | 21.28  |
| 32  | .226633  | 22.82  | .234014  | 23.22  | 32  | .305167  | 20.85  | .314026  | 21.27  |
| 33  | .228002  | 22.78  | .235407  | 23.17  | 33  | .306418  | 20.80  | .315302  | 21.23  |
| 34  | .229369  | 22.77  | .236797  | 23.15  | 34  | .307666  | 20.77  | .316576  | 21.20  |
| 35  | 8.230735 | 22.70  | 8.238186 | 23.10  | 35  | 8.308912 | 20.75  | 8.317848 | 21.18  |
| 36  | .232097  | 22.68  | .239572  | 23.08  | 36  | .310157  | 20.72  | .319119  | 21.15  |
| 37  | .233458  | 22.65  | .240957  | 23.03  | 37  | .311400  | 20.68  | .320388  | 21.12  |
| 38  | .234817  | 22.60  | .242339  | 23.00  | 38  | .312641  | 20.65  | .321655  | 21.08  |
| 39  | .236173  | 22.57  | .243719  | 22.97  | 39  | .313880  | 20.62  | .322920  | 21.05  |
| 40  | 8.237527 | 22.55  | 8.245097 | 22.93  | 40  | 8.315117 | 20.60  | 8.324183 | 21.03  |
| 41  | .238880  | 22.50  | .246473  | 22.90  | 41  | .316353  | 20.57  | .325445  | 21.00  |
| 42  | .240230  | 22.47  | .247847  | 22.87  | 42  | .317587  | 20.53  | .326705  | 20.98  |
| 43  | .241578  | 22.43  | .249219  | 22.83  | 43  | .318819  | 20.50  | .327964  | 20.93  |
| 44  | .242924  | 22.38  | .250589  | 22.80  | 44  | .320049  | 20.48  | .329220  | 20.92  |
| 45  | 8.244267 | 22.37  | 8.251957 | 22.75  | 45  | 8.321278 | 20.45  | 8.330475 | 20.88  |
| 46  | .245609  | 22.32  | .253322  | 22.73  | 46  | .322503  | 20.42  | .331728  | 20.87  |
| 47  | .246948  | 22.30  | .254686  | 22.68  | 47  | .323730  | 20.38  | .332980  | 20.82  |
| 48  | .248286  | 22.25  | .256047  | 22.67  | 48  | .324953  | 20.37  | .334229  | 20.80  |
| 49  | .249621  | 22.23  | .257407  | 22.62  | 49  | .326175  | 20.33  | .335477  | 20.78  |
| 50  | 8.250955 | 22.18  | 8.258764 | 22.60  | 50  | 8.327395 | 20.30  | 8.336724 | 20.73  |
| 51  | .252286  | 22.15  | .260120  | 22.55  | 51  | .328613  | 20.27  | .337968  | 20.72  |
| 52  | .253615  | 22.12  | .261473  | 22.53  | 52  | .329829  | 20.25  | .339211  | 20.70  |
| 53  | .254942  | 22.10  | .262825  | 22.48  | 53  | .331044  | 20.22  | .340453  | 20.65  |
| 54  | .256268  | 22.05  | .264174  | 22.47  | 54  | .332257  | 20.18  | .341692  | 20.63  |
| 55  | 8.257591 | 22.02  | 8.265522 | 22.42  | 55  | 8.333468 | 20.17  | 8.342930 | 20.60  |
| 56  | .258912  | 21.98  | .266867  | 22.40  | 56  | .334678  | 20.13  | .344166  | 20.58  |
| 57  | .260231  | 21.95  | .268211  | 22.35  | 57  | .335886  | 20.10  | .345401  | 20.55  |
| 58  | .261548  | 21.92  | .269552  | 22.33  | 58  | .337092  | 20.07  | .346634  | 20.52  |
| 59  | .262863  | 21.88  | .270892  | 22.28  | 59  | .338296  | 20.05  | .347865  | 20.50  |
| 60  | 8.264176 |        | 8.272229 |        | 60  | 8.339499 |        | 8.349095 |        |

| 12° |          |        |          |        | 13° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. r". | Exsec.   | D. r". | M.  | Vers.    | D. r". | Exsec.   | D. r". |
| 0   | 8.339499 | 20.02  | 8.349095 | 20.47  | 0   | 8.408748 | 18.47  | 8.420024 | 18.95  |
| 1   | .340700  | 20.00  | .350323  | 20.43  | 1   | .409856  | 18.43  | .421161  | 18.93  |
| 2   | .341900  | 19.95  | .351549  | 20.42  | 2   | .410962  | 18.42  | .422297  | 18.90  |
| 3   | .343097  | 19.95  | .352774  | 20.38  | 3   | .412067  | 18.42  | .423431  | 18.88  |
| 4   | .344294  | 19.90  | .353997  | 20.35  | 4   | .413171  | 18.38  | .424564  | 18.87  |
| 5   | 8.345488 | 19.88  | 8.355218 | 20.33  | 5   | 8.414274 | 18.35  | 8.425696 | 18.83  |
| 6   | .346681  | 19.85  | .356438  | 20.30  | 6   | .415375  | 18.32  | .426826  | 18.82  |
| 7   | .347872  | 19.82  | .357656  | 20.28  | 7   | .416474  | 18.30  | .427955  | 18.80  |
| 8   | .349061  | 19.80  | .358873  | 20.25  | 8   | .417572  | 18.28  | .429083  | 18.77  |
| 9   | .350249  | 19.77  | .360088  | 20.22  | 9   | .418669  | 18.25  | .430209  | 18.75  |
| 10  | 8.351435 | 19.75  | 8.361301 | 20.20  | 10  | 8.419764 | 18.23  | 8.431334 | 18.73  |
| 11  | .352620  | 19.72  | .362513  | 20.18  | 11  | .420858  | 18.22  | .432458  | 18.70  |
| 12  | .353803  | 19.68  | .363724  | 20.13  | 12  | .421951  | 18.18  | .433580  | 18.67  |
| 13  | .354984  | 19.67  | .364932  | 20.12  | 13  | .423042  | 18.17  | .434700  | 18.67  |
| 14  | .356164  | 19.63  | .366139  | 20.10  | 14  | .424132  | 18.13  | .435820  | 18.63  |
| 15  | 8.357342 | 19.60  | 8.367345 | 20.07  | 15  | 8.425220 | 18.12  | 8.436938 | 18.62  |
| 16  | .358518  | 19.58  | .368549  | 20.03  | 16  | .426307  | 18.10  | .438055  | 18.58  |
| 17  | .359693  | 19.55  | .369751  | 20.02  | 17  | .427393  | 18.07  | .439170  | 18.57  |
| 18  | .360866  | 19.53  | .370952  | 19.98  | 18  | .428477  | 18.05  | .440284  | 18.55  |
| 19  | .362038  | 19.50  | .372151  | 19.95  | 19  | .429560  | 18.02  | .441397  | 18.53  |
| 20  | 8.363208 | 19.48  | 8.373348 | 19.95  | 20  | 8.430641 | 18.02  | 8.442509 | 18.50  |
| 21  | .364377  | 19.43  | .374545  | 19.90  | 21  | .431722  | 17.97  | .443619  | 18.47  |
| 22  | .365543  | 19.43  | .375739  | 19.88  | 22  | .432800  | 17.97  | .444727  | 18.47  |
| 23  | .366709  | 19.38  | .376932  | 19.85  | 23  | .433878  | 17.93  | .445835  | 18.43  |
| 24  | .367872  | 19.37  | .378123  | 19.83  | 24  | .434954  | 17.92  | .446941  | 18.42  |
| 25  | 8.369034 | 19.35  | 8.379313 | 19.82  | 25  | 8.436029 | 17.88  | 8.448046 | 18.38  |
| 26  | .370195  | 19.32  | .380502  | 19.78  | 26  | .437102  | 17.87  | .449149  | 18.38  |
| 27  | .371354  | 19.28  | .381689  | 19.75  | 27  | .438174  | 17.85  | .450252  | 18.35  |
| 28  | .372511  | 19.27  | .382874  | 19.73  | 28  | .439245  | 17.82  | .451353  | 18.32  |
| 29  | .373667  | 19.25  | .384058  | 19.70  | 29  | .440314  | 17.80  | .452452  | 18.32  |
| 30  | 8.374822 | 19.20  | 8.385240 | 19.68  | 30  | 8.441382 | 17.78  | 8.453551 | 18.28  |
| 31  | .375974  | 19.18  | .386421  | 19.65  | 31  | .442449  | 17.75  | .454648  | 18.25  |
| 32  | .377125  | 19.17  | .387600  | 19.63  | 32  | .443514  | 17.73  | .455743  | 18.25  |
| 33  | .378275  | 19.13  | .388778  | 19.60  | 33  | .444578  | 17.72  | .456838  | 18.22  |
| 34  | .379423  | 19.12  | .389954  | 19.58  | 34  | .445641  | 17.68  | .457931  | 18.20  |
| 35  | 8.380570 | 19.08  | 8.391129 | 19.55  | 35  | 8.446702 | 17.68  | 8.459023 | 18.18  |
| 36  | .381715  | 19.05  | .392302  | 19.53  | 36  | .447763  | 17.63  | .460114  | 18.15  |
| 37  | .382858  | 19.03  | .393474  | 19.50  | 37  | .448821  | 17.63  | .461203  | 18.13  |
| 38  | .384000  | 19.02  | .394644  | 19.48  | 38  | .449879  | 17.60  | .462291  | 18.12  |
| 39  | .385141  | 18.98  | .395813  | 19.45  | 39  | .450935  | 17.58  | .463378  | 18.10  |
| 40  | 8.386280 | 18.95  | 8.396980 | 19.43  | 40  | 8.451990 | 17.55  | 8.464464 | 18.07  |
| 41  | .387417  | 18.93  | .398146  | 19.42  | 41  | .453043  | 17.55  | .465548  | 18.05  |
| 42  | .388553  | 18.92  | .399311  | 19.38  | 42  | .454096  | 17.52  | .466631  | 18.03  |
| 43  | .389688  | 18.88  | .400474  | 19.35  | 43  | .455147  | 17.48  | .467713  | 18.00  |
| 44  | .390821  | 18.85  | .401635  | 19.33  | 44  | .456196  | 17.48  | .468793  | 18.00  |
| 45  | 8.391952 | 18.83  | 8.402795 | 19.32  | 45  | 8.457245 | 17.45  | 8.469873 | 17.97  |
| 46  | .393082  | 18.82  | .403954  | 19.28  | 46  | .458292  | 17.43  | .470951  | 17.95  |
| 47  | .394211  | 18.78  | .405111  | 19.27  | 47  | .459338  | 17.40  | .472028  | 17.92  |
| 48  | .395338  | 18.75  | .406267  | 19.23  | 48  | .460382  | 17.40  | .473103  | 17.90  |
| 49  | .396463  | 18.73  | .407421  | 19.22  | 49  | .461426  | 17.37  | .474177  | 17.90  |
| 50  | 8.397587 | 18.72  | 8.408574 | 19.18  | 50  | 8.462468 | 17.35  | 8.475251 | 17.85  |
| 51  | .398710  | 18.68  | .409725  | 19.17  | 51  | .463509  | 17.32  | .476322  | 17.85  |
| 52  | .399831  | 18.67  | .410875  | 19.13  | 52  | .464548  | 17.30  | .477393  | 17.83  |
| 53  | .400951  | 18.63  | .412023  | 19.13  | 53  | .465586  | 17.28  | .478463  | 17.80  |
| 54  | .402069  | 18.62  | .413171  | 19.08  | 54  | .466623  | 17.27  | .479531  | 17.78  |
| 55  | 8.403186 | 18.58  | 8.414316 | 19.08  | 55  | 8.467659 | 17.23  | 8.480598 | 17.77  |
| 56  | .404301  | 18.57  | .415461  | 19.03  | 56  | .468693  | 17.23  | .481664  | 17.73  |
| 57  | .405415  | 18.53  | .416603  | 19.03  | 57  | .469727  | 17.20  | .482728  | 17.73  |
| 58  | .406527  | 18.52  | .417745  | 19.00  | 58  | .470759  | 17.17  | .483792  | 17.70  |
| 59  | .407638  | 18.50  | .418885  | 18.98  | 59  | .471789  | 17.17  | .484854  | 17.68  |
| 60  | 8.408748 | 18.50  | 8.420024 | 18.95  | 60  | 8.472819 | 17.17  | 8.485915 | 17.68  |

| 14° |          |         |          |         | 15° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. r''. | Exec.    | D. r''. | M.  | Vers.    | D. r''. | Exec.    | D. r''. |
| 0   | 8.472819 | 17.13   | 8.485915 | 17.67   | 0   | 8.532425 | 15.98   | 8.547482 | 16.53   |
| 1   | .473847  | 17.12   | .486975  | 17.63   | 1   | .533354  | 15.97   | .548474  | 16.53   |
| 2   | .474874  | 17.10   | .488033  | 17.63   | 2   | .534342  | 15.95   | .549466  | 16.52   |
| 3   | .475900  | 17.08   | .489091  | 17.60   | 3   | .535299  | 15.95   | .550457  | 16.50   |
| 4   | .476925  | 17.05   | .490147  | 17.58   | 4   | .536255  | 15.93   | .551447  | 16.48   |
| 5   | 8.477948 | 17.03   | 8.491202 | 17.57   | 5   | 8.537210 | 15.88   | 8.552436 | 16.47   |
| 6   | .478970  | 17.02   | .492256  | 17.53   | 6   | .538163  | 15.88   | .553424  | 16.43   |
| 7   | .479991  | 17.00   | .493308  | 17.53   | 7   | .539116  | 15.87   | .554410  | 16.43   |
| 8   | .481011  | 16.97   | .494360  | 17.50   | 8   | .540068  | 15.83   | .555396  | 16.42   |
| 9   | .482029  | 16.95   | .495410  | 17.48   | 9   | .541018  | 15.83   | .556381  | 16.38   |
| 10  | 8.483046 | 16.93   | 8.496459 | 17.47   | 10  | 8.541968 | 15.80   | 8.557364 | 16.38   |
| 11  | .484062  | 16.92   | .497507  | 17.45   | 11  | .542916  | 15.78   | .558347  | 16.37   |
| 12  | .485077  | 16.90   | .498554  | 17.43   | 12  | .543863  | 15.78   | .559329  | 16.33   |
| 13  | .486091  | 16.87   | .499600  | 17.40   | 13  | .544810  | 15.75   | .560309  | 16.33   |
| 14  | .487103  | 16.87   | .500644  | 17.38   | 14  | .545755  | 15.73   | .561289  | 16.30   |
| 15  | 8.488115 | 16.83   | 8.501687 | 17.38   | 15  | 8.546699 | 15.72   | 8.562267 | 16.30   |
| 16  | .489125  | 16.82   | .502730  | 17.35   | 16  | .547642  | 15.70   | .563245  | 16.30   |
| 17  | .490134  | 16.78   | .503771  | 17.32   | 17  | .548584  | 15.68   | .564222  | 16.28   |
| 18  | .491141  | 16.78   | .504810  | 17.32   | 18  | .549525  | 15.67   | .565197  | 16.25   |
| 19  | .492148  | 16.75   | .505849  | 17.30   | 19  | .550465  | 15.65   | .566172  | 16.22   |
| 20  | 8.493153 | 16.73   | 8.506887 | 17.27   | 20  | 8.551404 | 15.63   | 8.567145 | 16.22   |
| 21  | .494157  | 16.72   | .507923  | 17.25   | 21  | .552342  | 15.62   | .568118  | 16.20   |
| 22  | .495160  | 16.70   | .508958  | 17.25   | 22  | .553279  | 15.60   | .569090  | 16.17   |
| 23  | .496162  | 16.67   | .509993  | 17.22   | 23  | .554215  | 15.58   | .570060  | 16.17   |
| 24  | .497162  | 16.67   | .511026  | 17.18   | 24  | .555150  | 15.57   | .571030  | 16.15   |
| 25  | 8.498162 | 16.63   | 8.512057 | 17.18   | 25  | 8.556084 | 15.55   | 8.571999 | 16.12   |
| 26  | .499160  | 16.62   | .513088  | 17.17   | 26  | .557017  | 15.53   | .572966  | 16.12   |
| 27  | .500157  | 16.60   | .514118  | 17.13   | 27  | .557949  | 15.50   | .573933  | 16.10   |
| 28  | .501153  | 16.58   | .515146  | 17.13   | 28  | .558879  | 15.50   | .574899  | 16.08   |
| 29  | .502148  | 16.57   | .516174  | 17.10   | 29  | .559809  | 15.48   | .575864  | 16.05   |
| 30  | 8.503142 | 16.53   | 8.517200 | 17.08   | 30  | 8.560738 | 15.47   | 8.576827 | 16.05   |
| 31  | .504134  | 16.52   | .518225  | 17.07   | 31  | .561666  | 15.43   | .577790  | 16.03   |
| 32  | .505125  | 16.52   | .519249  | 17.05   | 32  | .562592  | 15.43   | .578752  | 16.02   |
| 33  | .506116  | 16.48   | .520272  | 17.03   | 33  | .563518  | 15.42   | .579713  | 16.00   |
| 34  | .507105  | 16.45   | .521294  | 17.02   | 34  | .564443  | 15.40   | .580673  | 15.98   |
| 35  | 8.508092 | 16.45   | 8.522315 | 16.98   | 35  | 8.565367 | 15.37   | 8.581632 | 15.97   |
| 36  | .509079  | 16.43   | .523334  | 16.98   | 36  | .566289  | 15.37   | .582590  | 15.95   |
| 37  | .510065  | 16.40   | .524353  | 16.95   | 37  | .567211  | 15.35   | .583547  | 15.93   |
| 38  | .511049  | 16.40   | .525370  | 16.95   | 38  | .568132  | 15.33   | .584503  | 15.92   |
| 39  | .512033  | 16.37   | .526387  | 16.92   | 39  | .569052  | 15.30   | .585458  | 15.90   |
| 40  | 8.513015 | 16.35   | 8.527402 | 16.90   | 40  | 8.569970 | 15.30   | 8.586412 | 15.88   |
| 41  | .513996  | 16.33   | .528416  | 16.88   | 41  | .570888  | 15.28   | .587365  | 15.88   |
| 42  | .514976  | 16.32   | .529429  | 16.87   | 42  | .571805  | 15.27   | .588318  | 15.85   |
| 43  | .515955  | 16.28   | .530441  | 16.85   | 43  | .572721  | 15.25   | .589269  | 15.83   |
| 44  | .516932  | 16.28   | .531452  | 16.83   | 44  | .573636  | 15.22   | .590219  | 15.83   |
| 45  | 8.517909 | 16.25   | 8.532462 | 16.82   | 45  | 8.574549 | 15.22   | 8.591169 | 15.80   |
| 46  | .518884  | 16.25   | .533471  | 16.78   | 46  | .575462  | 15.20   | .592117  | 15.80   |
| 47  | .519859  | 16.22   | .534478  | 16.78   | 47  | .576374  | 15.18   | .593065  | 15.78   |
| 48  | .520832  | 16.20   | .535485  | 16.75   | 48  | .577285  | 15.17   | .594012  | 15.75   |
| 49  | .521804  | 16.18   | .536490  | 16.75   | 49  | .578195  | 15.15   | .594957  | 15.75   |
| 50  | 8.522775 | 16.17   | 8.537495 | 16.72   | 50  | 8.579104 | 15.13   | 8.595902 | 15.73   |
| 51  | .523745  | 16.15   | .538498  | 16.72   | 51  | .580012  | 15.12   | .596846  | 15.72   |
| 52  | .524714  | 16.13   | .539501  | 16.68   | 52  | .580919  | 15.10   | .597789  | 15.70   |
| 53  | .525682  | 16.10   | .540502  | 16.67   | 53  | .581825  | 15.08   | .598731  | 15.68   |
| 54  | .526648  | 16.10   | .541502  | 16.65   | 54  | .582730  | 15.07   | .599672  | 15.67   |
| 55  | 8.527614 | 16.07   | 8.542501 | 16.63   | 55  | 8.583634 | 15.05   | 8.600612 | 15.65   |
| 56  | .528578  | 16.07   | .543499  | 16.63   | 56  | .584537  | 15.05   | .601551  | 15.65   |
| 57  | .529542  | 16.03   | .544497  | 16.60   | 57  | .585440  | 15.02   | .602490  | 15.62   |
| 58  | .530504  | 16.02   | .545493  | 16.58   | 58  | .586341  | 15.00   | .603427  | 15.60   |
| 59  | .531465  | 16.00   | .546488  | 16.57   | 59  | .587241  | 15.00   | .604363  | 15.60   |
| 60  | 8.532425 | 16.00   | 8.547482 | 16.57   | 60  | 8.588141 | 15.00   | 8.605299 | 15.60   |



| 16° |          |        |          |        | 17° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 8.588141 |        | 8.605299 | 15.58  | 0   | 8.640434 |        | 8.659838 |        |
| 1   | .589039  | 14.97  | .606234  | 15.55  | 1   | .641279  | 14.08  | .660721  | 14.72  |
| 2   | .589936  | 14.95  | .607167  | 15.55  | 2   | .642123  | 14.07  | .661604  | 14.72  |
| 3   | .590833  | 14.95  | .608100  | 15.55  | 3   | .642966  | 14.05  | .662486  | 14.70  |
| 4   | .591729  | 14.93  | .609032  | 15.53  | 4   | .643809  | 14.05  | .663367  | 14.68  |
| 5   | 8.592623 | 14.90  | 8.609963 | 15.52  | 5   | 8.644650 | 14.05  | 8.664248 | 14.68  |
| 6   | .593517  | 14.90  | .610893  | 15.50  | 6   | .645491  | 14.02  | .665127  | 14.65  |
| 7   | .594410  | 14.88  | .611823  | 15.50  | 7   | .646331  | 14.00  | .666006  | 14.65  |
| 8   | .595302  | 14.87  | .612751  | 15.47  | 8   | .647170  | 13.98  | .666884  | 14.63  |
| 9   | .596192  | 14.83  | .613678  | 15.45  | 9   | .648008  | 13.97  | .667761  | 14.62  |
| 10  | 8.597082 | 14.82  | 8.614605 | 15.43  | 10  | 8.648845 | 13.95  | 8.668637 | 14.60  |
| 11  | .597971  | 14.82  | .615531  | 15.42  | 11  | .649682  | 13.93  | .669513  | 14.58  |
| 12  | .598860  | 14.78  | .616456  | 15.38  | 12  | .650518  | 13.92  | .670388  | 14.57  |
| 13  | .599747  | 14.77  | .617379  | 15.38  | 13  | .651353  | 13.92  | .671262  | 14.55  |
| 14  | .600633  | 14.75  | .618302  | 15.38  | 14  | .652187  | 13.90  | .672135  | 14.55  |
| 15  | 8.601518 | 14.75  | 8.619225 | 15.38  | 15  | 8.653020 | 13.88  | 8.673008 | 14.55  |
| 16  | .602403  | 14.75  | .620146  | 15.35  | 16  | .653852  | 13.87  | .673879  | 14.52  |
| 17  | .603286  | 14.72  | .621066  | 15.33  | 17  | .654684  | 13.85  | .674750  | 14.50  |
| 18  | .604169  | 14.72  | .621986  | 15.30  | 18  | .655515  | 13.83  | .675620  | 14.50  |
| 19  | .605051  | 14.67  | .622904  | 15.30  | 19  | .656345  | 13.82  | .676490  | 14.47  |
| 20  | 8.605931 | 14.67  | 8.623822 | 15.28  | 20  | 8.657174 | 13.82  | 8.677358 | 14.47  |
| 21  | .606811  | 14.65  | .624739  | 15.27  | 21  | .658003  | 13.78  | .678226  | 14.45  |
| 22  | .607690  | 14.63  | .625655  | 15.25  | 22  | .658830  | 13.78  | .679093  | 14.45  |
| 23  | .608568  | 14.62  | .626570  | 15.23  | 23  | .659657  | 13.77  | .679960  | 14.42  |
| 24  | .609445  | 14.60  | .627484  | 15.23  | 24  | .660483  | 13.75  | .680825  | 14.42  |
| 25  | 8.610321 | 14.60  | 8.628398 | 15.20  | 25  | 8.661308 | 13.73  | 8.681690 | 14.40  |
| 26  | .611197  | 14.57  | .629310  | 15.20  | 26  | .662132  | 13.73  | .682554  | 14.38  |
| 27  | .612071  | 14.57  | .630222  | 15.18  | 27  | .662956  | 13.72  | .683417  | 14.38  |
| 28  | .612945  | 14.53  | .631133  | 15.17  | 28  | .663779  | 13.70  | .684280  | 14.35  |
| 29  | .613817  | 14.53  | .632043  | 15.15  | 29  | .664601  | 13.68  | .685141  | 14.35  |
| 30  | 8.614689 | 14.52  | 8.632952 | 15.13  | 30  | 8.665422 | 13.67  | 8.686002 | 14.35  |
| 31  | .615560  | 14.50  | .633860  | 15.13  | 31  | .666242  | 13.67  | .686863  | 14.32  |
| 32  | .616430  | 14.48  | .634768  | 15.10  | 32  | .667062  | 13.65  | .687722  | 14.32  |
| 33  | .617299  | 14.47  | .635674  | 15.10  | 33  | .667881  | 13.63  | .688581  | 14.30  |
| 34  | .618167  | 14.45  | .636580  | 15.08  | 34  | .668699  | 13.62  | .689439  | 14.28  |
| 35  | 8.619034 | 14.45  | 8.637485 | 15.07  | 35  | 8.669516 | 13.60  | 8.690296 | 14.28  |
| 36  | .619901  | 14.42  | .638389  | 15.05  | 36  | .670332  | 13.60  | .691153  | 14.28  |
| 37  | .620766  | 14.42  | .639292  | 15.05  | 37  | .671148  | 13.60  | .692008  | 14.25  |
| 38  | .621631  | 14.42  | .640195  | 15.02  | 38  | .671963  | 13.58  | .692863  | 14.25  |
| 39  | .622495  | 14.38  | .641096  | 15.02  | 39  | .672777  | 13.55  | .693718  | 14.22  |
| 40  | 8.623358 | 14.37  | 8.641997 | 15.00  | 40  | 8.673590 | 13.55  | 8.694571 | 14.22  |
| 41  | .624220  | 14.35  | .642897  | 14.98  | 41  | .674403  | 13.53  | .695424  | 14.20  |
| 42  | .625081  | 14.33  | .643796  | 14.97  | 42  | .675215  | 13.52  | .696276  | 14.18  |
| 43  | .625941  | 14.33  | .644694  | 14.95  | 43  | .676026  | 13.50  | .697127  | 14.18  |
| 44  | .626801  | 14.30  | .645591  | 14.95  | 44  | .676836  | 13.48  | .697978  | 14.17  |
| 45  | 8.627659 | 14.30  | 8.646488 | 14.93  | 45  | 8.677645 | 13.48  | 8.698828 | 14.15  |
| 46  | .628517  | 14.28  | .647384  | 14.92  | 46  | .678454  | 13.47  | .699677  | 14.13  |
| 47  | .629374  | 14.27  | .648279  | 14.90  | 47  | .679262  | 13.45  | .700525  | 14.13  |
| 48  | .630230  | 14.25  | .649173  | 14.88  | 48  | .680069  | 13.43  | .701373  | 14.12  |
| 49  | .631085  | 14.23  | .650066  | 14.87  | 49  | .680875  | 13.43  | .702220  | 14.10  |
| 50  | 8.631939 | 14.22  | 8.650958 | 14.87  | 50  | 8.681681 | 13.42  | 8.703066 | 14.10  |
| 51  | .632792  | 14.22  | .651850  | 14.85  | 51  | .682486  | 13.40  | .703912  | 14.07  |
| 52  | .633645  | 14.18  | .652741  | 14.83  | 52  | .683290  | 13.38  | .704756  | 14.07  |
| 53  | .634496  | 14.18  | .653631  | 14.82  | 53  | .684093  | 13.38  | .705600  | 14.07  |
| 54  | .635347  | 14.17  | .654520  | 14.80  | 54  | .684896  | 13.35  | .706444  | 14.03  |
| 55  | 8.636197 | 14.15  | 8.655408 | 14.80  | 55  | 8.685697 | 13.35  | 8.707286 | 14.03  |
| 56  | .637046  | 14.13  | .656296  | 14.77  | 56  | .686498  | 13.35  | .708128  | 14.02  |
| 57  | .637894  | 14.13  | .657182  | 14.77  | 57  | .687299  | 13.35  | .708969  | 14.02  |
| 58  | .638742  | 14.10  | .658068  | 14.77  | 58  | .688098  | 13.32  | .709810  | 14.00  |
| 59  | .639588  | 14.10  | .658954  | 14.77  | 59  | .688897  | 13.30  | .710650  | 14.00  |
| 60  | 8.640434 | 14.10  | 8.659838 | 14.73  | 60  | 8.689695 | 13.30  | 8.711489 | 13.98  |

| 18° |          |        |          |        | 19° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 8.689695 |        | 8.711489 |        | 0   | 8.736248 |        | 8.760578 |        |
| 1   | .690492  | 13.28  | .712327  | 13.97  | 1   | .737003  | 12.58  | .761376  | 13.30  |
| 2   | .691289  | 13.28  | .713164  | 13.95  | 2   | .737757  | 12.57  | .762174  | 13.30  |
| 3   | .692084  | 13.25  | .714001  | 13.95  | 3   | .738510  | 12.55  | .762971  | 13.28  |
| 4   | .692879  | 13.25  | .714838  | 13.95  | 4   | .739263  | 12.55  | .763767  | 13.27  |
| 5   | 8.693674 | 13.25  | 8.715673 | 13.92  | 5   | 8.740015 | 12.53  | 8.764563 | 13.27  |
| 6   | .694467  | 13.22  | .716508  | 13.92  | 6   | .740766  | 12.52  | .765358  | 13.25  |
| 7   | .695260  | 13.22  | .717342  | 13.90  | 7   | .741516  | 12.50  | .766152  | 13.23  |
| 8   | .696052  | 13.20  | .718175  | 13.88  | 8   | .742266  | 12.50  | .766946  | 13.23  |
| 9   | .696843  | 13.18  | .719008  | 13.88  | 9   | .743016  | 12.50  | .767739  | 13.22  |
|     |          | 13.18  |          | 13.87  |     |          | 12.47  |          | 13.20  |
| 10  | 8.697634 |        | 8.719840 |        | 10  | 8.743764 |        | 8.768531 |        |
| 11  | .698424  | 13.17  | .720671  | 13.85  | 11  | .744512  | 12.47  | .769323  | 13.20  |
| 12  | .699213  | 13.15  | .721502  | 13.85  | 12  | .745259  | 12.45  | .770114  | 13.18  |
| 13  | .700001  | 13.13  | .722332  | 13.83  | 13  | .746006  | 12.45  | .770905  | 13.18  |
| 14  | .700789  | 13.13  | .723161  | 13.82  | 14  | .746752  | 12.43  | .771695  | 13.17  |
| 15  | 8.701576 | 13.12  | 8.723989 | 13.80  | 15  | 8.747497 | 12.42  | 8.772484 | 13.15  |
| 16  | .702362  | 13.10  | .724817  | 13.80  | 16  | .748242  | 12.42  | .773273  | 13.15  |
| 17  | .703147  | 13.08  | .725644  | 13.78  | 17  | .748986  | 12.40  | .774061  | 13.13  |
| 18  | .703932  | 13.08  | .726471  | 13.78  | 18  | .749729  | 12.38  | .774849  | 13.13  |
| 19  | .704716  | 13.07  | .727297  | 13.77  | 19  | .750472  | 12.38  | .775635  | 13.12  |
|     |          | 13.05  |          | 13.75  |     |          | 12.37  |          |        |
| 20  | 8.705499 |        | 8.728122 |        | 20  | 8.751214 |        | 8.776422 |        |
| 21  | .706282  | 13.05  | .728946  | 13.73  | 21  | .751955  | 12.35  | .777207  | 13.08  |
| 22  | .707063  | 13.02  | .729770  | 13.73  | 22  | .752696  | 12.35  | .777993  | 13.10  |
| 23  | .707844  | 13.02  | .730593  | 13.72  | 23  | .753436  | 12.33  | .778777  | 13.07  |
| 24  | .708625  | 13.02  | .731415  | 13.70  | 24  | .754175  | 12.32  | .779561  | 13.07  |
| 25  | 8.709404 | 12.98  | 8.732237 | 13.70  | 25  | 8.754914 | 12.32  | 8.780344 | 13.05  |
| 26  | .710183  | 12.98  | .733058  | 13.68  | 26  | .755652  | 12.30  | .781127  | 13.05  |
| 27  | .710961  | 12.97  | .733878  | 13.67  | 27  | .756389  | 12.28  | .781909  | 13.03  |
| 28  | .711739  | 12.97  | .734698  | 13.67  | 28  | .757126  | 12.28  | .782690  | 13.02  |
| 29  | .712516  | 12.95  | .735517  | 13.65  | 29  | .757862  | 12.27  | .783471  | 13.02  |
|     |          | 12.93  |          | 13.63  |     |          | 12.27  |          | 13.00  |
| 30  | 8.713292 |        | 8.736335 |        | 30  | 8.758598 |        | 8.784251 |        |
| 31  | .714067  | 12.92  | .737153  | 13.63  | 31  | .759333  | 12.25  | .785031  | 13.00  |
| 32  | .714842  | 12.92  | .737970  | 13.62  | 32  | .760067  | 12.23  | .785810  | 12.98  |
| 33  | .715616  | 12.90  | .738786  | 13.60  | 33  | .760801  | 12.23  | .786588  | 12.97  |
| 34  | .716389  | 12.88  | .739602  | 13.60  | 34  | .761534  | 12.22  | .787366  | 12.97  |
| 35  | 8.717161 | 12.87  | 8.740417 | 13.58  | 35  | 8.762266 | 12.20  | 8.788144 | 12.97  |
| 36  | .717933  | 12.87  | .741231  | 13.57  | 36  | .762998  | 12.20  | .788920  | 12.93  |
| 37  | .718704  | 12.85  | .742045  | 13.57  | 37  | .763729  | 12.18  | .789696  | 12.93  |
| 38  | .719475  | 12.85  | .742858  | 13.55  | 38  | .764459  | 12.17  | .790472  | 12.93  |
| 39  | .720244  | 12.82  | .743670  | 13.53  | 39  | .765189  | 12.17  | .791247  | 12.92  |
|     |          | 12.82  |          | 13.53  |     |          | 12.15  |          | 12.90  |
| 40  | 8.721013 |        | 8.744482 |        | 40  | 8.765918 |        | 8.792021 |        |
| 41  | .721782  | 12.82  | .745293  | 13.52  | 41  | .766647  | 12.15  | .792795  | 12.90  |
| 42  | .722549  | 12.78  | .746103  | 13.50  | 42  | .767374  | 12.12  | .793568  | 12.88  |
| 43  | .723316  | 12.78  | .746913  | 13.50  | 43  | .768102  | 12.13  | .794340  | 12.87  |
| 44  | .724083  | 12.78  | .747722  | 13.48  | 44  | .768828  | 12.10  | .795112  | 12.87  |
| 45  | 8.724848 | 12.75  | 8.748530 | 13.47  | 45  | 8.769554 | 12.10  | 8.795884 | 12.87  |
| 46  | .725613  | 12.75  | .749338  | 13.47  | 46  | .770280  | 12.10  | .796654  | 12.83  |
| 47  | .726377  | 12.73  | .750145  | 13.45  | 47  | .771005  | 12.08  | .797425  | 12.85  |
| 48  | .727140  | 12.72  | .750951  | 13.43  | 48  | .771729  | 12.07  | .798194  | 12.82  |
| 49  | .727903  | 12.72  | .751757  | 13.43  | 49  | .772452  | 12.05  | .798963  | 12.82  |
|     |          | 12.70  |          | 13.42  |     |          | 12.05  |          |        |
| 50  | 8.728665 |        | 8.752562 |        | 50  | 8.773175 |        | 8.799732 |        |
| 51  | .729427  | 12.70  | .753367  | 13.42  | 51  | .773898  | 12.05  | .800500  | 12.80  |
| 52  | .730187  | 12.67  | .754171  | 13.40  | 52  | .774619  | 12.02  | .801267  | 12.78  |
| 53  | .730947  | 12.67  | .754974  | 13.38  | 53  | .775340  | 12.02  | .802034  | 12.78  |
| 54  | .731707  | 12.67  | .755776  | 13.37  | 54  | .776061  | 12.02  | .802800  | 12.77  |
| 55  | 8.732465 | 12.63  | 8.756578 | 13.37  | 55  | 8.776781 | 12.00  | 8.803565 | 12.75  |
| 56  | .733223  | 12.63  | .757380  | 13.37  | 56  | .777500  | 11.98  | .804330  | 12.75  |
| 57  | .733981  | 12.63  | .758180  | 13.35  | 57  | .778218  | 11.97  | .805095  | 12.75  |
| 58  | .734737  | 12.60  | .758980  | 13.33  | 58  | .778936  | 11.97  | .805859  | 12.73  |
| 59  | .735493  | 12.60  | .759780  | 13.33  | 59  | .779654  | 11.97  | .806622  | 12.72  |
| 60  | 8.736248 | 12.58  | 8.760578 | 13.30  | 60  | 8.780370 | 11.93  | 8.807385 | 12.72  |

| 20° |          |        |          |        | 21° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. r". | Exsec.   | D. r". | M.  | Vers.    | D. r". | Exsec.   | D. r". |
| 0   | 8.780370 | 11.95  | 8.807385 | 12.70  | 0   | 8.822296 | 11.35  | 8.852144 | 12.17  |
| 1   | .781087  | 11.92  | .808147  | 12.68  | 1   | .822977  | 11.35  | .852874  | 12.17  |
| 2   | .781802  | 11.92  | .808908  | 12.68  | 2   | .823658  | 11.33  | .853604  | 12.13  |
| 3   | .782517  | 11.90  | .809669  | 12.68  | 3   | .824338  | 11.33  | .854332  | 12.15  |
| 4   | .783231  | 11.90  | .810430  | 12.67  | 4   | .825018  | 11.33  | .855061  | 12.13  |
| 5   | 8.783945 | 11.88  | 8.811190 | 12.65  | 5   | 8.825697 | 11.32  | 8.855789 | 12.12  |
| 6   | .784658  | 11.88  | .811949  | 12.65  | 6   | .826376  | 11.30  | .856516  | 12.12  |
| 7   | .785371  | 11.87  | .812708  | 12.63  | 7   | .827054  | 11.28  | .857243  | 12.10  |
| 8   | .786083  | 11.85  | .813466  | 12.63  | 8   | .827731  | 11.28  | .857969  | 12.10  |
| 9   | .786794  | 11.85  | .814224  | 12.62  | 9   | .828408  | 11.28  | .858695  | 12.08  |
| 10  | 8.787505 | 11.83  | 8.814981 | 12.60  | 10  | 8.829085 | 11.27  | 8.859420 | 12.08  |
| 11  | .788215  | 11.82  | .815737  | 12.60  | 11  | .829761  | 11.25  | .860145  | 12.07  |
| 12  | .788924  | 11.82  | .816493  | 12.60  | 12  | .830436  | 11.25  | .860869  | 12.07  |
| 13  | .789633  | 11.82  | .817249  | 12.58  | 13  | .831111  | 11.23  | .861593  | 12.05  |
| 14  | .790342  | 11.78  | .818004  | 12.57  | 14  | .831785  | 11.23  | .862316  | 12.05  |
| 15  | 8.791049 | 11.78  | 8.818758 | 12.57  | 15  | 8.832459 | 11.22  | 8.863039 | 12.12  |
| 16  | .791756  | 11.78  | .819512  | 12.55  | 16  | .833132  | 11.20  | .863761  | 12.03  |
| 17  | .792463  | 11.77  | .820265  | 12.55  | 17  | .833804  | 11.20  | .864483  | 12.02  |
| 18  | .793169  | 11.75  | .821018  | 12.53  | 18  | .834476  | 11.20  | .865204  | 12.02  |
| 19  | .793874  | 11.75  | .821770  | 12.52  | 19  | .835148  | 11.18  | .865925  | 12.02  |
| 20  | 8.794579 | 11.73  | 8.822521 | 12.52  | 20  | 8.835819 | 11.17  | 8.866646 | 11.98  |
| 21  | .795283  | 11.73  | .823272  | 12.52  | 21  | .836489  | 11.17  | .867365  | 12.00  |
| 22  | .795987  | 11.72  | .824023  | 12.50  | 22  | .837159  | 11.17  | .868085  | 11.98  |
| 23  | .796690  | 11.70  | .824773  | 12.48  | 23  | .837829  | 11.15  | .868804  | 11.97  |
| 24  | .797392  | 11.70  | .825522  | 12.48  | 24  | .838498  | 11.13  | .869522  | 11.97  |
| 25  | 8.798094 | 11.68  | 8.826271 | 12.47  | 25  | 8.839166 | 11.13  | 8.870240 | 11.95  |
| 26  | .798795  | 11.68  | .827019  | 12.47  | 26  | .839834  | 11.12  | .870957  | 11.95  |
| 27  | .799496  | 11.67  | .827767  | 12.45  | 27  | .840501  | 11.12  | .871674  | 11.93  |
| 28  | .800196  | 11.67  | .828514  | 12.45  | 28  | .841168  | 11.10  | .872390  | 11.93  |
| 29  | .800896  | 11.63  | .829261  | 12.43  | 29  | .841834  | 11.10  | .873106  | 11.93  |
| 30  | 8.801594 | 11.65  | 8.830007 | 12.42  | 30  | 8.842500 | 11.08  | 8.873822 | 11.92  |
| 31  | .802293  | 11.63  | .830752  | 12.42  | 31  | .843165  | 11.07  | .874537  | 11.90  |
| 32  | .802991  | 11.62  | .831497  | 12.42  | 32  | .843829  | 11.07  | .875251  | 11.90  |
| 33  | .803688  | 11.60  | .832242  | 12.40  | 33  | .844493  | 11.07  | .875965  | 11.88  |
| 34  | .804384  | 11.60  | .832986  | 12.38  | 34  | .845157  | 11.05  | .876678  | 11.88  |
| 35  | 8.805080 | 11.60  | 8.833729 | 12.38  | 35  | 8.845820 | 11.05  | 8.877391 | 11.88  |
| 36  | .805776  | 11.58  | .834472  | 12.37  | 36  | .846483  | 11.03  | .878104  | 11.87  |
| 37  | .806471  | 11.57  | .835215  | 12.37  | 37  | .847145  | 11.02  | .878816  | 11.87  |
| 38  | .807165  | 11.57  | .835957  | 12.35  | 38  | .847806  | 11.02  | .879528  | 11.85  |
| 39  | .807859  | 11.55  | .836698  | 12.35  | 39  | .848467  | 11.00  | .880239  | 11.83  |
| 40  | 8.808552 | 11.53  | 8.837439 | 12.33  | 40  | 8.849127 | 11.00  | 8.880949 | 11.83  |
| 41  | .809244  | 11.53  | .838179  | 12.33  | 41  | .849787  | 11.00  | .881659  | 11.83  |
| 42  | .809936  | 11.53  | .838919  | 12.32  | 42  | .850447  | 10.98  | .882369  | 11.82  |
| 43  | .810628  | 11.52  | .839658  | 12.30  | 43  | .851106  | 10.97  | .883078  | 11.82  |
| 44  | .811319  | 11.50  | .840396  | 12.32  | 44  | .851764  | 10.97  | .883787  | 11.80  |
| 45  | 8.812009 | 11.50  | 8.841135 | 12.28  | 45  | 8.852422 | 10.95  | 8.884495 | 11.80  |
| 46  | .812699  | 11.48  | .841872  | 12.28  | 46  | .853079  | 10.95  | .885203  | 11.78  |
| 47  | .813388  | 11.48  | .842609  | 12.28  | 47  | .853736  | 10.93  | .885910  | 11.78  |
| 48  | .814077  | 11.47  | .843346  | 12.27  | 48  | .854392  | 10.93  | .886617  | 11.77  |
| 49  | .814765  | 11.45  | .844082  | 12.25  | 49  | .855048  | 10.92  | .887323  | 11.77  |
| 50  | 8.815452 | 11.45  | 8.844817 | 12.25  | 50  | 8.855703 | 10.92  | 8.888029 | 11.75  |
| 51  | .816139  | 11.43  | .845552  | 12.25  | 51  | .856358  | 10.90  | .888734  | 11.75  |
| 52  | .816825  | 11.43  | .846287  | 12.23  | 52  | .857012  | 10.90  | .889439  | 11.75  |
| 53  | .817511  | 11.42  | .847021  | 12.22  | 53  | .857666  | 10.88  | .890144  | 11.73  |
| 54  | .818196  | 11.42  | .847754  | 12.22  | 54  | .858319  | 10.88  | .890848  | 11.72  |
| 55  | 8.818881 | 11.40  | 8.848487 | 12.22  | 55  | 8.858972 | 10.87  | 8.891551 | 11.72  |
| 56  | .819565  | 11.40  | .849220  | 12.20  | 56  | .859624  | 10.87  | .892254  | 11.72  |
| 57  | .820249  | 11.38  | .849952  | 12.18  | 57  | .860276  | 10.85  | .892957  | 11.70  |
| 58  | .820932  | 11.37  | .850683  | 12.18  | 58  | .860927  | 10.85  | .893659  | 11.70  |
| 59  | .821614  | 11.37  | .851414  | 12.17  | 59  | .861578  | 10.83  | .894361  | 11.68  |
| 60  | 8.822296 | 11.35  | 8.852144 | 12.17  | 60  | 8.862228 | 10.83  | 8.895062 | 11.68  |

| 22° |          |        |          |        | 23° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 8.862228 | 10.82  | 8.895062 | 11.68  | 0   | 8.900341 | 10.33  | 8.936315 | 11.23  |
| 1   | .862877  | 10.83  | .895763  | 11.67  | 1   | .900961  | 10.35  | .936989  | 11.23  |
| 2   | .863527  | 10.80  | .896463  | 11.67  | 2   | .901582  | 10.32  | .937663  | 11.22  |
| 3   | .864175  | 10.80  | .897163  | 11.65  | 3   | .902201  | 10.33  | .938336  | 11.22  |
| 4   | .864823  | 10.80  | .897862  | 11.65  | 4   | .902821  | 10.32  | .939009  | 11.22  |
| 5   | 8.865471 | 10.78  | 8.898561 | 11.63  | 5   | 8.903440 | 10.30  | 8.939682 | 11.20  |
| 6   | .866118  | 10.78  | .899259  | 11.63  | 6   | .904058  | 10.30  | .940354  | 11.20  |
| 7   | .866765  | 10.78  | .899957  | 11.63  | 7   | .904676  | 10.28  | .941026  | 11.20  |
| 8   | .867411  | 10.77  | .900655  | 11.63  | 8   | .905293  | 10.28  | .941698  | 11.18  |
| 9   | .868057  | 10.75  | .901352  | 11.60  | 9   | .905910  | 10.28  | .942369  | 11.17  |
| 10  | 8.868702 | 10.73  | 8.902048 | 11.62  | 10  | 8.906527 | 10.27  | 8.943039 | 11.18  |
| 11  | .869346  | 10.75  | .902745  | 11.58  | 11  | .907143  | 10.27  | .943710  | 11.15  |
| 12  | .869991  | 10.72  | .903440  | 11.60  | 12  | .907759  | 10.25  | .944379  | 11.17  |
| 13  | .870634  | 10.72  | .904136  | 11.57  | 13  | .908374  | 10.25  | .945049  | 11.15  |
| 14  | .871277  | 10.72  | .904830  | 11.58  | 14  | .908989  | 10.23  | .945718  | 11.13  |
| 15  | 8.871920 | 10.70  | 8.905525 | 11.57  | 15  | 8.909603 | 10.23  | 8.946386 | 11.13  |
| 16  | .872562  | 10.70  | .906219  | 11.55  | 16  | .910217  | 10.22  | .947054  | 11.13  |
| 17  | .873204  | 10.68  | .906912  | 11.55  | 17  | .910830  | 10.22  | .947722  | 11.12  |
| 18  | .873845  | 10.68  | .907605  | 11.55  | 18  | .911443  | 10.22  | .948389  | 11.12  |
| 19  | .874486  | 10.67  | .908298  | 11.53  | 19  | .912056  | 10.20  | .949056  | 11.12  |
| 20  | 8.875126 | 10.67  | 8.908990 | 11.52  | 20  | 8.912668 | 10.18  | 8.949723 | 11.10  |
| 21  | .875766  | 10.65  | .909681  | 11.52  | 21  | .913279  | 10.20  | .950389  | 11.10  |
| 22  | .876405  | 10.65  | .910372  | 11.52  | 22  | .913891  | 10.17  | .951055  | 11.08  |
| 23  | .877044  | 10.63  | .911063  | 11.52  | 23  | .914501  | 10.17  | .951720  | 11.08  |
| 24  | .877682  | 10.63  | .911754  | 11.48  | 24  | .915111  | 10.17  | .952385  | 11.07  |
| 25  | 8.878320 | 10.62  | 8.912443 | 11.50  | 25  | 8.915721 | 10.17  | 8.953049 | 11.07  |
| 26  | .878957  | 10.62  | .913133  | 11.48  | 26  | .916331  | 10.15  | .953713  | 11.07  |
| 27  | .879594  | 10.60  | .913822  | 11.47  | 27  | .916940  | 10.13  | .954377  | 11.05  |
| 28  | .880230  | 10.60  | .914510  | 11.47  | 28  | .917548  | 10.13  | .955040  | 11.05  |
| 29  | .880866  | 10.58  | .915198  | 11.47  | 29  | .918156  | 10.13  | .955703  | 11.05  |
| 30  | 8.881501 | 10.58  | 8.915886 | 11.45  | 30  | 8.918764 | 10.12  | 8.956366 | 11.03  |
| 31  | .882136  | 10.58  | .916573  | 11.45  | 31  | .919371  | 10.10  | .957028  | 11.03  |
| 32  | .882771  | 10.57  | .917260  | 11.43  | 32  | .919977  | 10.12  | .957690  | 11.02  |
| 33  | .883405  | 10.55  | .917946  | 11.43  | 33  | .920584  | 10.10  | .958351  | 11.02  |
| 34  | .884038  | 10.55  | .918632  | 11.43  | 34  | .921190  | 10.08  | .959012  | 11.00  |
| 35  | 8.884671 | 10.53  | 8.919318 | 11.42  | 35  | 8.921795 | 10.08  | 8.959672 | 11.00  |
| 36  | .885303  | 10.53  | .920003  | 11.40  | 36  | .922400  | 10.07  | .960332  | 11.00  |
| 37  | .885935  | 10.53  | .920687  | 11.40  | 37  | .923004  | 10.07  | .960992  | 11.00  |
| 38  | .886567  | 10.52  | .921372  | 11.38  | 38  | .923608  | 10.07  | .961651  | 10.98  |
| 39  | .887198  | 10.52  | .922055  | 11.40  | 39  | .924212  | 10.05  | .962310  | 10.98  |
| 40  | 8.887839 | 10.50  | 8.922739 | 11.37  | 40  | 8.924815 | 10.05  | 8.962969 | 10.97  |
| 41  | .888459  | 10.48  | .923421  | 11.38  | 41  | .925418  | 10.03  | .963627  | 10.97  |
| 42  | .889088  | 10.48  | .924104  | 11.37  | 42  | .926020  | 10.03  | .964285  | 10.95  |
| 43  | .889717  | 10.48  | .924786  | 11.35  | 43  | .926622  | 10.03  | .964942  | 10.95  |
| 44  | .890346  | 10.47  | .925467  | 11.37  | 44  | .927224  | 10.02  | .965599  | 10.95  |
| 45  | 8.890974 | 10.47  | 8.926149 | 11.33  | 45  | 8.927825 | 10.00  | 8.966256 | 10.93  |
| 46  | .891602  | 10.45  | .926829  | 11.35  | 46  | .928425  | 10.00  | .966912  | 10.93  |
| 47  | .892229  | 10.45  | .927510  | 11.32  | 47  | .929025  | 10.00  | .967568  | 10.92  |
| 48  | .892856  | 10.43  | .928189  | 11.33  | 48  | .929625  | 9.98   | .968223  | 10.92  |
| 49  | .893482  | 10.43  | .928869  | 11.32  | 49  | .930224  | 9.98   | .968878  | 10.92  |
| 50  | 8.894108 | 10.42  | 8.929548 | 11.30  | 50  | 8.930823 | 9.97   | 8.969533 | 10.90  |
| 51  | .894733  | 10.42  | .930226  | 11.32  | 51  | .931421  | 9.97   | .970187  | 10.90  |
| 52  | .895358  | 10.42  | .930905  | 11.28  | 52  | .932019  | 9.97   | .970841  | 10.88  |
| 53  | .895983  | 10.40  | .931582  | 11.30  | 53  | .932617  | 9.97   | .971494  | 10.88  |
| 54  | .896607  | 10.38  | .932260  | 11.27  | 54  | .933214  | 9.95   | .972147  | 10.88  |
| 55  | 8.897230 | 10.38  | 8.932936 | 11.28  | 55  | 8.933811 | 9.93   | 8.972800 | 10.87  |
| 56  | .897853  | 10.38  | .933613  | 11.27  | 56  | .934407  | 9.93   | .973452  | 10.87  |
| 57  | .898476  | 10.37  | .934289  | 11.27  | 57  | .935003  | 9.92   | .974104  | 10.87  |
| 58  | .899098  | 10.35  | .934965  | 11.25  | 58  | .935598  | 9.92   | .974756  | 10.85  |
| 59  | .899719  | 10.37  | .935640  | 11.25  | 59  | .936193  | 9.92   | .975407  | 10.85  |
| 60  | 8.900341 | 10.37  | 8.936315 | 11.25  | 60  | 8.936788 | 9.92   | 8.976058 | 10.85  |

| 24° |          |         |          |         | 25° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. | M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 8.936788 | 9.90    | 8.976058 | 10.83   | 0   | 8.971703 | 9.50    | 9.014428 | 10.47   |
| 1   | .937382  | 9.90    | .776708  | 10.83   | 1   | .972273  | 9.48    | .015056  | 10.48   |
| 2   | .937976  | 9.88    | .977358  | 10.83   | 2   | .972842  | 9.48    | .015685  | 10.45   |
| 3   | .938569  | 9.88    | .978008  | 10.82   | 3   | .973411  | 9.48    | .016312  | 10.47   |
| 4   | .939162  | 9.87    | .978657  | 10.82   | 4   | .973980  | 9.47    | .016940  | 10.45   |
| 5   | 8.939754 | 9.87    | 8.979306 | 10.80   | 5   | 8.974548 | 9.47    | 9.017567 | 10.45   |
| 6   | .940346  | 9.87    | .979954  | 10.80   | 6   | .975116  | 9.47    | .018194  | 10.45   |
| 7   | .940938  | 9.87    | .980602  | 10.80   | 7   | .975683  | 9.45    | .018821  | 10.45   |
| 8   | .941529  | 9.85    | .981250  | 10.80   | 8   | .976250  | 9.45    | .019447  | 10.43   |
| 9   | .942120  | 9.85    | .981898  | 10.78   | 9   | .976816  | 9.43    | .020073  | 10.42   |
| 10  | 8.942710 | 9.83    | 8.982545 | 10.77   | 10  | 8.977382 | 9.43    | 9.020698 | 10.42   |
| 11  | .943300  | 9.82    | .983191  | 10.77   | 11  | .977948  | 9.43    | .021323  | 10.42   |
| 12  | .943889  | 9.83    | .983837  | 10.77   | 12  | .978514  | 9.40    | .021948  | 10.40   |
| 13  | .944479  | 9.80    | .984483  | 10.77   | 13  | .979078  | 9.42    | .022572  | 10.42   |
| 14  | .945067  | 9.80    | .985129  | 10.75   | 14  | .979643  | 9.40    | .023197  | 10.38   |
| 15  | 8.945655 | 9.80    | 8.985774 | 10.75   | 15  | 8.980207 | 9.40    | 9.023820 | 10.40   |
| 16  | .946243  | 9.80    | .986419  | 10.73   | 16  | .980771  | 9.40    | .024444  | 10.38   |
| 17  | .946831  | 9.78    | .987063  | 10.73   | 17  | .981335  | 9.38    | .025067  | 10.38   |
| 18  | .947418  | 9.77    | .987707  | 10.73   | 18  | .981898  | 9.37    | .025690  | 10.37   |
| 19  | .948004  | 9.77    | .988351  | 10.72   | 19  | .982460  | 9.38    | .026312  | 10.37   |
| 20  | 8.948590 | 9.77    | 8.988994 | 10.72   | 20  | 8.983023 | 9.37    | 9.026934 | 10.37   |
| 21  | .949176  | 9.75    | .989637  | 10.70   | 21  | .983585  | 9.35    | .027556  | 10.35   |
| 22  | .949761  | 9.75    | .990279  | 10.72   | 22  | .984146  | 9.35    | .028177  | 10.35   |
| 23  | .950346  | 9.75    | .990922  | 10.68   | 23  | .984707  | 9.35    | .028798  | 10.35   |
| 24  | .950931  | 9.73    | .991563  | 10.70   | 24  | .985268  | 9.33    | .029419  | 10.33   |
| 25  | 8.951515 | 9.73    | 8.992205 | 10.68   | 25  | 8.985828 | 9.33    | 9.030039 | 10.33   |
| 26  | .952099  | 9.72    | .992846  | 10.68   | 26  | .986388  | 9.33    | .030659  | 10.33   |
| 27  | .952682  | 9.72    | .993487  | 10.67   | 27  | .986948  | 9.33    | .031279  | 10.33   |
| 28  | .953265  | 9.70    | .994127  | 10.67   | 28  | .987507  | 9.32    | .031899  | 10.33   |
| 29  | .953847  | 9.70    | .994767  | 10.65   | 29  | .988066  | 9.32    | .032518  | 10.30   |
| 30  | 8.954429 | 9.70    | 8.995406 | 10.67   | 30  | 8.988625 | 9.30    | 9.033136 | 10.32   |
| 31  | .955011  | 9.68    | .996046  | 10.65   | 31  | .989183  | 9.28    | .033755  | 10.30   |
| 32  | .955592  | 9.68    | .996685  | 10.63   | 32  | .989740  | 9.30    | .034373  | 10.30   |
| 33  | .956173  | 9.67    | .997323  | 10.63   | 33  | .990298  | 9.28    | .034991  | 10.28   |
| 34  | .956753  | 9.68    | .997961  | 10.63   | 34  | .990855  | 9.27    | .035608  | 10.28   |
| 35  | 8.957334 | 9.65    | 8.998599 | 10.62   | 35  | 8.991411 | 9.28    | 9.036225 | 10.28   |
| 36  | .957913  | 9.65    | .999236  | 10.62   | 36  | .991968  | 9.25    | .036842  | 10.27   |
| 37  | .958492  | 9.65    | .999873  | 10.62   | 37  | .992523  | 9.27    | .037458  | 10.27   |
| 38  | .959071  | 9.65    | 9.000510 | 10.62   | 38  | .993079  | 9.25    | .038074  | 10.27   |
| 39  | .959650  | 9.62    | .001147  | 10.60   | 39  | .993634  | 9.25    | .038690  | 10.25   |
| 40  | 8.960227 | 9.63    | 9.001783 | 10.58   | 40  | 8.994189 | 9.23    | 9.039305 | 10.25   |
| 41  | .960805  | 9.62    | .002418  | 10.58   | 41  | .994743  | 9.23    | .039920  | 10.25   |
| 42  | .961382  | 9.62    | .003053  | 10.58   | 42  | .995297  | 9.23    | .040535  | 10.25   |
| 43  | .961959  | 9.60    | .003688  | 10.58   | 43  | .995851  | 9.22    | .041150  | 10.23   |
| 44  | .962535  | 9.60    | .004323  | 10.57   | 44  | .996404  | 9.22    | .041764  | 10.23   |
| 45  | 8.963111 | 9.60    | 9.004957 | 10.57   | 45  | 8.996957 | 9.20    | 9.042378 | 10.22   |
| 46  | .963687  | 9.58    | .005591  | 10.55   | 46  | .997509  | 9.22    | .042991  | 10.22   |
| 47  | .964262  | 9.58    | .006224  | 10.57   | 47  | .998062  | 9.18    | .043604  | 10.22   |
| 48  | .964837  | 9.57    | .006858  | 10.57   | 48  | .998613  | 9.20    | .044217  | 10.22   |
| 49  | .965411  | 9.57    | .007490  | 10.55   | 49  | .999165  | 9.18    | .044830  | 10.20   |
| 50  | 8.965985 | 9.57    | 9.008123 | 10.53   | 50  | 8.999716 | 9.17    | 9.045442 | 10.20   |
| 51  | .966559  | 9.55    | .008755  | 10.53   | 51  | 9.000266 | 9.18    | .046054  | 10.18   |
| 52  | .967132  | 9.55    | .009387  | 10.52   | 52  | .000817  | 9.17    | .046665  | 10.18   |
| 53  | .967705  | 9.53    | .010018  | 10.52   | 53  | .001367  | 9.15    | .047276  | 10.18   |
| 54  | .968277  | 9.53    | .010649  | 10.52   | 54  | .001916  | 9.17    | .047887  | 10.18   |
| 55  | 8.968849 | 9.53    | 9.011280 | 10.50   | 55  | 9.002466 | 9.13    | 9.048498 | 10.17   |
| 56  | .969421  | 9.52    | .011910  | 10.50   | 56  | .003014  | 9.15    | .049108  | 10.17   |
| 57  | .969992  | 9.52    | .012540  | 10.50   | 57  | .003563  | 9.13    | .049718  | 10.17   |
| 58  | .970563  | 9.50    | .013170  | 10.48   | 58  | .004111  | 9.13    | .050328  | 10.15   |
| 59  | .971133  | 9.50    | .013799  | 10.48   | 59  | .004659  | 9.12    | .050937  | 10.15   |
| 60  | 8.971703 | 9.50    | 9.014428 | 10.48   | 60  | 9.005206 | 9.12    | 9.051546 | 10.15   |

| 26° |          |        |          |        | 27° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.005206 |        | 9.051546 | 10.15  | 0   | 9.037401 |        | 9.087520 | 9.83   |
| 1   | .005753  | 9.12   | .052155  | 10.13  | 1   | .037927  | 8.77   | .088110  | 9.83   |
| 2   | .006300  | 9.12   | .052763  | 10.13  | 2   | .038452  | 8.75   | .088700  | 9.83   |
| 3   | .006846  | 9.10   | .053371  | 10.13  | 3   | .038978  | 8.77   | .089290  | 9.83   |
| 4   | .007392  | 9.10   | .053979  | 10.13  | 4   | .039503  | 8.75   | .089880  | 9.83   |
| 5   | .007938  | 9.10   | .054586  | 10.12  | 5   | .040027  | 8.75   | .090469  | 9.82   |
| 6   | .008483  | 9.08   | .055193  | 10.12  | 6   | .040552  | 8.75   | .091058  | 9.82   |
| 7   | .009028  | 9.08   | .055800  | 10.12  | 7   | .041076  | 8.73   | .091647  | c.80   |
| 8   | .009572  | 9.07   | .056406  | 10.10  | 8   | .041599  | 8.72   | .092235  | 9.80   |
| 9   | .010116  | 9.07   | .057012  | 10.10  | 9   | .042123  | 8.72   | .092823  | 9.80   |
| 10  | 9.010660 |        | 9.057618 | 10.10  | 10  | 9.042646 |        | 9.093411 | 9.78   |
| 11  | .011203  | 9.05   | .058224  | 10.08  | 11  | .043166  | 8.70   | .093998  | 9.80   |
| 12  | .011746  | 9.05   | .058829  | 10.08  | 12  | .043691  | 8.72   | .094586  | 9.78   |
| 13  | .012289  | 9.03   | .059434  | 10.07  | 13  | .044213  | 8.70   | .095173  | 9.77   |
| 14  | .012831  | 9.03   | .060038  | 10.07  | 14  | .044735  | 8.68   | .095759  | 9.77   |
| 15  | 9.013373 |        | 9.060643 | 10.07  | 15  | 9.045256 |        | 9.096346 | 9.75   |
| 16  | .013915  | 9.03   | .061247  | 10.07  | 16  | .045777  | 8.68   | .096932  | 9.77   |
| 17  | .014456  | 9.02   | .061850  | 10.05  | 17  | .046298  | 8.68   | .097518  | 9.77   |
| 18  | .014997  | 9.02   | .062454  | 10.07  | 18  | .046818  | 8.67   | .098103  | 9.75   |
| 19  | .015538  | 9.02   | .063057  | 10.05  | 19  | .047338  | 8.67   | .098689  | 9.77   |
| 20  | 9.016078 |        | 9.063659 | 10.03  | 20  | 9.047858 |        | 9.099274 | 9.75   |
| 21  | .016618  | 9.00   | .064262  | 10.05  | 21  | .048377  | 8.65   | .099858  | 9.73   |
| 22  | .017157  | 8.98   | .064864  | 10.03  | 22  | .048896  | 8.65   | .100443  | 9.75   |
| 23  | .017697  | 9.00   | .065466  | 10.03  | 23  | .049415  | 8.65   | .101027  | 9.73   |
| 24  | .018235  | 8.97   | .066067  | 10.02  | 24  | .049933  | 8.63   | .101611  | 9.73   |
| 25  | 9.018774 |        | 9.066668 | 10.02  | 25  | 9.050451 |        | 9.102194 | 9.72   |
| 26  | .019312  | 8.97   | .067269  | 10.02  | 26  | .050969  | 8.63   | .102778  | 9.73   |
| 27  | .019850  | 8.97   | .067870  | 10.02  | 27  | .051487  | 8.63   | .103361  | 9.72   |
| 28  | .020387  | 8.95   | .068470  | 10.00  | 28  | .052004  | 8.62   | .103943  | 9.70   |
| 29  | .020924  | 8.95   | .069070  | 10.00  | 29  | .052520  | 8.60   | .104526  | 9.72   |
| 30  | 9.021461 |        | 9.069670 | 10.00  | 30  | 9.053037 |        | 9.105108 | 9.70   |
| 31  | .021997  | 8.93   | .070269  | 9.98   | 31  | .053553  | 8.60   | .105690  | 9.70   |
| 32  | .022533  | 8.93   | .070868  | 9.98   | 32  | .054069  | 8.60   | .106271  | 9.68   |
| 33  | .023069  | 8.93   | .071467  | 9.98   | 33  | .054584  | 8.58   | .106853  | 9.70   |
| 34  | .023604  | 8.92   | .072065  | 9.97   | 34  | .055099  | 8.58   | .107434  | 9.68   |
| 35  | 9.024139 |        | 9.072663 | 9.97   | 35  | 9.055614 |        | 9.108015 | 9.67   |
| 36  | .024673  | 8.90   | .073261  | 9.97   | 36  | .056129  | 8.58   | .108595  | 9.68   |
| 37  | .025208  | 8.92   | .073859  | 9.97   | 37  | .056643  | 8.57   | .109175  | 9.67   |
| 38  | .025742  | 8.90   | .074456  | 9.95   | 38  | .057157  | 8.57   | .109755  | 9.67   |
| 39  | .026275  | 8.88   | .075053  | 9.95   | 39  | .057670  | 8.55   | .110335  | 9.65   |
| 40  | 9.026808 |        | 9.075649 | 9.93   | 40  | 9.058183 |        | 9.110914 | 9.65   |
| 41  | .027341  | 8.88   | .076246  | 9.95   | 41  | .058696  | 8.55   | .111494  | 9.67   |
| 42  | .027874  | 8.88   | .076842  | 9.93   | 42  | .059209  | 8.55   | .112072  | 9.63   |
| 43  | .028406  | 8.87   | .077437  | 9.92   | 43  | .059721  | 8.53   | .112651  | 9.65   |
| 44  | .028938  | 8.87   | .078033  | 9.93   | 44  | .060233  | 8.53   | .113229  | 9.63   |
| 45  | 9.029469 |        | 9.078628 | 9.92   | 45  | 9.060745 |        | 9.113807 | 9.63   |
| 46  | .030000  | 8.85   | .079223  | 9.92   | 46  | .061256  | 8.52   | .114385  | 9.63   |
| 47  | .030531  | 8.85   | .079817  | 9.92   | 47  | .061767  | 8.52   | .114963  | 9.63   |
| 48  | .031062  | 8.83   | .080412  | 9.92   | 48  | .062277  | 8.50   | .115540  | 9.62   |
| 49  | .031592  | 8.83   | .081006  | 9.90   | 49  | .062788  | 8.52   | .116117  | 9.62   |
| 50  | 9.032122 |        | 9.081599 | 9.88   | 50  | 9.063298 |        | 9.116693 | 9.60   |
| 51  | .032651  | 8.82   | .082193  | 9.90   | 51  | .063807  | 8.48   | .117270  | 9.62   |
| 52  | .033180  | 8.82   | .082786  | 9.88   | 52  | .064317  | 8.50   | .117846  | 9.60   |
| 53  | .033709  | 8.80   | .083378  | 9.87   | 53  | .064826  | 8.48   | .118422  | 9.60   |
| 54  | .034237  | 8.80   | .083971  | 9.88   | 54  | .065335  | 8.48   | .118997  | 9.58   |
| 55  | 9.034765 |        | 9.084563 | 9.87   | 55  | 9.065843 |        | 9.119573 | 9.60   |
| 56  | .035293  | 8.80   | .085155  | 9.87   | 56  | .066351  | 8.47   | .120148  | 9.58   |
| 57  | .035820  | 8.78   | .085747  | 9.87   | 57  | .066859  | 8.47   | .120723  | 9.58   |
| 58  | .036347  | 8.78   | .086338  | 9.85   | 58  | .067366  | 8.45   | .121297  | 9.57   |
| 59  | .036874  | 8.78   | .086929  | 9.85   | 59  | .067874  | 8.47   | .121871  | 9.57   |
| 60  | 9.037401 |        | 9.087520 | 9.85   | 60  | 9.068380 |        | 9.122445 | 9.57   |

| 28° |          |        |          |        | 29° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.068380 | 8.45   | 9.122445 | 9.57   | 0   | 9.098220 | 8.15   | 9.156410 | 9.30   |
| 1   | .068887  | 8.43   | .123019  | 9.57   | 1   | .098718  | 8.13   | .156968  | 9.32   |
| 2   | .069393  | 8.43   | .123593  | 9.55   | 2   | .099206  | 8.12   | .157527  | 9.28   |
| 3   | .069899  | 8.43   | .124166  | 9.55   | 3   | .099693  | 8.13   | .158084  | 9.30   |
| 4   | .070405  | 8.42   | .124739  | 9.53   | 4   | .100181  | 8.12   | .158642  | 9.30   |
| 5   | 9.070910 | 8.42   | 9.125311 | 9.55   | 5   | 9.100668 | 8.12   | 9.159200 | 9.28   |
| 6   | .071415  | 3.40   | .125884  | 9.53   | 6   | .101155  | 8.12   | .159757  | 9.28   |
| 7   | .071919  | 8.42   | .126456  | 9.53   | 7   | .101642  | 8.10   | .160314  | 9.27   |
| 8   | .072424  | 8.40   | .127028  | 9.52   | 8   | .102128  | 8.10   | .160870  | 9.28   |
| 9   | .072928  | 8.40   | .127599  | 9.53   | 9   | .102614  | 8.10   | .161427  | 9.27   |
| 10  | 9.073432 | 8.38   | 9.128171 | 9.52   | 10  | 9.103100 | 8.08   | 9.161983 | 9.27   |
| 11  | .073935  | 8.38   | .128742  | 9.52   | 11  | .103585  | 8.08   | .162539  | 9.27   |
| 12  | .074438  | 8.38   | .129313  | 9.50   | 12  | .104070  | 8.08   | .163095  | 9.25   |
| 13  | .074941  | 8.37   | .129883  | 9.50   | 13  | .104555  | 8.08   | .163650  | 9.25   |
| 14  | .075443  | 8.38   | .130453  | 9.50   | 14  | .105040  | 8.07   | .164205  | 9.25   |
| 15  | 9.075946 | 8.35   | 9.131023 | 9.50   | 15  | 9.105524 | 8.07   | 9.164760 | 9.25   |
| 16  | .076447  | 8.37   | .131593  | 9.50   | 16  | .106008  | 8.05   | .165315  | 9.25   |
| 17  | .076949  | 8.35   | .132163  | 9.48   | 17  | .106491  | 8.07   | .165870  | 9.23   |
| 18  | .077450  | 8.35   | .132732  | 9.48   | 18  | .106975  | 8.05   | .166424  | 9.23   |
| 19  | .077951  | 8.35   | .133301  | 9.48   | 19  | .107458  | 8.05   | .166978  | 9.23   |
| 20  | 9.078452 | 8.33   | 9.133870 | 9.47   | 20  | 9.107941 | 8.03   | 9.167532 | 9.22   |
| 21  | .078952  | 8.33   | .134438  | 9.47   | 21  | .108423  | 8.05   | .168085  | 9.23   |
| 22  | .079452  | 8.33   | .135006  | 9.47   | 22  | .108906  | 8.03   | .168639  | 9.22   |
| 23  | .079952  | 8.32   | .135574  | 9.47   | 23  | .109388  | 8.02   | .169192  | 9.22   |
| 24  | .080451  | 8.32   | .136142  | 9.45   | 24  | .109869  | 8.03   | .169745  | 9.20   |
| 25  | 9.080950 | 8.32   | 9.136709 | 9.47   | 25  | 9.110351 | 8.02   | 9.170297 | 9.22   |
| 26  | .081449  | 8.32   | .137277  | 9.45   | 26  | .110832  | 8.02   | .170850  | 9.20   |
| 27  | .081948  | 8.30   | .137844  | 9.43   | 27  | .111313  | 8.00   | .171402  | 9.20   |
| 28  | .082446  | 8.30   | .138410  | 9.45   | 28  | .111793  | 8.00   | .171954  | 9.18   |
| 29  | .082944  | 8.28   | .138977  | 9.43   | 29  | .112273  | 8.00   | .172505  | 9.20   |
| 30  | 9.083441 | 8.30   | 9.139543 | 9.43   | 30  | 9.112753 | 8.00   | 9.173057 | 9.18   |
| 31  | .083939  | 8.28   | .140109  | 9.42   | 31  | .113233  | 8.00   | .173608  | 9.18   |
| 32  | .084436  | 8.27   | .140674  | 9.43   | 32  | .113713  | 7.98   | .174159  | 9.18   |
| 33  | .084932  | 8.28   | .141240  | 9.42   | 33  | .114192  | 7.98   | .174710  | 9.17   |
| 34  | .085429  | 8.27   | .141805  | 9.42   | 34  | .114671  | 7.97   | .175260  | 9.17   |
| 35  | 9.085925 | 8.25   | 9.142370 | 9.40   | 35  | 9.115149 | 7.97   | 9.175810 | 9.17   |
| 36  | .086420  | 8.27   | .142934  | 9.42   | 36  | .115627  | 7.97   | .176360  | 9.17   |
| 37  | .086916  | 8.25   | .143499  | 9.40   | 37  | .116105  | 7.97   | .176910  | 9.17   |
| 38  | .087411  | 8.25   | .144063  | 9.40   | 38  | .116583  | 7.97   | .177460  | 9.15   |
| 39  | .087906  | 8.23   | .144627  | 9.38   | 39  | .117061  | 7.95   | .178009  | 9.15   |
| 40  | 9.088400 | 8.25   | 9.145190 | 9.40   | 40  | 9.117538 | 7.95   | 9.178558 | 9.15   |
| 41  | .088895  | 8.23   | .145754  | 9.38   | 41  | .118015  | 7.93   | .179107  | 9.15   |
| 42  | .089389  | 8.22   | .146317  | 9.38   | 42  | .118491  | 7.95   | .179656  | 9.13   |
| 43  | .089882  | 8.23   | .146880  | 9.37   | 43  | .118968  | 7.93   | .180204  | 9.13   |
| 44  | .090376  | 8.22   | .147442  | 9.38   | 44  | .119444  | 7.92   | .180752  | 9.13   |
| 45  | 9.090869 | 8.22   | 9.148005 | 9.37   | 45  | 9.119919 | 7.93   | 9.181300 | 9.13   |
| 46  | .091363  | 8.20   | .148567  | 9.37   | 46  | .120395  | 7.92   | .181848  | 9.12   |
| 47  | .091854  | 8.20   | .149129  | 9.35   | 47  | .120870  | 7.92   | .182395  | 9.13   |
| 48  | .092346  | 8.20   | .149690  | 9.35   | 48  | .121345  | 7.92   | .182943  | 9.12   |
| 49  | .092838  | 8.20   | .150251  | 9.37   | 49  | .121820  | 7.90   | .183490  | 9.10   |
| 50  | 9.093330 | 8.18   | 9.150813 | 9.33   | 50  | 9.122294 | 7.90   | 9.184036 | 9.12   |
| 51  | .093821  | 8.18   | .151373  | 9.35   | 51  | .122768  | 7.90   | .184583  | 9.10   |
| 52  | .094312  | 8.18   | .151934  | 9.33   | 52  | .123242  | 7.88   | .185129  | 9.10   |
| 53  | .094803  | 8.17   | .152494  | 9.35   | 53  | .123715  | 7.90   | .185675  | 9.10   |
| 54  | .095293  | 8.17   | .153055  | 9.32   | 54  | .124189  | 7.88   | .186221  | 9.10   |
| 55  | 9.095783 | 8.17   | 9.153614 | 9.33   | 55  | 9.124662 | 7.87   | 9.186767 | 9.08   |
| 56  | .096273  | 8.17   | .154174  | 9.32   | 56  | .125134  | 7.85   | .187312  | 9.10   |
| 57  | .096763  | 8.15   | .154733  | 9.33   | 57  | .125607  | 7.87   | .187858  | 9.08   |
| 58  | .097252  | 8.15   | .155293  | 9.30   | 58  | .126079  | 7.87   | .188403  | 9.07   |
| 59  | .097741  | 8.13   | .155851  | 9.32   | 59  | .126551  | 7.85   | .188947  | 9.08   |
| 60  | 9.098229 | 8.13   | 9.156410 |        | 60  | 9.127022 |        | 9.189492 |        |

| 30° |           |        |           |        | 31° |           |        |           |        |
|-----|-----------|--------|-----------|--------|-----|-----------|--------|-----------|--------|
| M.  | Vers.     | D. 1". | Exsec.    | D. 1". | M.  | Vers.     | D. 1". | Exsec.    | D. 1". |
| 0   | 9. 127022 |        | 9. 189492 |        | 0   | 9. 154828 |        | 9. 221762 |        |
| 1   | . 127494  | 7. 87  | . 190036  | 9. 07  | 1   | . 155283  | 7. 58  | . 222293  | 8. 85  |
| 2   | . 127965  | 7. 85  | . 190580  | 9. 07  | 2   | . 155738  | 7. 58  | . 222825  | 8. 87  |
| 3   | . 128436  | 7. 83  | . 191124  | 9. 07  | 3   | . 156193  | 7. 58  | . 223355  | 8. 83  |
| 4   | . 128906  | 7. 83  | . 191668  | 9. 07  | 4   | . 156648  | 7. 58  | . 223886  | 8. 85  |
| 5   | 9. 129376 | 7. 83  | 9. 192211 | 9. 05  | 5   | 9. 157102 | 7. 57  | 9. 224417 | 8. 84  |
| 6   | . 129846  | 7. 83  | . 192754  | 9. 05  | 6   | . 157556  | 7. 57  | . 224947  | 8. 83  |
| 7   | . 130316  | 7. 82  | . 193297  | 9. 05  | 7   | . 158010  | 7. 57  | . 225477  | 8. 83  |
| 8   | . 130785  | 7. 83  | . 193840  | 9. 05  | 8   | . 158464  | 7. 55  | . 226007  | 8. 83  |
| 9   | . 131255  | 7. 82  | . 194382  | 9. 05  | 9   | . 158917  | 7. 55  | . 226537  | 8. 82  |
| 10  | 9. 131724 | 7. 80  | 9. 194925 | 9. 03  | 10  | 9. 159370 | 7. 55  | 9. 227066 | 8. 82  |
| 11  | . 132192  | 7. 80  | . 195467  | 9. 03  | 11  | . 159823  | 7. 55  | . 227595  | 8. 83  |
| 12  | . 132660  | 7. 82  | . 196009  | 9. 02  | 12  | . 160276  | 7. 55  | . 228125  | 8. 80  |
| 13  | . 133129  | 7. 78  | . 196550  | 9. 03  | 13  | . 160728  | 7. 53  | . 228653  | 8. 82  |
| 14  | . 133596  | 7. 80  | . 197092  | 9. 02  | 14  | . 161180  | 7. 53  | . 229182  | 8. 82  |
| 15  | 9. 134064 | 7. 78  | 9. 197633 | 9. 02  | 15  | 9. 161632 | 7. 52  | 9. 229711 | 8. 80  |
| 16  | . 134531  | 7. 78  | . 198174  | 9. 02  | 16  | . 162083  | 7. 52  | . 230239  | 8. 80  |
| 17  | . 134998  | 7. 78  | . 198715  | 9. 02  | 17  | . 162535  | 7. 52  | . 230767  | 8. 80  |
| 18  | . 135465  | 7. 77  | . 199255  | 9. 00  | 18  | . 162986  | 7. 52  | . 231295  | 8. 78  |
| 19  | . 135931  | 7. 77  | . 199795  | 9. 00  | 19  | . 163437  | 7. 50  | . 231822  | 8. 80  |
| 20  | 9. 136397 | 7. 77  | 9. 200335 | 9. 00  | 20  | 9. 163887 | 7. 52  | 9. 232350 | 8. 78  |
| 21  | . 136863  | 7. 77  | . 200875  | 9. 00  | 21  | . 164338  | 7. 50  | . 232877  | 8. 78  |
| 22  | . 137329  | 7. 75  | . 201415  | 8. 98  | 22  | . 164788  | 7. 48  | . 233404  | 8. 78  |
| 23  | . 137794  | 7. 77  | . 201954  | 9. 00  | 23  | . 165237  | 7. 50  | . 233931  | 8. 78  |
| 24  | . 138260  | 7. 73  | . 202494  | 8. 98  | 24  | . 165687  | 7. 48  | . 234458  | 8. 77  |
| 25  | 9. 138724 | 7. 75  | 9. 203033 | 8. 97  | 25  | 9. 166136 | 7. 48  | 9. 234984 | 8. 77  |
| 26  | . 139189  | 7. 73  | . 203571  | 8. 98  | 26  | . 166585  | 7. 48  | . 235510  | 8. 77  |
| 27  | . 139653  | 7. 73  | . 204110  | 8. 98  | 27  | . 167034  | 7. 48  | . 236036  | 8. 77  |
| 28  | . 140117  | 7. 73  | . 204648  | 8. 97  | 28  | . 167483  | 7. 48  | . 236562  | 8. 77  |
| 29  | . 140581  | 7. 73  | . 205186  | 8. 97  | 29  | . 167931  | 7. 47  | . 237088  | 8. 75  |
| 30  | 9. 141045 | 7. 72  | 9. 205724 | 8. 97  | 30  | 9. 168379 | 7. 47  | 9. 237613 | 8. 77  |
| 31  | . 141508  | 7. 72  | . 206262  | 8. 95  | 31  | . 168827  | 7. 47  | . 238139  | 8. 75  |
| 32  | . 141971  | 7. 72  | . 206799  | 8. 97  | 32  | . 169275  | 7. 45  | . 238664  | 8. 75  |
| 33  | . 142434  | 7. 70  | . 207337  | 8. 95  | 33  | . 169722  | 7. 45  | . 239189  | 8. 75  |
| 34  | . 142896  | 7. 70  | . 207874  | 8. 93  | 34  | . 170169  | 7. 45  | . 239713  | 8. 73  |
| 35  | 9. 143358 | 7. 70  | 9. 208410 | 8. 95  | 35  | 9. 170616 | 7. 43  | 9. 240238 | 8. 75  |
| 36  | . 143820  | 7. 70  | . 208947  | 8. 93  | 36  | . 171062  | 7. 45  | . 240762  | 8. 73  |
| 37  | . 144282  | 7. 68  | . 209483  | 8. 95  | 37  | . 171509  | 7. 45  | . 241286  | 8. 73  |
| 38  | . 144743  | 7. 68  | . 210020  | 8. 93  | 38  | . 171955  | 7. 42  | . 241810  | 8. 73  |
| 39  | . 145204  | 7. 68  | . 210556  | 8. 92  | 39  | . 172400  | 7. 43  | . 242333  | 8. 72  |
| 40  | 9. 145665 | 7. 68  | 9. 211091 | 8. 93  | 40  | 9. 172846 | 7. 42  | 9. 242857 | 8. 72  |
| 41  | . 146126  | 7. 67  | . 211627  | 8. 92  | 41  | . 173291  | 7. 42  | . 243380  | 8. 72  |
| 42  | . 146586  | 7. 67  | . 212162  | 8. 92  | 42  | . 173736  | 7. 42  | . 243903  | 8. 72  |
| 43  | . 147046  | 7. 67  | . 212697  | 8. 92  | 43  | . 174181  | 7. 42  | . 244426  | 8. 72  |
| 44  | . 147506  | 7. 67  | . 213232  | 8. 92  | 44  | . 174626  | 7. 40  | . 244949  | 8. 70  |
| 45  | 9. 147966 | 7. 65  | 9. 213767 | 8. 90  | 45  | 9. 175070 | 7. 40  | 9. 245471 | 8. 72  |
| 46  | . 148425  | 7. 65  | . 214301  | 8. 92  | 46  | . 175514  | 7. 40  | . 245994  | 8. 70  |
| 47  | . 148884  | 7. 65  | . 214836  | 8. 90  | 47  | . 175958  | 7. 40  | . 246516  | 8. 70  |
| 48  | . 149343  | 7. 63  | . 215370  | 8. 90  | 48  | . 176402  | 7. 38  | . 247038  | 8. 68  |
| 49  | . 149801  | 7. 63  | . 215904  | 8. 88  | 49  | . 176845  | 7. 38  | . 247559  | 8. 70  |
| 50  | 9. 150259 | 7. 63  | 9. 216437 | 8. 90  | 50  | 9. 177288 | 7. 38  | 9. 248081 | 8. 68  |
| 51  | . 150717  | 7. 63  | . 216971  | 8. 88  | 51  | . 177731  | 7. 38  | . 248602  | 8. 68  |
| 52  | . 151175  | 7. 63  | . 217504  | 8. 88  | 52  | . 178174  | 7. 37  | . 249123  | 8. 68  |
| 53  | . 151633  | 7. 62  | . 218037  | 8. 88  | 53  | . 178616  | 7. 37  | . 249644  | 8. 68  |
| 54  | . 152090  | 7. 62  | . 218570  | 8. 87  | 54  | . 179058  | 7. 37  | . 250165  | 8. 68  |
| 55  | 9. 152547 | 7. 60  | 9. 219102 | 8. 88  | 55  | 9. 179500 | 7. 37  | 9. 250686 | 8. 68  |
| 56  | . 153003  | 7. 62  | . 219635  | 8. 87  | 56  | . 179942  | 7. 35  | . 251206  | 8. 67  |
| 57  | . 153460  | 7. 60  | . 220167  | 8. 87  | 57  | . 180383  | 7. 35  | . 251726  | 8. 67  |
| 58  | . 153916  | 7. 60  | . 220699  | 8. 87  | 58  | . 180825  | 7. 33  | . 252246  | 8. 67  |
| 59  | . 154372  | 7. 60  | . 221231  | 8. 85  | 59  | . 181265  | 7. 35  | . 252766  | 8. 67  |
| 60  | 9. 154828 |        | 9. 221762 |        | 60  | 9. 181706 |        | 9. 253286 |        |



| 32° |           |        |           |        | 33° |           |        |           |        |
|-----|-----------|--------|-----------|--------|-----|-----------|--------|-----------|--------|
| M.  | Vers.     | D. 1". | Exsec.    | D. 1". | M.  | Vers.     | D. 1". | Exsec.    | D. 1". |
| 0   | 9. 181706 | 7. 35  | 9. 253286 | 8. 65  | 0   | 9. 207714 |        | 9. 284122 | 8. 48  |
| 1   | . 182147  | 7. 33  | . 253805  | 8. 65  | 1   | . 208140  | 7. 10  | . 284631  | 8. 45  |
| 2   | . 182587  | 7. 33  | . 254324  | 8. 65  | 2   | . 208566  | 7. 10  | . 285139  | 8. 47  |
| 3   | . 183027  | 7. 32  | . 254843  | 8. 65  | 3   | . 208992  | 7. 10  | . 285647  | 8. 47  |
| 4   | . 183466  | 7. 33  | . 255362  | 8. 65  | 4   | . 209418  | 7. 08  | . 286155  | 8. 47  |
| 5   | 9. 183906 | 7. 32  | 9. 255881 | 8. 63  | 5   | 9. 209843 | 7. 08  | 9. 286663 | 8. 45  |
| 6   | . 184345  | 7. 32  | . 256399  | 8. 65  | 6   | . 210268  | 7. 08  | . 287170  | 8. 47  |
| 7   | . 184784  | 7. 32  | . 256918  | 8. 65  | 7   | . 210693  | 7. 08  | . 287678  | 8. 45  |
| 8   | . 185223  | 7. 32  | . 257436  | 8. 63  | 8   | . 211118  | 7. 08  | . 288185  | 8. 45  |
| 9   | . 185662  | 7. 30  | . 257954  | 8. 62  | 9   | . 211543  | 7. 07  | . 288692  | 8. 45  |
| 10  | 9. 186100 | 7. 30  | 9. 258471 | 8. 63  | 10  | 9. 211967 | 7. 07  | 9. 289199 | 8. 43  |
| 11  | . 186538  | 7. 30  | . 258989  | 8. 62  | 11  | . 212391  | 7. 07  | . 289705  | 8. 45  |
| 12  | . 186976  | 7. 28  | . 259506  | 8. 62  | 12  | . 212815  | 7. 07  | . 290212  | 8. 43  |
| 13  | . 187413  | 7. 30  | . 260023  | 8. 62  | 13  | . 213239  | 7. 05  | . 290718  | 8. 43  |
| 14  | . 187851  | 7. 28  | . 260540  | 8. 62  | 14  | . 213662  | 7. 05  | . 291224  | 8. 43  |
| 15  | 9. 188288 | 7. 28  | 9. 261057 | 8. 62  | 15  | 9. 214085 | 7. 05  | 9. 291730 | 8. 43  |
| 16  | . 188724  | 7. 27  | . 261574  | 8. 62  | 16  | . 214508  | 7. 05  | . 292236  | 8. 43  |
| 17  | . 189161  | 7. 28  | . 262090  | 8. 60  | 17  | . 214931  | 7. 05  | . 292742  | 8. 43  |
| 18  | . 189597  | 7. 28  | . 262606  | 8. 60  | 18  | . 215354  | 7. 05  | . 293247  | 8. 42  |
| 19  | . 190034  | 7. 25  | . 263122  | 8. 60  | 19  | . 215776  | 7. 03  | . 293753  | 8. 42  |
| 20  | 9. 190469 | 7. 27  | 9. 263638 | 8. 60  | 20  | 9. 216198 | 7. 03  | 9. 294258 | 8. 42  |
| 21  | . 190905  | 7. 27  | . 264154  | 8. 58  | 21  | . 216620  | 7. 03  | . 294763  | 8. 42  |
| 22  | . 191341  | 7. 25  | . 264669  | 8. 58  | 22  | . 217042  | 7. 02  | . 295268  | 8. 40  |
| 23  | . 191776  | 7. 25  | . 265184  | 8. 60  | 23  | . 217463  | 7. 02  | . 295772  | 8. 42  |
| 24  | . 192211  | 7. 23  | . 265700  | 8. 57  | 24  | . 217884  | 7. 02  | . 296277  | 8. 40  |
| 25  | 9. 192645 | 7. 25  | 9. 266214 | 8. 58  | 25  | 9. 218305 | 7. 02  | 9. 296781 | 8. 40  |
| 26  | . 193080  | 7. 23  | . 266729  | 8. 58  | 26  | . 218726  | 7. 00  | . 297285  | 8. 40  |
| 27  | . 193514  | 7. 23  | . 267244  | 8. 57  | 27  | . 219146  | 7. 02  | . 297789  | 8. 40  |
| 28  | . 193948  | 7. 23  | . 267758  | 8. 57  | 28  | . 219567  | 7. 00  | . 298293  | 8. 40  |
| 29  | . 194382  | 7. 22  | . 268272  | 8. 57  | 29  | . 219987  | 7. 00  | . 298797  | 8. 38  |
| 30  | 9. 194815 | 7. 23  | 9. 268786 | 8. 57  | 30  | 9. 220407 | 6. 98  | 9. 299300 | 8. 38  |
| 31  | . 195249  | 7. 22  | . 269300  | 8. 57  | 31  | . 220826  | 7. 00  | . 299803  | 8. 38  |
| 32  | . 195682  | 7. 22  | . 269814  | 8. 55  | 32  | . 221246  | 6. 98  | . 300307  | 8. 37  |
| 33  | . 196115  | 7. 20  | . 270327  | 8. 55  | 33  | . 221665  | 6. 98  | . 300809  | 8. 38  |
| 34  | . 196547  | 7. 22  | . 270840  | 8. 57  | 34  | . 222084  | 6. 98  | . 301312  | 8. 38  |
| 35  | 9. 196980 | 7. 20  | 9. 271354 | 8. 53  | 35  | 9. 222503 | 6. 97  | 9. 301815 | 8. 37  |
| 36  | . 197412  | 7. 20  | . 271866  | 8. 55  | 36  | . 222921  | 6. 98  | . 302317  | 8. 38  |
| 37  | . 197844  | 7. 18  | . 272379  | 8. 55  | 37  | . 223340  | 6. 97  | . 302820  | 8. 37  |
| 38  | . 198275  | 7. 20  | . 272892  | 8. 53  | 38  | . 223758  | 6. 97  | . 303322  | 8. 37  |
| 39  | . 198707  | 7. 18  | . 273404  | 8. 53  | 39  | . 224176  | 6. 95  | . 303824  | 8. 35  |
| 40  | 9. 199138 | 7. 18  | 9. 273916 | 8. 53  | 40  | 9. 224593 | 6. 97  | 9. 304325 | 8. 37  |
| 41  | . 199569  | 7. 18  | . 274428  | 8. 53  | 41  | . 225011  | 6. 95  | . 304827  | 8. 35  |
| 42  | . 200000  | 7. 17  | . 274940  | 8. 53  | 42  | . 225428  | 6. 95  | . 305328  | 8. 37  |
| 43  | . 200430  | 7. 18  | . 275452  | 8. 52  | 43  | . 225845  | 6. 95  | . 305830  | 8. 35  |
| 44  | . 200861  | 7. 17  | . 275963  | 8. 52  | 44  | . 226262  | 6. 95  | . 306331  | 8. 35  |
| 45  | 9. 201291 | 7. 15  | 9. 276474 | 8. 53  | 45  | 9. 226678 | 6. 93  | 9. 306832 | 8. 35  |
| 46  | . 201720  | 7. 17  | . 276986  | 8. 50  | 46  | . 227095  | 6. 93  | . 307333  | 8. 33  |
| 47  | . 202150  | 7. 15  | . 277497  | 8. 52  | 47  | . 227511  | 6. 93  | . 307833  | 8. 35  |
| 48  | . 202579  | 7. 15  | . 278006  | 8. 52  | 48  | . 227927  | 6. 92  | . 308334  | 8. 33  |
| 49  | . 203008  | 7. 15  | . 278518  | 8. 50  | 49  | . 228342  | 6. 93  | . 308834  | 8. 33  |
| 50  | 9. 203437 | 7. 15  | 9. 279028 | 8. 50  | 50  | 9. 228758 | 6. 92  | 9. 309334 | 8. 33  |
| 51  | . 203866  | 7. 13  | . 279538  | 8. 50  | 51  | . 229173  | 6. 92  | . 309834  | 8. 33  |
| 52  | . 204294  | 7. 15  | . 280048  | 8. 50  | 52  | . 229588  | 6. 92  | . 310334  | 8. 33  |
| 53  | . 204723  | 7. 13  | . 280558  | 8. 50  | 53  | . 230003  | 6. 92  | . 310834  | 8. 32  |
| 54  | . 205151  | 7. 12  | . 281068  | 8. 48  | 54  | . 230418  | 6. 90  | . 311333  | 8. 32  |
| 55  | 9. 205578 | 7. 13  | 9. 281577 | 8. 50  | 55  | 9. 230832 | 6. 90  | 9. 311832 | 8. 32  |
| 56  | . 206006  | 7. 12  | . 282087  | 8. 48  | 56  | . 231246  | 6. 90  | . 312331  | 8. 32  |
| 57  | . 206433  | 7. 12  | . 282596  | 8. 48  | 57  | . 231660  | 6. 90  | . 312830  | 8. 32  |
| 58  | . 206860  | 7. 12  | . 283105  | 8. 48  | 58  | . 232074  | 6. 88  | . 313329  | 8. 32  |
| 59  | . 207287  | 7. 12  | . 283614  | 8. 47  | 59  | . 232487  | 6. 90  | . 313828  | 8. 30  |
| 60  | 9. 207714 |        | 9. 284122 |        | 60  | 9. 232901 |        | 9. 314326 |        |

| 34° |          |        |          |        | 35° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.232901 | 6.88   | 9.314326 | 8.32   | 0   | 9.257314 | 6.67   | 9.343949 | 8.15   |
| 1   | .233314  | 6.88   | .314825  | 8.30   | 1   | .257714  | 6.68   | .344438  | 8.15   |
| 2   | .233727  | 6.87   | .315323  | 8.30   | 2   | .258115  | 6.67   | .344927  | 8.15   |
| 3   | .234139  | 6.88   | .315821  | 8.30   | 3   | .258515  | 6.67   | .345416  | 8.13   |
| 4   | .234552  | 6.87   | .316319  | 8.30   | 4   | .258915  | 6.65   | .345904  | 8.15   |
| 5   | 9.234964 | 6.87   | 9.316817 | 8.28   | 5   | 9.259314 | 6.67   | 9.346393 | 8.13   |
| 6   | .235376  | 6.87   | .317314  | 8.28   | 6   | .259714  | 6.65   | .346881  | 8.13   |
| 7   | .235788  | 6.87   | .317811  | 8.30   | 7   | .260113  | 6.65   | .347369  | 8.13   |
| 8   | .236199  | 6.85   | .318309  | 8.28   | 8   | .260512  | 6.65   | .347857  | 8.13   |
| 9   | .236611  | 6.85   | .318806  | 8.28   | 9   | .260911  | 6.65   | .348345  | 8.13   |
| 10  | 9.237022 | 6.85   | 9.319303 | 8.27   | 10  | 9.261310 | 6.65   | 9.348833 | 8.13   |
| 11  | .237433  | 6.85   | .319799  | 8.28   | 11  | .261709  | 6.63   | .349321  | 8.12   |
| 12  | .237844  | 6.83   | .320296  | 8.27   | 12  | .262107  | 6.63   | .349808  | 8.12   |
| 13  | .238254  | 6.85   | .320792  | 8.28   | 13  | .262505  | 6.63   | .350295  | 8.12   |
| 14  | .238665  | 6.83   | .321289  | 8.27   | 14  | .262903  | 6.63   | .350782  | 8.12   |
| 15  | 9.239075 | 6.83   | 9.321785 | 8.27   | 15  | 9.263301 | 6.62   | 9.351269 | 8.12   |
| 16  | .239485  | 6.82   | .322281  | 8.25   | 16  | .263698  | 6.62   | .351756  | 8.12   |
| 17  | .239894  | 6.83   | .322776  | 8.27   | 17  | .264096  | 6.62   | .352243  | 8.12   |
| 18  | .240304  | 6.82   | .323272  | 8.27   | 18  | .264493  | 6.62   | .352730  | 8.10   |
| 19  | .240713  | 6.82   | .323768  | 8.25   | 19  | .264890  | 6.62   | .353216  | 8.10   |
| 20  | 9.241122 | 6.82   | 9.324263 | 8.25   | 20  | 9.265287 | 6.60   | 9.353702 | 8.10   |
| 21  | .241531  | 6.82   | .324758  | 8.25   | 21  | .265683  | 6.62   | .354188  | 8.10   |
| 22  | .241940  | 6.80   | .325253  | 8.25   | 22  | .266080  | 6.60   | .354674  | 8.10   |
| 23  | .242348  | 6.80   | .325748  | 8.25   | 23  | .266476  | 6.60   | .355160  | 8.10   |
| 24  | .242756  | 6.80   | .326243  | 8.23   | 24  | .266872  | 6.58   | .355646  | 8.08   |
| 25  | 9.243164 | 6.80   | 9.326737 | 8.25   | 25  | 9.267267 | 6.60   | 9.356131 | 8.10   |
| 26  | .243572  | 6.80   | .327232  | 8.23   | 26  | .267663  | 6.58   | .356617  | 8.08   |
| 27  | .243980  | 6.78   | .327726  | 8.23   | 27  | .268058  | 6.58   | .357102  | 8.08   |
| 28  | .244387  | 6.78   | .328220  | 8.23   | 28  | .268453  | 6.58   | .357587  | 8.08   |
| 29  | .244794  | 6.78   | .328714  | 8.22   | 29  | .268848  | 6.58   | .358072  | 8.08   |
| 30  | 9.245201 | 6.78   | 9.329207 | 8.23   | 30  | 9.269243 | 6.58   | 9.358557 | 8.08   |
| 31  | .245608  | 6.77   | .329701  | 8.23   | 31  | .269638  | 6.57   | .359042  | 8.07   |
| 32  | .246014  | 6.78   | .330195  | 8.22   | 32  | .270032  | 6.57   | .359526  | 8.07   |
| 33  | .246421  | 6.77   | .330688  | 8.22   | 33  | .270426  | 6.57   | .360011  | 8.07   |
| 34  | .246827  | 6.77   | .331181  | 8.22   | 34  | .270820  | 6.57   | .360495  | 8.07   |
| 35  | 9.247233 | 6.77   | 9.331674 | 8.22   | 35  | 9.271214 | 6.57   | 9.360979 | 8.07   |
| 36  | .247639  | 6.75   | .332167  | 8.20   | 36  | .271608  | 6.57   | .361463  | 8.07   |
| 37  | .248044  | 6.75   | .332659  | 8.20   | 37  | .272001  | 6.55   | .361947  | 8.07   |
| 38  | .248449  | 6.75   | .333152  | 8.20   | 38  | .272394  | 6.55   | .362431  | 8.05   |
| 39  | .248854  | 6.75   | .333644  | 8.22   | 39  | .272787  | 6.55   | .362914  | 8.07   |
| 40  | 9.249259 | 6.75   | 9.334137 | 8.20   | 40  | 9.273180 | 6.53   | 9.363398 | 8.05   |
| 41  | .249664  | 6.73   | .334629  | 8.20   | 41  | .273572  | 6.55   | .363881  | 8.05   |
| 42  | .250068  | 6.75   | .335121  | 8.18   | 42  | .273965  | 6.53   | .364364  | 8.05   |
| 43  | .250473  | 6.73   | .335612  | 8.20   | 43  | .274357  | 6.53   | .364847  | 8.05   |
| 44  | .250877  | 6.73   | .336104  | 8.18   | 44  | .274749  | 6.53   | .365330  | 8.05   |
| 45  | 9.251281 | 6.72   | 9.336595 | 8.20   | 45  | 9.275141 | 6.52   | 9.365813 | 8.03   |
| 46  | .251684  | 6.73   | .337087  | 8.18   | 46  | .275532  | 6.53   | .366295  | 8.05   |
| 47  | .252088  | 6.72   | .337578  | 8.18   | 47  | .275924  | 6.52   | .366778  | 8.03   |
| 48  | .252491  | 6.72   | .338069  | 8.18   | 48  | .276315  | 6.52   | .367260  | 8.03   |
| 49  | .252894  | 6.72   | .338560  | 8.17   | 49  | .276706  | 6.52   | .367742  | 8.03   |
| 50  | 9.253297 | 6.70   | 9.339050 | 8.18   | 50  | 9.277097 | 6.52   | 9.368224 | 8.03   |
| 51  | .253699  | 6.72   | .339541  | 8.17   | 51  | .277488  | 6.50   | .368706  | 8.03   |
| 52  | .254102  | 6.70   | .340031  | 8.18   | 52  | .277878  | 6.50   | .369188  | 8.03   |
| 53  | .254504  | 6.70   | .340522  | 8.17   | 53  | .278268  | 6.50   | .369670  | 8.02   |
| 54  | .254906  | 6.70   | .341012  | 8.17   | 54  | .278658  | 6.50   | .370151  | 8.02   |
| 55  | 9.255308 | 6.68   | 9.341502 | 8.15   | 55  | 9.279048 | 6.50   | 9.370632 | 8.03   |
| 56  | .255709  | 6.70   | .341991  | 8.17   | 56  | .279438  | 6.48   | .371114  | 8.02   |
| 57  | .256111  | 6.68   | .342481  | 8.17   | 57  | .279827  | 6.50   | .371595  | 8.02   |
| 58  | .256512  | 6.68   | .342971  | 8.15   | 58  | .280217  | 6.48   | .372076  | 8.00   |
| 59  | .256913  | 6.68   | .343460  | 8.15   | 59  | .280606  | 6.48   | .372556  | 8.00   |
| 60  | 9.257314 | 6.68   | 9.343949 | 8.15   | 60  | 9.280995 | 6.48   | 9.373037 | 8.02   |

| 36° |          |        |          |        | 37° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.280995 | 6.47   | 9.373037 | 8.02   | 0   | 9.303983 | 6.28   | 9.401634 | 7.88   |
| 1   | .281383  | 6.48   | .373518  | 8.00   | 1   | .304360  | 6.30   | .402107  | 7.88   |
| 2   | .281772  | 6.47   | .373998  | 8.00   | 2   | .304738  | 6.28   | .402580  | 7.87   |
| 3   | .282160  | 6.47   | .374478  | 8.00   | 3   | .305115  | 6.28   | .403052  | 7.87   |
| 4   | .282548  | 6.47   | .374958  | 8.00   | 4   | .305492  | 6.27   | .403524  | 7.88   |
| 5   | 9.282936 | 6.47   | 9.375438 | 8.00   | 5   | 9.305868 | 6.28   | 9.403997 | 7.87   |
| 6   | .283324  | 6.47   | .375918  | 8.00   | 6   | .306245  | 6.27   | .404469  | 7.87   |
| 7   | .283712  | 6.47   | .376398  | 7.98   | 7   | .306621  | 6.28   | .404941  | 7.85   |
| 8   | .284099  | 6.45   | .376877  | 8.00   | 8   | .306998  | 6.27   | .405412  | 7.87   |
| 9   | .284486  | 6.45   | .377357  | 7.98   | 9   | .307374  | 6.25   | .405884  | 7.87   |
| 10  | 9.284873 | 6.45   | 9.377836 | 7.98   | 10  | 9.307749 | 6.27   | 9.406356 | 7.85   |
| 11  | .285260  | 6.45   | .378315  | 7.98   | 11  | .308125  | 6.27   | .406827  | 7.85   |
| 12  | .285647  | 6.43   | .378794  | 7.98   | 12  | .308501  | 6.25   | .407298  | 7.87   |
| 13  | .286033  | 6.43   | .379273  | 7.98   | 13  | .308876  | 6.25   | .407770  | 7.85   |
| 14  | .286419  | 6.43   | .379752  | 7.98   | 14  | .309251  | 6.25   | .408241  | 7.85   |
| 15  | 9.286805 | 6.43   | 9.380231 | 7.97   | 15  | 9.309626 | 6.25   | 9.408712 | 7.85   |
| 16  | .287191  | 6.43   | .380709  | 7.98   | 16  | .310001  | 6.23   | .409183  | 7.85   |
| 17  | .287577  | 6.42   | .381188  | 7.97   | 17  | .310375  | 6.25   | .409653  | 7.83   |
| 18  | .287962  | 6.43   | .381666  | 7.97   | 18  | .310750  | 6.23   | .410124  | 7.83   |
| 19  | .288348  | 6.42   | .382144  | 7.97   | 19  | .311124  | 6.23   | .410594  | 7.85   |
| 20  | 9.288733 | 6.42   | 9.382622 | 7.97   | 20  | 9.311498 | 6.23   | 9.411065 | 7.83   |
| 21  | .289118  | 6.40   | .383100  | 7.95   | 21  | .311872  | 6.22   | .411535  | 7.83   |
| 22  | .289502  | 6.42   | .383577  | 7.97   | 22  | .312245  | 6.23   | .412005  | 7.83   |
| 23  | .289887  | 6.40   | .384055  | 7.95   | 23  | .312619  | 6.22   | .412475  | 7.83   |
| 24  | .290271  | 6.40   | .384532  | 7.97   | 24  | .312992  | 6.22   | .412945  | 7.83   |
| 25  | 9.290655 | 6.40   | 9.385010 | 7.95   | 25  | 9.313365 | 6.22   | 9.413415 | 7.82   |
| 26  | .291039  | 6.40   | .385487  | 7.95   | 26  | .313738  | 6.22   | .413884  | 7.83   |
| 27  | .291423  | 6.40   | .385964  | 7.95   | 27  | .314111  | 6.22   | .414354  | 7.82   |
| 28  | .291807  | 6.38   | .386441  | 7.95   | 28  | .314484  | 6.20   | .414823  | 7.83   |
| 29  | .292190  | 6.38   | .386918  | 7.93   | 29  | .314856  | 6.20   | .415293  | 7.82   |
| 30  | 9.292573 | 6.38   | 9.387394 | 7.95   | 30  | 9.315228 | 6.20   | 9.415762 | 7.82   |
| 31  | .292956  | 6.38   | .387871  | 7.93   | 31  | .315600  | 6.20   | .416231  | 7.82   |
| 32  | .293339  | 6.38   | .388347  | 7.95   | 32  | .315972  | 6.20   | .416700  | 7.80   |
| 33  | .293722  | 6.37   | .388824  | 7.93   | 33  | .316344  | 6.20   | .417168  | 7.82   |
| 34  | .294104  | 6.37   | .389300  | 7.93   | 34  | .316716  | 6.18   | .417637  | 7.82   |
| 35  | 9.294486 | 6.37   | 9.389776 | 7.93   | 35  | 9.317087 | 6.18   | 9.418106 | 7.80   |
| 36  | .294868  | 6.37   | .390252  | 7.93   | 36  | .317458  | 6.18   | .418574  | 7.80   |
| 37  | .295250  | 6.37   | .390727  | 7.92   | 37  | .317829  | 6.18   | .419042  | 7.80   |
| 38  | .295632  | 6.37   | .391203  | 7.92   | 38  | .318200  | 6.18   | .419511  | 7.82   |
| 39  | .296014  | 6.35   | .391678  | 7.93   | 39  | .318571  | 6.17   | .419979  | 7.80   |
| 40  | 9.296395 | 6.35   | 9.392154 | 7.92   | 40  | 9.318941 | 6.17   | 9.420447 | 7.80   |
| 41  | .296776  | 6.35   | .392629  | 7.92   | 41  | .319311  | 6.18   | .420915  | 7.78   |
| 42  | .297157  | 6.35   | .393104  | 7.92   | 42  | .319682  | 6.15   | .421382  | 7.80   |
| 43  | .297538  | 6.33   | .393579  | 7.92   | 43  | .320051  | 6.17   | .421850  | 7.78   |
| 44  | .297918  | 6.35   | .394054  | 7.92   | 44  | .320421  | 6.17   | .422317  | 7.80   |
| 45  | 9.298299 | 6.33   | 9.394529 | 7.90   | 45  | 9.320791 | 6.15   | 9.422785 | 7.78   |
| 46  | .298679  | 6.33   | .395003  | 7.92   | 46  | .321160  | 6.17   | .423252  | 7.78   |
| 47  | .299059  | 6.33   | .395478  | 7.90   | 47  | .321530  | 6.15   | .423719  | 7.78   |
| 48  | .299439  | 6.33   | .395952  | 7.90   | 48  | .321899  | 6.13   | .424186  | 7.78   |
| 49  | .299819  | 6.32   | .396426  | 7.90   | 49  | .322267  | 6.15   | .424653  | 7.78   |
| 50  | 9.300198 | 6.32   | 9.396900 | 7.90   | 50  | 9.322636 | 6.15   | 9.425120 | 7.78   |
| 51  | .300577  | 6.30   | .397374  | 7.90   | 51  | .323005  | 6.13   | .425587  | 7.77   |
| 52  | .300955  | 6.30   | .397848  | 7.90   | 52  | .323373  | 6.13   | .426053  | 7.78   |
| 53  | .301335  | 6.32   | .398322  | 7.88   | 53  | .323741  | 6.13   | .426520  | 7.77   |
| 54  | .301714  | 6.32   | .398795  | 7.90   | 54  | .324109  | 6.13   | .426986  | 7.77   |
| 55  | 9.302093 | 6.30   | 9.399269 | 7.88   | 55  | 9.324477 | 6.13   | 9.427452 | 7.77   |
| 56  | .302471  | 6.30   | .399742  | 7.88   | 56  | .324845  | 6.12   | .427918  | 7.77   |
| 57  | .302849  | 6.30   | .400215  | 7.88   | 57  | .325212  | 6.13   | .428384  | 7.77   |
| 58  | .303227  | 6.30   | .400688  | 7.88   | 58  | .325580  | 6.12   | .428850  | 7.77   |
| 59  | 9.303605 | 6.30   | 9.401161 | 7.88   | 59  | .325947  | 6.12   | .429316  | 7.77   |
| 60  | 9.303983 | 6.30   | 9.401634 | 7.88   | 60  | 9.326314 | 6.12   | 9.429782 | 7.77   |

| 38° |          |        |          |        | 39° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.326314 | 6.12   | 9.429782 | 7.75   | 0   | 9.348021 | 5.93   | 9.457518 | 7.65   |
| 1   | .326681  | 6.10   | .430247  | 7.77   | 1   | .348377  | 5.95   | .457977  | 7.65   |
| 2   | .327047  | 6.12   | .430713  | 7.75   | 2   | .348734  | 5.95   | .458436  | 7.65   |
| 3   | .327414  | 6.10   | .431178  | 7.75   | 3   | .349090  | 5.93   | .458895  | 7.65   |
| 4   | .327780  | 6.10   | .431643  | 7.75   | 4   | .349446  | 5.93   | .459353  | 7.65   |
| 5   | 9.328146 | 6.10   | 9.432108 | 7.75   | 5   | 9.349802 | 5.93   | 9.459812 | 7.63   |
| 6   | .328512  | 6.10   | .432573  | 7.75   | 6   | .350158  | 5.93   | .460270  | 7.65   |
| 7   | .328878  | 6.08   | .433038  | 7.75   | 7   | .350514  | 5.92   | .460729  | 7.63   |
| 8   | .329243  | 6.10   | .433503  | 7.73   | 8   | .350869  | 5.93   | .461187  | 7.63   |
| 9   | .329609  | 6.08   | .433967  | 7.75   | 9   | .351225  | 5.92   | .461645  | 7.63   |
| 10  | 9.329974 | 6.08   | 9.434432 | 7.73   | 10  | 9.351580 | 5.92   | 9.462103 | 7.63   |
| 11  | .330339  | 6.08   | .434896  | 7.75   | 11  | .351935  | 5.92   | .462561  | 7.63   |
| 12  | .330704  | 6.08   | .435361  | 7.73   | 12  | .352290  | 5.92   | .463019  | 7.63   |
| 13  | .331069  | 6.07   | .435825  | 7.73   | 13  | .352644  | 5.92   | .463477  | 7.62   |
| 14  | .331433  | 6.08   | .436289  | 7.73   | 14  | .352999  | 5.90   | .463934  | 7.63   |
| 15  | 9.331798 | 6.07   | 9.436753 | 7.73   | 15  | 9.353353 | 5.90   | 9.464392 | 7.62   |
| 16  | .332162  | 6.07   | .437217  | 7.72   | 16  | .353707  | 5.92   | .464849  | 7.63   |
| 17  | .332526  | 6.07   | .437680  | 7.73   | 17  | .354062  | 5.88   | .465307  | 7.62   |
| 18  | .332890  | 6.07   | .438144  | 7.73   | 18  | .354415  | 5.90   | .465764  | 7.62   |
| 19  | .333254  | 6.05   | .438608  | 7.72   | 19  | .354769  | 5.90   | .466221  | 7.62   |
| 20  | 9.333617 | 6.07   | 9.439071 | 7.72   | 20  | 9.355123 | 5.88   | 9.466678 | 7.62   |
| 21  | .333981  | 6.05   | .439534  | 7.72   | 21  | .355476  | 5.88   | .467135  | 7.62   |
| 22  | .334344  | 6.05   | .439997  | 7.72   | 22  | .355829  | 5.88   | .467592  | 7.62   |
| 23  | .334707  | 6.05   | .440460  | 7.72   | 23  | .356182  | 5.88   | .468049  | 7.62   |
| 24  | .335070  | 6.03   | .440923  | 7.72   | 24  | .356535  | 5.88   | .468506  | 7.60   |
| 25  | 9.335432 | 6.05   | 9.441386 | 7.72   | 25  | 9.356888 | 5.88   | 9.468962 | 7.60   |
| 26  | .335795  | 6.03   | .441849  | 7.72   | 26  | .357241  | 5.87   | .469418  | 7.62   |
| 27  | .336157  | 6.03   | .442312  | 7.70   | 27  | .357593  | 5.87   | .469875  | 7.60   |
| 28  | .336519  | 6.03   | .442774  | 7.72   | 28  | .357945  | 5.87   | .470331  | 7.60   |
| 29  | .336881  | 6.03   | .443237  | 7.70   | 29  | .358297  | 5.87   | .470787  | 7.60   |
| 30  | 9.337243 | 6.03   | 9.443699 | 7.70   | 30  | 9.358649 | 5.87   | 9.471243 | 7.60   |
| 31  | .337605  | 6.02   | .444161  | 7.70   | 31  | .359001  | 5.87   | .471699  | 7.60   |
| 32  | .337966  | 6.03   | .444623  | 7.70   | 32  | .359353  | 5.85   | .472155  | 7.60   |
| 33  | .338328  | 6.02   | .445085  | 7.70   | 33  | .359704  | 5.85   | .472611  | 7.60   |
| 34  | .338689  | 6.02   | .445547  | 7.70   | 34  | .360056  | 5.85   | .473067  | 7.60   |
| 35  | 9.339050 | 6.02   | 9.446009 | 7.68   | 35  | 9.360407 | 5.85   | 9.473522 | 7.58   |
| 36  | .339411  | 6.00   | .446470  | 7.70   | 36  | .360758  | 5.83   | .473978  | 7.58   |
| 37  | .339771  | 6.02   | .446932  | 7.68   | 37  | .361108  | 5.85   | .474433  | 7.58   |
| 38  | .340132  | 6.00   | .447393  | 7.70   | 38  | .361459  | 5.85   | .474888  | 7.58   |
| 39  | .340492  | 6.00   | .447855  | 7.68   | 39  | .361810  | 5.83   | .475343  | 7.58   |
| 40  | 9.340852 | 6.00   | 9.448316 | 7.68   | 40  | 9.362160 | 5.83   | 9.475798 | 7.58   |
| 41  | .341212  | 6.00   | .448777  | 7.68   | 41  | .362510  | 5.83   | .476253  | 7.58   |
| 42  | .341572  | 6.00   | .449238  | 7.68   | 42  | .362860  | 5.83   | .476708  | 7.58   |
| 43  | .341932  | 5.98   | .449699  | 7.68   | 43  | .363210  | 5.83   | .477163  | 7.58   |
| 44  | .342291  | 6.00   | .450160  | 7.67   | 44  | .363560  | 5.82   | .477618  | 7.57   |
| 45  | 9.342651 | 5.98   | 9.450620 | 7.68   | 45  | 9.363909 | 5.83   | 9.478072 | 7.58   |
| 46  | .343010  | 5.98   | .451081  | 7.67   | 46  | .364259  | 5.82   | .478527  | 7.57   |
| 47  | .343369  | 5.98   | .451541  | 7.68   | 47  | .364608  | 5.82   | .478981  | 7.57   |
| 48  | .343728  | 5.98   | .452002  | 7.67   | 48  | .364957  | 5.82   | .479435  | 7.57   |
| 49  | .344086  | 5.98   | .452462  | 7.67   | 49  | .365306  | 5.82   | .479890  | 7.57   |
| 50  | 9.344445 | 5.97   | 9.452922 | 7.67   | 50  | 9.365655 | 5.80   | 9.480344 | 7.57   |
| 51  | .344803  | 5.97   | .453382  | 7.67   | 51  | .366003  | 5.82   | .480798  | 7.57   |
| 52  | .345161  | 5.97   | .453842  | 7.67   | 52  | .366352  | 5.80   | .481252  | 7.55   |
| 53  | 9.345519 | 5.97   | 9.454302 | 7.67   | 53  | .366700  | 5.80   | .481705  | 7.57   |
| 54  | .345877  | 5.97   | .454762  | 7.65   | 54  | .367048  | 5.80   | .482159  | 7.57   |
| 55  | 9.346235 | 5.95   | 9.455221 | 7.67   | 55  | 9.367396 | 5.80   | 9.482613 | 7.55   |
| 56  | .346592  | 5.97   | .455681  | 7.65   | 56  | .367744  | 5.78   | .483066  | 7.57   |
| 57  | .346950  | 5.95   | .456140  | 7.67   | 57  | .368091  | 5.80   | .483520  | 7.55   |
| 58  | .347307  | 5.95   | .456600  | 7.65   | 58  | .368439  | 5.78   | .483973  | 7.55   |
| 59  | .347664  | 5.95   | .457059  | 7.65   | 59  | .368786  | 5.78   | .484426  | 7.55   |
| 60  | 9.348021 | 5.95   | 9.457518 | 7.65   | 60  | 9.369133 | 5.78   | 9.484879 | 7.55   |

| 40° |          |        |          |        | 41° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.369133 | 5.78   | 9.484879 | 7.55   | 0   | 9.389681 | 5.62   | 9.511901 | 7.45   |
| 1   | .369480  | 5.78   | .485332  | 7.55   | 1   | .390018  | 5.63   | .512348  | 7.47   |
| 2   | .369827  | 5.78   | .485785  | 7.55   | 2   | .390356  | 5.63   | .512796  | 7.45   |
| 3   | .370174  | 5.77   | .486238  | 7.55   | 3   | .390694  | 5.62   | .513243  | 7.47   |
| 4   | .370520  | 5.78   | .486691  | 7.55   | 4   | .391031  | 5.62   | .513691  | 7.45   |
| 5   | 9.370867 | 5.77   | 9.487144 | 7.53   | 5   | 9.391368 | 5.62   | 9.514138 | 7.45   |
| 6   | .371213  | 5.77   | .487596  | 7.55   | 6   | .391705  | 5.62   | .514585  | 7.47   |
| 7   | .371559  | 5.77   | .488049  | 7.53   | 7   | .392042  | 5.62   | .515033  | 7.45   |
| 8   | .371905  | 5.77   | .488501  | 7.53   | 8   | .392379  | 5.62   | .515480  | 7.45   |
| 9   | .372251  | 5.75   | .488953  | 7.55   | 9   | .392716  | 5.60   | .515927  | 7.45   |
| 10  | 9.372596 | 5.77   | 9.489406 | 7.53   | 10  | 9.393052 | 5.60   | 9.516374 | 7.43   |
| 11  | .372942  | 5.75   | .489858  | 7.53   | 11  | .393388  | 5.60   | .516820  | 7.45   |
| 12  | .373287  | 5.75   | .490310  | 7.53   | 12  | .393724  | 5.62   | .517267  | 7.45   |
| 13  | .373632  | 5.75   | .490762  | 7.53   | 13  | .394061  | 5.58   | .517714  | 7.43   |
| 14  | .373977  | 5.75   | .491214  | 7.52   | 14  | .394396  | 5.60   | .518160  | 7.45   |
| 15  | 9.374322 | 5.75   | 9.491665 | 7.53   | 15  | 9.394732 | 5.60   | 9.518607 | 7.43   |
| 16  | .374667  | 5.75   | .492117  | 7.53   | 16  | .395068  | 5.58   | .519053  | 7.45   |
| 17  | .375011  | 5.73   | .492569  | 7.53   | 17  | .395403  | 5.58   | .519500  | 7.43   |
| 18  | .375356  | 5.75   | .493020  | 7.52   | 18  | .395738  | 5.60   | .519946  | 7.43   |
| 19  | .375700  | 5.73   | .493471  | 7.53   | 19  | .396074  | 5.58   | .520392  | 7.43   |
| 20  | 9.376044 | 5.73   | 9.493923 | 7.52   | 20  | 9.396409 | 5.57   | 9.520838 | 7.43   |
| 21  | .376388  | 5.73   | .494374  | 7.52   | 21  | .396743  | 5.58   | .521284  | 7.43   |
| 22  | .376732  | 5.72   | .494825  | 7.52   | 22  | .397078  | 5.58   | .521730  | 7.43   |
| 23  | .377075  | 5.73   | .495276  | 7.52   | 23  | .397413  | 5.57   | .522176  | 7.42   |
| 24  | .377419  | 5.72   | .495727  | 7.52   | 24  | .397747  | 5.57   | .522621  | 7.43   |
| 25  | 9.377762 | 5.72   | 9.496178 | 7.50   | 25  | 9.398081 | 5.57   | 9.523067 | 7.43   |
| 26  | .378105  | 5.72   | .496628  | 7.52   | 26  | .398415  | 5.57   | .523513  | 7.42   |
| 27  | .378448  | 5.72   | .497079  | 7.52   | 27  | .398749  | 5.57   | .523958  | 7.43   |
| 28  | .378791  | 5.70   | .497530  | 7.50   | 28  | .399083  | 5.57   | .524404  | 7.42   |
| 29  | .379133  | 5.72   | .497980  | 7.50   | 29  | .399417  | 5.55   | .524849  | 7.42   |
| 30  | 9.379476 | 5.70   | 9.498430 | 7.52   | 30  | 9.399750 | 5.57   | 9.525294 | 7.42   |
| 31  | .379818  | 5.72   | .498881  | 7.50   | 31  | .400084  | 5.55   | .525739  | 7.42   |
| 32  | .380161  | 5.70   | .499331  | 7.50   | 32  | .400417  | 5.55   | .526184  | 7.42   |
| 33  | .380503  | 5.70   | .499781  | 7.50   | 33  | .400750  | 5.55   | .526629  | 7.42   |
| 34  | .380845  | 5.68   | .500231  | 7.50   | 34  | .401083  | 5.55   | .527074  | 7.42   |
| 35  | 9.381186 | 5.70   | 9.500681 | 7.50   | 35  | 9.401416 | 5.53   | 9.527519 | 7.42   |
| 36  | .381528  | 5.68   | .501131  | 7.50   | 36  | .401748  | 5.55   | .527964  | 7.42   |
| 37  | .381869  | 5.68   | .501581  | 7.48   | 37  | .402081  | 5.55   | .528409  | 7.40   |
| 38  | .382211  | 5.70   | .502030  | 7.50   | 38  | .402413  | 5.53   | .528853  | 7.42   |
| 39  | .382552  | 5.68   | .502480  | 7.48   | 39  | .402745  | 5.53   | .529298  | 7.40   |
| 40  | 9.382893 | 5.68   | 9.502929 | 7.50   | 40  | 9.403077 | 5.53   | 9.529742 | 7.42   |
| 41  | .383234  | 5.67   | .503379  | 7.48   | 41  | .403409  | 5.53   | .530187  | 7.40   |
| 42  | .383574  | 5.68   | .503828  | 7.48   | 42  | .403741  | 5.53   | .530631  | 7.40   |
| 43  | .383915  | 5.67   | .504277  | 7.48   | 43  | .404073  | 5.52   | .531075  | 7.40   |
| 44  | .384255  | 5.67   | .504726  | 7.48   | 44  | .404404  | 5.53   | .531519  | 7.40   |
| 45  | 9.384595 | 5.67   | 9.505175 | 7.48   | 45  | 9.404736 | 5.52   | 9.531963 | 7.40   |
| 46  | .384935  | 5.67   | .505624  | 7.48   | 46  | .405067  | 5.52   | .532407  | 7.40   |
| 47  | .385275  | 5.67   | .506073  | 7.48   | 47  | .405398  | 5.52   | .532851  | 7.40   |
| 48  | .385615  | 5.67   | .506522  | 7.48   | 48  | .405729  | 5.50   | .533295  | 7.40   |
| 49  | .385955  | 5.65   | .506971  | 7.47   | 49  | .406059  | 5.52   | .533739  | 7.38   |
| 50  | 9.386294 | 5.67   | 9.507419 | 7.48   | 50  | 9.406390 | 5.52   | 9.534182 | 7.40   |
| 51  | .386634  | 5.65   | .507868  | 7.47   | 51  | .406721  | 5.50   | .534626  | 7.40   |
| 52  | .386973  | 5.65   | .508316  | 7.48   | 52  | .407051  | 5.50   | .535070  | 7.38   |
| 53  | .387312  | 5.65   | .508765  | 7.47   | 53  | .407381  | 5.50   | .535513  | 7.38   |
| 54  | .387651  | 5.63   | .509213  | 7.47   | 54  | .407711  | 5.50   | .535956  | 7.38   |
| 55  | 9.387989 | 5.65   | 9.509661 | 7.47   | 55  | 9.408041 | 5.50   | 9.536400 | 7.38   |
| 56  | .388328  | 5.63   | .510109  | 7.47   | 56  | .408371  | 5.48   | .536843  | 7.38   |
| 57  | .388666  | 5.65   | .510557  | 7.47   | 57  | .408700  | 5.50   | .537286  | 7.38   |
| 58  | .389005  | 5.63   | .511005  | 7.47   | 58  | .409030  | 5.48   | .537729  | 7.38   |
| 59  | .389343  | 5.63   | .511453  | 7.47   | 59  | .409359  | 5.48   | .538172  | 7.38   |
| 60  | 9.389681 | 5.63   | 9.511901 | 7.47   | 60  | 9.409688 | 5.48   | 9.538615 | 7.38   |

| 42° |          |        |          |        | 43° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.406688 |        | 9.538615 |        | 0   | 9.429181 |        | 9.565053 |        |
| 1   | .410017  | 5.48   | .539058  | 7.38   | 1   | .429502  | 5.35   | .565492  | 7.32   |
| 2   | .410346  | 5.48   | .539500  | 7.37   | 2   | .429822  | 5.33   | .565930  | 7.30   |
| 3   | .410675  | 5.48   | .539943  | 7.38   | 3   | .430142  | 5.33   | .566369  | 7.32   |
| 4   | .411004  | 5.48   | .540386  | 7.38   | 4   | .430463  | 5.35   | .566807  | 7.30   |
| 5   | 9.411332 | 5.47   | 9.540828 | 7.37   | 5   | 9.430783 | 5.33   | 9.567245 | 7.30   |
| 6   | .411660  | 5.47   | .541271  | 7.38   | 6   | .431103  | 5.33   | .567683  | 7.30   |
| 7   | .411989  | 5.48   | .541713  | 7.37   | 7   | .431422  | 5.32   | .568121  | 7.30   |
| 8   | .412317  | 5.47   | .542155  | 7.37   | 8   | .431742  | 5.33   | .568559  | 7.30   |
| 9   | .412644  | 5.45   | .542597  | 7.37   | 9   | .432062  | 5.33   | .568997  | 7.30   |
| 10  | 9.412972 | 5.47   | 9.543040 | 7.38   | 10  | 9.432381 | 5.32   | 9.569435 | 7.30   |
| 11  | .413300  | 5.47   | .543482  | 7.37   | 11  | .432700  | 5.32   | .569873  | 7.30   |
| 12  | .413627  | 5.45   | .543924  | 7.37   | 12  | .433020  | 5.33   | .570311  | 7.28   |
| 13  | .413955  | 5.47   | .544366  | 7.37   | 13  | .433339  | 5.32   | .570748  | 7.28   |
| 14  | .414282  | 5.45   | .544807  | 7.35   | 14  | .433657  | 5.30   | .571186  | 7.30   |
| 15  | 9.414609 | 5.45   | 9.545249 | 7.37   | 15  | 9.433976 | 5.32   | 9.571624 | 7.30   |
| 16  | .414936  | 5.45   | .545691  | 7.37   | 16  | .434295  | 5.32   | .572061  | 7.28   |
| 17  | .415262  | 5.43   | .546132  | 7.35   | 17  | .434613  | 5.30   | .572498  | 7.28   |
| 18  | .415589  | 5.45   | .546574  | 7.37   | 18  | .434932  | 5.32   | .572936  | 7.30   |
| 19  | .415916  | 5.45   | .547015  | 7.35   | 19  | .435250  | 5.30   | .573373  | 7.28   |
| 20  | 9.416242 | 5.43   | 9.547457 | 7.37   | 20  | 9.435568 | 5.30   | 9.573810 | 7.28   |
| 21  | .416568  | 5.43   | .547898  | 7.35   | 21  | .435886  | 5.30   | .574247  | 7.30   |
| 22  | .416894  | 5.43   | .548339  | 7.35   | 22  | .436204  | 5.28   | .574685  | 7.28   |
| 23  | .417220  | 5.43   | .548781  | 7.37   | 23  | .436521  | 5.28   | .575122  | 7.30   |
| 24  | .417546  | 5.43   | .549222  | 7.35   | 24  | .436839  | 5.30   | .575558  | 7.27   |
| 25  | 9.417871 | 5.42   | 9.549663 | 7.35   | 25  | 9.437156 | 5.28   | 9.575995 | 7.28   |
| 26  | .418197  | 5.43   | .550104  | 7.35   | 26  | .437473  | 5.28   | .576432  | 7.28   |
| 27  | .418522  | 5.42   | .550544  | 7.33   | 27  | .437791  | 5.30   | .576869  | 7.28   |
| 28  | .418848  | 5.43   | .550985  | 7.35   | 28  | .438107  | 5.27   | .577306  | 7.28   |
| 29  | .419173  | 5.42   | .551426  | 7.35   | 29  | .438424  | 5.28   | .577742  | 7.27   |
| 30  | 9.419498 | 5.42   | 9.551867 | 7.35   | 30  | 9.438741 | 5.28   | 9.578179 | 7.27   |
| 31  | .419822  | 5.40   | .552307  | 7.33   | 31  | .439058  | 5.28   | .578615  | 7.27   |
| 32  | .420147  | 5.42   | .552748  | 7.35   | 32  | .439374  | 5.27   | .579052  | 7.28   |
| 33  | .420471  | 5.40   | .553188  | 7.33   | 33  | .439690  | 5.27   | .579488  | 7.27   |
| 34  | .420796  | 5.42   | .553629  | 7.35   | 34  | .440007  | 5.28   | .579924  | 7.27   |
| 35  | 9.421120 | 5.40   | 9.554069 | 7.33   | 35  | 9.440323 | 5.27   | 9.580361 | 7.28   |
| 36  | .421444  | 5.40   | .554509  | 7.33   | 36  | .440639  | 5.27   | .580797  | 7.27   |
| 37  | .421768  | 5.40   | .554949  | 7.33   | 37  | .440954  | 5.25   | .581233  | 7.27   |
| 38  | .422092  | 5.40   | .555389  | 7.33   | 38  | .441270  | 5.27   | .581669  | 7.27   |
| 39  | .422416  | 5.38   | .555829  | 7.33   | 39  | .441586  | 5.25   | .582105  | 7.27   |
| 40  | 9.422739 | 5.40   | 9.556269 | 7.33   | 40  | 9.441901 | 5.25   | 9.582541 | 7.27   |
| 41  | .423063  | 5.38   | .556709  | 7.33   | 41  | .442216  | 5.25   | .582977  | 7.27   |
| 42  | .423386  | 5.38   | .557149  | 7.33   | 42  | .442531  | 5.25   | .583413  | 7.25   |
| 43  | .423709  | 5.38   | .557589  | 7.32   | 43  | .442846  | 5.25   | .583848  | 7.27   |
| 44  | .424032  | 5.38   | .558028  | 7.32   | 44  | .443161  | 5.25   | .584284  | 7.27   |
| 45  | 9.424355 | 5.38   | 9.558468 | 7.33   | 45  | 9.443476 | 5.23   | 9.584720 | 7.27   |
| 46  | .424677  | 5.37   | .558907  | 7.32   | 46  | .443790  | 5.23   | .585155  | 7.25   |
| 47  | .425000  | 5.38   | .559347  | 7.32   | 47  | .444105  | 5.25   | .585591  | 7.27   |
| 48  | .425322  | 5.37   | .559786  | 7.33   | 48  | .444419  | 5.23   | .586026  | 7.25   |
| 49  | .425645  | 5.38   | .560226  | 7.33   | 49  | .444733  | 5.23   | .586462  | 7.27   |
| 50  | 9.425967 | 5.37   | 9.560665 | 7.32   | 50  | 9.445047 | 5.23   | 9.586897 | 7.25   |
| 51  | .426289  | 5.37   | .561104  | 7.32   | 51  | .445361  | 5.23   | .587332  | 7.25   |
| 52  | .426611  | 5.37   | .561543  | 7.32   | 52  | .445675  | 5.23   | .587767  | 7.25   |
| 53  | .426933  | 5.37   | .561982  | 7.32   | 53  | .445989  | 5.23   | .588203  | 7.27   |
| 54  | .427254  | 5.35   | .562421  | 7.32   | 54  | .446302  | 5.22   | .588638  | 7.25   |
| 55  | 9.427576 | 5.37   | 9.562860 | 7.32   | 55  | 9.446616 | 5.23   | 9.589073 | 7.25   |
| 56  | .427897  | 5.35   | .563299  | 7.32   | 56  | .446929  | 5.22   | .589508  | 7.25   |
| 57  | .428218  | 5.35   | .563738  | 7.34   | 57  | .447242  | 5.22   | .589942  | 7.23   |
| 58  | .428539  | 5.35   | .564176  | 7.30   | 58  | .447555  | 5.22   | .590377  | 7.25   |
| 59  | .428860  | 5.35   | .564615  | 7.32   | 59  | .447868  | 5.22   | .590812  | 7.25   |
| 60  | 9.429181 | 5.35   | 9.565053 | 7.30   | 60  | 9.448181 | 5.22   | 9.591247 | 7.25   |

| 44° |          |         |          |         | 45° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. | M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.448181 | 5.20    | 9.591247 | 7.23    | 0   | 9.466709 | 5.08    | 9.617224 | 7.20    |
| 1   | .448493  | 5.22    | .591681  | 7.25    | 1   | .467014  | 5.08    | .617656  | 7.18    |
| 2   | .448806  | 5.20    | .592116  | 7.25    | 2   | .467319  | 5.08    | .618087  | 7.18    |
| 3   | .449118  | 5.22    | .592551  | 7.25    | 3   | .467624  | 5.08    | .618518  | 7.18    |
| 4   | .449431  | 5.20    | .592985  | 7.23    | 4   | .467928  | 5.07    | .618949  | 7.18    |
| 5   | 9.449743 | 5.20    | 9.593419 | 7.25    | 5   | 9.468233 | 5.08    | 9.619380 | 7.18    |
| 6   | .450055  | 5.18    | .593854  | 7.23    | 6   | .468537  | 5.07    | .619811  | 7.18    |
| 7   | .450366  | 5.20    | .594288  | 7.23    | 7   | .468841  | 5.07    | .620242  | 7.18    |
| 8   | .450678  | 5.20    | .594722  | 7.23    | 8   | .469145  | 5.07    | .620673  | 7.18    |
| 9   | .450990  | 5.18    | .595156  | 7.25    | 9   | .469449  | 5.07    | .621104  | 7.18    |
| 10  | 9.451301 | 5.18    | 9.595531 | 7.23    | 10  | 9.469753 | 5.07    | 9.621535 | 7.18    |
| 11  | .451612  | 5.20    | .596025  | 7.23    | 11  | .470057  | 5.05    | .621966  | 7.17    |
| 12  | .451924  | 5.18    | .596459  | 7.23    | 12  | .470360  | 5.07    | .622396  | 7.18    |
| 13  | .452235  | 5.18    | .596893  | 7.22    | 13  | .470664  | 5.05    | .622827  | 7.18    |
| 14  | .452546  | 5.17    | .597326  | 7.23    | 14  | .470967  | 5.05    | .623258  | 7.17    |
| 15  | 9.452856 | 5.18    | 9.597760 | 7.23    | 15  | 9.471270 | 5.05    | 9.623688 | 7.18    |
| 16  | .453167  | 5.18    | .598194  | 7.23    | 16  | .471573  | 5.05    | .624119  | 7.17    |
| 17  | .453478  | 5.18    | .598628  | 7.23    | 17  | .471876  | 5.05    | .624549  | 7.17    |
| 18  | .453788  | 5.17    | .599061  | 7.22    | 18  | .472179  | 5.05    | .624980  | 7.18    |
| 19  | .454098  | 5.17    | .599495  | 7.22    | 19  | .472482  | 5.03    | .625410  | 7.18    |
| 20  | 9.454408 | 5.17    | 9.599928 | 7.23    | 20  | 9.472784 | 5.05    | 9.625841 | 7.17    |
| 21  | .454718  | 5.17    | .600362  | 7.22    | 21  | .473087  | 5.03    | .626271  | 7.17    |
| 22  | .455028  | 5.17    | .600795  | 7.23    | 22  | .473389  | 5.03    | .626701  | 7.17    |
| 23  | .455338  | 5.17    | .601229  | 7.22    | 23  | .473691  | 5.03    | .627131  | 7.17    |
| 24  | .455648  | 5.17    | .601662  | 7.22    | 24  | .473993  | 5.03    | .627561  | 7.17    |
| 25  | 9.455957 | 5.15    | 9.602095 | 7.22    | 25  | 9.474295 | 5.03    | 9.627991 | 7.17    |
| 26  | .456267  | 5.17    | .602528  | 7.23    | 26  | .474597  | 5.03    | .628421  | 7.17    |
| 27  | .456576  | 5.15    | .602962  | 7.22    | 27  | .474899  | 5.03    | .628851  | 7.17    |
| 28  | .456885  | 5.15    | .603395  | 7.22    | 28  | .475200  | 5.02    | .629281  | 7.17    |
| 29  | .457194  | 5.15    | .603828  | 7.22    | 29  | .475502  | 5.02    | .629711  | 7.17    |
| 30  | 9.457503 | 5.13    | 9.604261 | 7.22    | 30  | 9.475803 | 5.02    | 9.630141 | 7.17    |
| 31  | .457811  | 5.15    | .604694  | 7.20    | 31  | .476104  | 5.02    | .630571  | 7.17    |
| 32  | .458120  | 5.15    | .605126  | 7.22    | 32  | .476405  | 5.02    | .631001  | 7.17    |
| 33  | .458429  | 5.15    | .605559  | 7.22    | 33  | .476706  | 5.02    | .631430  | 7.15    |
| 34  | .458737  | 5.13    | .605992  | 7.22    | 34  | .477007  | 5.02    | .631860  | 7.17    |
| 35  | 9.459045 | 5.13    | 9.606425 | 7.20    | 35  | 9.477308 | 5.00    | 9.632290 | 7.15    |
| 36  | .459353  | 5.13    | .606857  | 7.22    | 36  | .477608  | 5.00    | .632719  | 7.15    |
| 37  | .459661  | 5.13    | .607290  | 7.22    | 37  | .477909  | 5.02    | .633149  | 7.17    |
| 38  | .459969  | 5.13    | .607722  | 7.20    | 38  | .478209  | 5.00    | .633578  | 7.15    |
| 39  | .460277  | 5.12    | .608155  | 7.20    | 39  | .478509  | 5.00    | .634008  | 7.15    |
| 40  | 9.460584 | 5.13    | 9.608587 | 7.22    | 40  | 9.478809 | 5.00    | 9.634437 | 7.15    |
| 41  | .460892  | 5.12    | .609020  | 7.20    | 41  | .479109  | 5.00    | .634866  | 7.17    |
| 42  | .461199  | 5.12    | .609452  | 7.20    | 42  | .479409  | 5.00    | .635296  | 7.15    |
| 43  | .461506  | 5.12    | .609884  | 7.20    | 43  | .479709  | 5.00    | .635725  | 7.15    |
| 44  | .461813  | 5.12    | .610316  | 7.22    | 44  | .480009  | 4.98    | .636154  | 7.15    |
| 45  | 9.462120 | 5.12    | 9.610749 | 7.20    | 45  | 9.480308 | 4.98    | 9.636583 | 7.15    |
| 46  | .462427  | 5.12    | .611181  | 7.20    | 46  | .480608  | 4.98    | .637012  | 7.15    |
| 47  | .462734  | 5.12    | .611613  | 7.20    | 47  | .480907  | 4.98    | .637441  | 7.15    |
| 48  | .463040  | 5.10    | .612045  | 7.20    | 48  | .481206  | 4.98    | .637870  | 7.15    |
| 49  | .463347  | 5.10    | .612477  | 7.18    | 49  | .481505  | 4.98    | .638299  | 7.15    |
| 50  | 9.463653 | 5.10    | 9.612908 | 7.20    | 50  | 9.481804 | 4.98    | 9.638728 | 7.15    |
| 51  | .463959  | 5.10    | .613340  | 7.20    | 51  | .482103  | 4.97    | .639157  | 7.15    |
| 52  | .464265  | 5.10    | .613772  | 7.20    | 52  | .482401  | 4.98    | .639586  | 7.15    |
| 53  | .464571  | 5.10    | .614204  | 7.18    | 53  | .482700  | 4.97    | .640015  | 7.15    |
| 54  | .464877  | 5.10    | .614635  | 7.20    | 54  | .482998  | 4.97    | .640443  | 7.15    |
| 55  | 9.465183 | 5.08    | 9.615067 | 7.20    | 55  | 9.483296 | 4.98    | 9.640872 | 7.15    |
| 56  | .465488  | 5.10    | .615499  | 7.18    | 56  | .483595  | 4.97    | .641301  | 7.13    |
| 57  | .465794  | 5.08    | .615930  | 7.20    | 57  | .483893  | 4.97    | .641729  | 7.15    |
| 58  | .466099  | 5.08    | .616362  | 7.18    | 58  | .484191  | 4.95    | .642158  | 7.13    |
| 59  | .466404  | 5.08    | .616793  | 7.18    | 59  | .484488  | 4.97    | .642586  | 7.13    |
| 60  | 9.466709 | 5.08    | 9.617224 | 7.18    | 60  | 9.484786 | 4.97    | 9.643015 | 7.15    |

| 46° |          |         |          |        | 47° |          |         |          |         |
|-----|----------|---------|----------|--------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec    | D. 1'' | M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.484786 | 4.97    | 9.643015 | 7.13   | 0   | 9.502429 | 4.85    | 9.668646 | 7.10    |
| 1   | .485084  | 4.95    | .643443  | 7.15   | 1   | .502720  | 4.83    | .669072  | 7.10    |
| 2   | .485381  | 4.95    | .643872  | 7.13   | 2   | .503010  | 4.83    | .669498  | 7.10    |
| 3   | .485678  | 4.95    | .644300  | 7.13   | 3   | .503300  | 4.85    | .669924  | 7.10    |
| 4   | .485976  | 4.97    | .644728  | 7.13   | 4   | .503591  | 4.85    | .670350  | 7.10    |
| 5   | 9.486273 | 4.95    | 9.645156 | 7.15   | 5   | 9.503881 | 4.83    | 9.670776 | 7.10    |
| 6   | .486570  | 4.95    | .645585  | 7.13   | 6   | .504171  | 4.83    | .671201  | 7.08    |
| 7   | .486866  | 4.95    | .646013  | 7.13   | 7   | .504460  | 4.83    | .671627  | 7.10    |
| 8   | .487163  | 4.95    | .646441  | 7.13   | 8   | .504750  | 4.83    | .672053  | 7.10    |
| 9   | .487460  | 4.93    | .646869  | 7.13   | 9   | .505040  | 4.82    | .672479  | 7.08    |
| 10  | 9.487756 | 4.95    | 9.647297 | 7.13   | 10  | 9.505329 | 4.82    | 9.672904 | 7.10    |
| 11  | .488053  | 4.93    | .647725  | 7.15   | 11  | .505618  | 4.83    | .673330  | 7.10    |
| 12  | .488349  | 4.93    | .648153  | 7.13   | 12  | .505908  | 4.82    | .673756  | 7.10    |
| 13  | .488645  | 4.93    | .648581  | 7.13   | 13  | .506197  | 4.82    | .674181  | 7.08    |
| 14  | .488941  | 4.93    | .649009  | 7.13   | 14  | .506486  | 4.82    | .674607  | 7.10    |
| 15  | 9.489237 | 4.93    | 9.649436 | 7.12   | 15  | 9.506775 | 4.80    | 9.675032 | 7.10    |
| 16  | .489533  | 4.92    | .649864  | 7.13   | 16  | .507063  | 4.82    | .675458  | 7.08    |
| 17  | .489828  | 4.92    | .650292  | 7.13   | 17  | .507352  | 4.80    | .675883  | 7.08    |
| 18  | .490124  | 4.92    | .650720  | 7.13   | 18  | .507640  | 4.82    | .676309  | 7.10    |
| 19  | .490419  | 4.92    | .651147  | 7.13   | 19  | .507929  | 4.80    | .676734  | 7.08    |
| 20  | 9.490714 | 4.93    | 9.651575 | 7.12   | 20  | 9.508217 | 4.80    | 9.677159 | 7.08    |
| 21  | .491010  | 4.92    | .652002  | 7.13   | 21  | .508505  | 4.80    | .677584  | 7.10    |
| 22  | .491305  | 4.92    | .652430  | 7.12   | 22  | .508793  | 4.80    | .678010  | 7.08    |
| 23  | .491600  | 4.90    | .652857  | 7.13   | 23  | .509081  | 4.80    | .678435  | 7.08    |
| 24  | .491894  | 4.92    | .653285  | 7.12   | 24  | .509369  | 4.80    | .678860  | 7.08    |
| 25  | 9.492189 | 4.92    | 9.653712 | 7.13   | 25  | 9.509657 | 4.80    | 9.679285 | 7.08    |
| 26  | .492484  | 4.92    | .654140  | 7.13   | 26  | .509945  | 4.80    | .679710  | 7.10    |
| 27  | .492778  | 4.90    | .654567  | 7.12   | 27  | .510232  | 4.78    | .680136  | 7.08    |
| 28  | .493072  | 4.92    | .654994  | 7.12   | 28  | .510520  | 4.80    | .680561  | 7.08    |
| 29  | .493367  | 4.90    | .655421  | 7.13   | 29  | .510807  | 4.78    | .680986  | 7.08    |
| 30  | 9.493661 | 4.90    | 9.655849 | 7.12   | 30  | 9.511094 | 4.78    | 9.681411 | 7.08    |
| 31  | .493955  | 4.90    | .656276  | 7.12   | 31  | .511381  | 4.78    | .681836  | 7.07    |
| 32  | .494249  | 4.88    | .656703  | 7.12   | 32  | .511668  | 4.78    | .682260  | 7.08    |
| 33  | .494542  | 4.90    | .657130  | 7.12   | 33  | .511955  | 4.78    | .682685  | 7.08    |
| 34  | .494836  | 4.90    | .657557  | 7.12   | 34  | .512241  | 4.78    | .683110  | 7.08    |
| 35  | 9.495130 | 4.88    | 9.657984 | 7.12   | 35  | 9.512528 | 4.78    | 9.683535 | 7.08    |
| 36  | .495423  | 4.88    | .658411  | 7.12   | 36  | .512815  | 4.78    | .683960  | 7.08    |
| 37  | .495716  | 4.88    | .658838  | 7.12   | 37  | .513101  | 4.77    | .684385  | 7.08    |
| 38  | .496009  | 4.88    | .659265  | 7.10   | 38  | .513387  | 4.77    | .684809  | 7.07    |
| 39  | .496302  | 4.88    | .659691  | 7.12   | 39  | .513673  | 4.77    | .685234  | 7.08    |
| 40  | 9.496595 | 4.88    | 9.660118 | 7.12   | 40  | 9.513959 | 4.77    | 9.685659 | 7.07    |
| 41  | .496888  | 4.88    | .660545  | 7.12   | 41  | .514245  | 4.77    | .686083  | 7.08    |
| 42  | .497181  | 4.87    | .660972  | 7.10   | 42  | .514531  | 4.77    | .686508  | 7.08    |
| 43  | .497473  | 4.88    | .661398  | 7.12   | 43  | .514817  | 4.77    | .686933  | 7.08    |
| 44  | .497766  | 4.87    | .661825  | 7.12   | 44  | .515102  | 4.75    | .687357  | 7.07    |
| 45  | 9.498058 | 4.87    | 9.662252 | 7.10   | 45  | 9.515388 | 4.75    | 9.687782 | 7.08    |
| 46  | .498350  | 4.88    | .662678  | 7.12   | 46  | .515673  | 4.77    | .688206  | 7.07    |
| 47  | .498643  | 4.87    | .663105  | 7.10   | 47  | .515959  | 4.75    | .688631  | 7.07    |
| 48  | .498935  | 4.85    | .663531  | 7.12   | 48  | .516244  | 4.75    | .689055  | 7.07    |
| 49  | .499226  | 4.87    | .663958  | 7.10   | 49  | .516529  | 4.75    | .689479  | 7.08    |
| 50  | 9.499518 | 4.87    | 9.664384 | 7.10   | 50  | 9.516814 | 4.73    | 9.689904 | 7.07    |
| 51  | .499810  | 4.85    | .664810  | 7.12   | 51  | .517098  | 4.75    | .690328  | 7.07    |
| 52  | .500101  | 4.87    | .665237  | 7.10   | 52  | .517383  | 4.75    | .690752  | 7.08    |
| 53  | .500393  | 4.85    | .665663  | 7.10   | 53  | .517668  | 4.75    | .691177  | 7.07    |
| 54  | .500684  | 4.85    | .666089  | 7.10   | 54  | .517952  | 4.73    | .691601  | 7.07    |
| 55  | 9.500975 | 4.85    | 9.666515 | 7.12   | 55  | 9.518237 | 4.75    | 9.692025 | 7.07    |
| 56  | .501266  | 4.85    | .666942  | 7.10   | 56  | .518521  | 4.75    | .692449  | 7.07    |
| 57  | .501557  | 4.85    | .667368  | 7.10   | 57  | .518805  | 4.73    | .692873  | 7.08    |
| 58  | .501848  | 4.85    | .667794  | 7.10   | 58  | .519089  | 4.73    | .693298  | 7.07    |
| 59  | .502139  | 4.83    | .668220  | 7.10   | 59  | .519373  | 4.73    | .693722  | 7.07    |
| 60  | 9.502429 | 4.83    | 9.668646 | 7.10   | 60  | 9.519657 | 4.73    | 9.694146 | 7.07    |



| 48° |          |        |          |        | 49° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.519657 | 4.72   | 9.694146 | 7.07   | 0   | 9.536484 | 4.62   | 9.719541 | 7.05   |
| 1   | .519940  | 4.73   | .694570  | 7.07   | 1   | .536761  | 4.62   | .719964  | 7.03   |
| 2   | .520224  | 4.72   | .694994  | 7.07   | 2   | .537038  | 4.62   | .720386  | 7.05   |
| 3   | .520507  | 4.73   | .695418  | 7.07   | 3   | .537315  | 4.62   | .720809  | 7.03   |
| 4   | .520791  | 4.72   | .695842  | 7.07   | 4   | .537592  | 4.62   | .721231  | 7.03   |
| 5   | 9.521074 | 4.72   | 9.696266 | 7.05   | 5   | 9.537869 | 4.60   | 9.721653 | 7.05   |
| 6   | .521357  | 4.72   | .696689  | 7.05   | 6   | .538145  | 4.62   | .722076  | 7.03   |
| 7   | .521640  | 4.72   | .697113  | 7.07   | 7   | .538422  | 4.60   | .722498  | 7.05   |
| 8   | .521923  | 4.72   | .697537  | 7.07   | 8   | .538698  | 4.60   | .722921  | 7.03   |
| 9   | .522206  | 4.70   | .697961  | 7.07   | 9   | .538974  | 4.62   | .723343  | 7.03   |
| 10  | 9.522488 | 4.72   | 9.698385 | 7.07   | 10  | 9.539251 | 4.60   | 9.723765 | 7.05   |
| 11  | .522771  | 4.72   | .698809  | 7.05   | 11  | .539527  | 4.60   | .724188  | 7.03   |
| 12  | .523054  | 4.70   | .699232  | 7.07   | 12  | .539803  | 4.60   | .724610  | 7.03   |
| 13  | .523336  | 4.70   | .699656  | 7.07   | 13  | .540079  | 4.58   | .725032  | 7.03   |
| 14  | .523618  | 4.70   | .700080  | 7.05   | 14  | .540354  | 4.60   | .725454  | 7.05   |
| 15  | 9.523900 | 4.70   | 9.700503 | 7.07   | 15  | 9.540630 | 4.60   | 9.725877 | 7.03   |
| 16  | .524182  | 4.70   | .700927  | 7.05   | 16  | .540906  | 4.58   | .726299  | 7.03   |
| 17  | .524464  | 4.70   | .701350  | 7.07   | 17  | .541181  | 4.58   | .726721  | 7.03   |
| 18  | .524746  | 4.70   | .701774  | 7.07   | 18  | .541456  | 4.60   | .727143  | 7.03   |
| 19  | .525028  | 4.68   | .702198  | 7.05   | 19  | .541732  | 4.58   | .727565  | 7.05   |
| 20  | 9.525309 | 4.70   | 9.702621 | 7.07   | 20  | 9.542007 | 4.58   | 9.727988 | 7.03   |
| 21  | .525591  | 4.68   | .703045  | 7.05   | 21  | .542282  | 4.58   | .728410  | 7.03   |
| 22  | .525872  | 4.68   | .703468  | 7.05   | 22  | .542557  | 4.58   | .728832  | 7.03   |
| 23  | .526153  | 4.70   | .703891  | 7.07   | 23  | .542832  | 4.57   | .729254  | 7.03   |
| 24  | .526435  | 4.68   | .704315  | 7.05   | 24  | .543106  | 4.58   | .729676  | 7.03   |
| 25  | 9.526716 | 4.68   | 9.704738 | 7.07   | 25  | 9.543381 | 4.57   | 9.730098 | 7.03   |
| 26  | .526997  | 4.67   | .705162  | 7.05   | 26  | .543655  | 4.58   | .730520  | 7.03   |
| 27  | .527277  | 4.68   | .705585  | 7.05   | 27  | .543930  | 4.57   | .730942  | 7.03   |
| 28  | .527558  | 4.68   | .706008  | 7.05   | 28  | .544204  | 4.57   | .731364  | 7.03   |
| 29  | .527839  | 4.67   | .706431  | 7.07   | 29  | .544478  | 4.57   | .731786  | 7.03   |
| 30  | 9.528119 | 4.68   | 9.706855 | 7.05   | 30  | 9.544752 | 4.57   | 9.732208 | 7.03   |
| 31  | .528400  | 4.67   | .707278  | 7.05   | 31  | .545026  | 4.57   | .732630  | 7.03   |
| 32  | .528680  | 4.67   | .707701  | 7.05   | 32  | .545300  | 4.57   | .733052  | 7.03   |
| 33  | .528960  | 4.67   | .708124  | 7.05   | 33  | .545574  | 4.57   | .733474  | 7.03   |
| 34  | .529240  | 4.67   | .708547  | 7.07   | 34  | .545848  | 4.55   | .733896  | 7.02   |
| 35  | 9.529520 | 4.67   | 9.708971 | 7.05   | 35  | 9.546121 | 4.57   | 9.734317 | 7.03   |
| 36  | .529800  | 4.67   | .709394  | 7.05   | 36  | .546395  | 4.55   | .734739  | 7.03   |
| 37  | .530080  | 4.65   | .709817  | 7.05   | 37  | .546668  | 4.55   | .735161  | 7.03   |
| 38  | .530359  | 4.67   | .710240  | 7.05   | 38  | .546941  | 4.55   | .735583  | 7.03   |
| 39  | .530639  | 4.65   | .710663  | 7.05   | 39  | .547214  | 4.55   | .736005  | 7.03   |
| 40  | 9.530918 | 4.67   | 9.711086 | 7.05   | 40  | 9.547487 | 4.55   | 9.736427 | 7.02   |
| 41  | .531198  | 4.65   | .711509  | 7.05   | 41  | .547760  | 4.55   | .736848  | 7.03   |
| 42  | .531477  | 4.65   | .711932  | 7.05   | 42  | .548033  | 4.55   | .737270  | 7.03   |
| 43  | .531756  | 4.65   | .712355  | 7.05   | 43  | .548306  | 4.55   | .737692  | 7.03   |
| 44  | .532035  | 4.65   | .712778  | 7.03   | 44  | .548579  | 4.53   | .738114  | 7.02   |
| 45  | 9.532314 | 4.63   | 9.713200 | 7.05   | 45  | 9.548851 | 4.55   | 9.738535 | 7.03   |
| 46  | .532592  | 4.65   | .713623  | 7.05   | 46  | .549124  | 4.53   | .738957  | 7.03   |
| 47  | .532871  | 4.65   | .714046  | 7.05   | 47  | .549396  | 4.53   | .739379  | 7.02   |
| 48  | .533150  | 4.65   | .714469  | 7.05   | 48  | .549668  | 4.53   | .739800  | 7.03   |
| 49  | .533428  | 4.63   | .714892  | 7.05   | 49  | .549940  | 4.53   | .740222  | 7.03   |
| 50  | 9.533706 | 4.65   | 9.715315 | 7.03   | 50  | 9.550212 | 4.53   | 9.740644 | 7.02   |
| 51  | .533985  | 4.63   | .715737  | 7.05   | 51  | .550484  | 4.53   | .741065  | 7.03   |
| 52  | .534263  | 4.63   | .716160  | 7.05   | 52  | .550756  | 4.53   | .741487  | 7.02   |
| 53  | .534541  | 4.63   | .716583  | 7.03   | 53  | .551028  | 4.52   | .741908  | 7.03   |
| 54  | .534819  | 4.63   | .717005  | 7.05   | 54  | .551299  | 4.52   | .742330  | 7.02   |
| 55  | 9.535097 | 4.62   | 9.717428 | 7.05   | 55  | 9.551571 | 4.52   | 9.742751 | 7.03   |
| 56  | .535374  | 4.63   | .717851  | 7.03   | 56  | .551842  | 4.52   | .743173  | 7.03   |
| 57  | .535652  | 4.62   | .718273  | 7.05   | 57  | .552113  | 4.52   | .743595  | 7.02   |
| 58  | .535929  | 4.63   | .718696  | 7.03   | 58  | .552384  | 4.53   | .744016  | 7.03   |
| 59  | .536207  | 4.62   | .719118  | 7.05   | 59  | .552656  | 4.52   | .744438  | 7.02   |
| 60  | 9.536484 | 4.62   | 9.719541 | 7.05   | 60  | 9.552927 | 4.52   | 9.744859 | 7.02   |

| 50° |          |        |          |        | 51° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.552927 | 4.50   | 9.744859 | 7.02   | 0   | 9.568999 | 4.42   | 9.770127 | 7.02   |
| 1   | .553197  | 4.52   | .745280  | 7.03   | 1   | .569264  | 4.40   | .770548  | 7.02   |
| 2   | .553468  | 4.52   | .745702  | 7.02   | 2   | .569528  | 4.42   | .770969  | 7.00   |
| 3   | .553739  | 4.50   | .746123  | 7.03   | 3   | .569793  | 4.40   | .771389  | 7.02   |
| 4   | .554009  | 4.52   | .746545  | 7.02   | 4   | .570057  | 4.42   | .771810  | 7.02   |
| 5   | 9.554280 | 4.50   | 9.746966 | 7.03   | 5   | 9.570322 | 4.40   | 9.772231 | 7.02   |
| 6   | .554550  | 4.50   | .747388  | 7.02   | 6   | .570586  | 4.40   | .772652  | 7.02   |
| 7   | .554820  | 4.50   | .747809  | 7.02   | 7   | .570850  | 4.40   | .773073  | 7.02   |
| 8   | .555091  | 4.52   | .748230  | 7.03   | 8   | .571114  | 4.40   | .773494  | 7.00   |
| 9   | .555361  | 4.50   | .748652  | 7.02   | 9   | .571378  | 4.40   | .773914  | 7.02   |
| 10  | 9.555631 | 4.48   | 9.749073 | 7.02   | 10  | 9.571642 | 4.40   | 9.774335 | 7.02   |
| 11  | .555900  | 4.50   | .749494  | 7.03   | 11  | .571906  | 4.40   | .774756  | 7.02   |
| 12  | .556170  | 4.50   | .749916  | 7.02   | 12  | .572170  | 4.40   | .775177  | 7.02   |
| 13  | .556440  | 4.48   | .750337  | 7.02   | 13  | .572434  | 4.38   | .775598  | 7.00   |
| 14  | .556709  | 4.50   | .750758  | 7.03   | 14  | .572697  | 4.38   | .776018  | 7.02   |
| 15  | 9.556979 | 4.48   | 9.751180 | 7.02   | 15  | 9.572960 | 4.40   | 9.776439 | 7.02   |
| 16  | .557248  | 4.48   | .751601  | 7.02   | 16  | .573224  | 4.38   | .776860  | 7.02   |
| 17  | .557517  | 4.48   | .752022  | 7.02   | 17  | .573487  | 4.38   | .777281  | 7.02   |
| 18  | .557786  | 4.48   | .752443  | 7.03   | 18  | .573750  | 4.38   | .777702  | 7.00   |
| 19  | .558055  | 4.48   | .752865  | 7.02   | 19  | .574013  | 4.38   | .778122  | 7.02   |
| 20  | 9.558324 | 4.48   | 9.753286 | 7.02   | 20  | 9.574276 | 4.38   | 9.778543 | 7.02   |
| 21  | .558593  | 4.48   | .753707  | 7.02   | 21  | .574539  | 4.38   | .778964  | 7.02   |
| 22  | .558862  | 4.48   | .754128  | 7.02   | 22  | .574802  | 4.37   | .779385  | 7.00   |
| 23  | .559131  | 4.47   | .754549  | 7.03   | 23  | .575064  | 4.38   | .779805  | 7.02   |
| 24  | .559399  | 4.47   | .754971  | 7.02   | 24  | .575327  | 4.37   | .780226  | 7.02   |
| 25  | 9.559667 | 4.48   | 9.755392 | 7.02   | 25  | 9.575589 | 4.38   | 9.780647 | 7.02   |
| 26  | .559936  | 4.47   | .755813  | 7.02   | 26  | .575852  | 4.37   | .781068  | 7.00   |
| 27  | .560204  | 4.47   | .756234  | 7.02   | 27  | .576114  | 4.37   | .781488  | 7.02   |
| 28  | .560472  | 4.47   | .756655  | 7.02   | 28  | .576376  | 4.37   | .781909  | 7.02   |
| 29  | .560740  | 4.47   | .757076  | 7.03   | 29  | .576638  | 4.37   | .782330  | 7.02   |
| 30  | 9.561008 | 4.47   | 9.757498 | 7.02   | 30  | 9.576900 | 4.37   | 9.782751 | 7.00   |
| 31  | .561276  | 4.47   | .757919  | 7.02   | 31  | .577162  | 4.37   | .783171  | 7.02   |
| 32  | .561544  | 4.45   | .758340  | 7.02   | 32  | .577424  | 4.35   | .783592  | 7.02   |
| 33  | .561811  | 4.47   | .758761  | 7.02   | 33  | .577685  | 4.37   | .784013  | 7.00   |
| 34  | .562079  | 4.45   | .759182  | 7.02   | 34  | .577947  | 4.35   | .784433  | 7.02   |
| 35  | 9.562346 | 4.45   | 9.759603 | 7.02   | 35  | 9.578208 | 4.37   | 9.784854 | 7.02   |
| 36  | .562613  | 4.47   | .760024  | 7.02   | 36  | .578470  | 4.35   | .785275  | 7.02   |
| 37  | .562881  | 4.45   | .760445  | 7.02   | 37  | .578731  | 4.35   | .785696  | 7.00   |
| 38  | .563148  | 4.45   | .760866  | 7.02   | 38  | .578992  | 4.35   | .786116  | 7.02   |
| 39  | .563415  | 4.45   | .761287  | 7.02   | 39  | .579253  | 4.35   | .786537  | 7.02   |
| 40  | 9.563682 | 4.43   | 9.761708 | 7.02   | 40  | 9.579514 | 4.35   | 9.786958 | 7.00   |
| 41  | .563948  | 4.45   | .762129  | 7.02   | 41  | .579775  | 4.35   | .787378  | 7.02   |
| 42  | .564215  | 4.45   | .762550  | 7.02   | 42  | .580036  | 4.35   | .787799  | 7.02   |
| 43  | .564482  | 4.43   | .762971  | 7.02   | 43  | .580297  | 4.33   | .788220  | 7.02   |
| 44  | .564748  | 4.45   | .763392  | 7.02   | 44  | .580557  | 4.35   | .788641  | 7.00   |
| 45  | 9.565015 | 4.43   | 9.763813 | 7.02   | 45  | 9.580818 | 4.33   | 9.789061 | 7.02   |
| 46  | .565281  | 4.43   | .764234  | 7.02   | 46  | .581078  | 4.35   | .789482  | 7.02   |
| 47  | .565547  | 4.43   | .764655  | 7.02   | 47  | .581339  | 4.33   | .789903  | 7.00   |
| 48  | .565813  | 4.43   | .765076  | 7.02   | 48  | .581599  | 4.33   | .790323  | 7.02   |
| 49  | .566079  | 4.43   | .765497  | 7.02   | 49  | .581859  | 4.33   | .790744  | 7.02   |
| 50  | 9.566345 | 4.43   | 9.765918 | 7.02   | 50  | 9.582119 | 4.33   | 9.791165 | 7.02   |
| 51  | .566611  | 4.43   | .766339  | 7.02   | 51  | .582379  | 4.33   | .791586  | 7.00   |
| 52  | .566877  | 4.42   | .766760  | 7.02   | 52  | .582639  | 4.32   | .792006  | 7.02   |
| 53  | .567142  | 4.43   | .767181  | 7.02   | 53  | .582898  | 4.33   | .792427  | 7.02   |
| 54  | .567408  | 4.42   | .767602  | 7.00   | 54  | .583158  | 4.33   | .792848  | 7.00   |
| 55  | 9.567673 | 4.42   | 9.768022 | 7.02   | 55  | 9.583418 | 4.32   | 9.793268 | 7.02   |
| 56  | .567938  | 4.43   | .768443  | 7.02   | 56  | .583677  | 4.32   | .793689  | 7.02   |
| 57  | .568204  | 4.42   | .768864  | 7.02   | 57  | .583936  | 4.33   | .794110  | 7.02   |
| 58  | .568469  | 4.42   | .769285  | 7.02   | 58  | .584196  | 4.32   | .794531  | 7.00   |
| 59  | .568734  | 4.42   | .769706  | 7.02   | 59  | .584455  | 4.32   | .794951  | 7.02   |
| 60  | 9.568999 | 4.42   | 9.770127 | 7.02   | 60  | 9.584714 | 4.32   | 9.795372 | 7.02   |

| 52° |          |         |          |         | 53° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. | M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.584714 |         | 9.795372 | 7.02    | 0   | 9.600085 |         | 9.820622 | 7.02    |
| 1   | .584973  | 4.32    | .795793  | 7.00    | 1   | .600338  | 4.22    | .821042  | 7.02    |
| 2   | .585232  | 4.32    | .796213  | 7.02    | 2   | .600591  | 4.22    | .821464  | 7.02    |
| 3   | .585491  | 4.32    | .796634  | 7.02    | 3   | .600845  | 4.23    | .821885  | 7.02    |
| 4   | .585749  | 4.30    | .797055  | 7.02    | 4   | .601098  | 4.22    | .822306  | 7.02    |
| 5   | 9.586008 | 4.32    | 9.797476 | 7.02    | 5   | 9.601351 | 4.20    | 9.822727 | 7.02    |
| 6   | .586266  | 4.30    | .797896  | 7.02    | 6   | .601603  | 4.22    | .823148  | 7.02    |
| 7   | .586525  | 4.32    | .798317  | 7.02    | 7   | .601856  | 4.22    | .823569  | 7.02    |
| 8   | .586783  | 4.30    | .798738  | 7.02    | 8   | .602109  | 4.22    | .823990  | 7.02    |
| 9   | .587041  | 4.30    | .799158  | 7.00    | 9   | .602362  | 4.20    | .824411  | 7.03    |
| 10  | 9.587299 | 4.30    | 9.799579 | 7.02    | 10  | 9.602614 | 4.20    | 9.824833 | 7.02    |
| 11  | .587557  | 4.30    | .800000  | 7.02    | 11  | .602866  | 4.20    | .825254  | 7.02    |
| 12  | .587815  | 4.30    | .800421  | 7.00    | 12  | .603119  | 4.22    | .825675  | 7.02    |
| 13  | .588073  | 4.30    | .800841  | 7.02    | 13  | .603371  | 4.20    | .826096  | 7.02    |
| 14  | .588331  | 4.28    | .801262  | 7.02    | 14  | .603623  | 4.20    | .826517  | 7.02    |
| 15  | 9.588588 | 4.30    | 9.801683 | 7.02    | 15  | 9.603875 | 4.20    | 9.826938 | 7.03    |
| 16  | .588846  | 4.28    | .802104  | 7.00    | 16  | .604127  | 4.20    | .827360  | 7.02    |
| 17  | .589103  | 4.28    | .802524  | 7.02    | 17  | .604379  | 4.20    | .827781  | 7.02    |
| 18  | .589361  | 4.28    | .802945  | 7.02    | 18  | .604631  | 4.20    | .828202  | 7.02    |
| 19  | .589618  | 4.28    | .803366  | 7.02    | 19  | .604883  | 4.18    | .828623  | 7.02    |
| 20  | 9.589875 | 4.28    | 9.803787 | 7.00    | 20  | 9.605134 | 4.20    | 9.829044 | 7.03    |
| 21  | .590132  | 4.28    | .804207  | 7.02    | 21  | .605386  | 4.18    | .829466  | 7.02    |
| 22  | .590389  | 4.28    | .804628  | 7.02    | 22  | .605637  | 4.18    | .829887  | 7.02    |
| 23  | .590646  | 4.28    | .805049  | 7.02    | 23  | .605888  | 4.20    | .830308  | 7.02    |
| 24  | .590903  | 4.28    | .805470  | 7.02    | 24  | .606140  | 4.18    | .830729  | 7.03    |
| 25  | 9.591160 | 4.27    | 9.805891 | 7.00    | 25  | 9.606391 | 4.18    | 9.831151 | 7.02    |
| 26  | .591416  | 4.28    | .806311  | 7.02    | 26  | .606642  | 4.18    | .831572  | 7.02    |
| 27  | .591673  | 4.27    | .806732  | 7.02    | 27  | .606893  | 4.18    | .831993  | 7.03    |
| 28  | .591929  | 4.27    | .807153  | 7.02    | 28  | .607144  | 4.17    | .832415  | 7.02    |
| 29  | .592185  | 4.28    | .807574  | 7.02    | 29  | .607394  | 4.18    | .832836  | 7.02    |
| 30  | 9.592442 | 4.27    | 9.807995 | 7.00    | 30  | 9.607645 | 4.18    | 9.833257 | 7.03    |
| 31  | .592698  | 4.27    | .808415  | 7.02    | 31  | .607896  | 4.17    | .833679  | 7.02    |
| 32  | .592954  | 4.27    | .808836  | 7.02    | 32  | .608146  | 4.18    | .834100  | 7.03    |
| 33  | .593210  | 4.27    | .809257  | 7.02    | 33  | .608397  | 4.18    | .834522  | 7.02    |
| 34  | .593466  | 4.25    | .809678  | 7.02    | 34  | .608647  | 4.17    | .834943  | 7.02    |
| 35  | 9.593721 | 4.27    | 9.810099 | 7.02    | 35  | 9.608897 | 4.17    | 9.835364 | 7.03    |
| 36  | .593977  | 4.27    | .810520  | 7.00    | 36  | .609147  | 4.17    | .835786  | 7.02    |
| 37  | .594233  | 4.25    | .810940  | 7.02    | 37  | .609397  | 4.17    | .836207  | 7.03    |
| 38  | .594488  | 4.25    | .811361  | 7.02    | 38  | .609647  | 4.17    | .836629  | 7.02    |
| 39  | .594743  | 4.27    | .811782  | 7.02    | 39  | .609897  | 4.17    | .837050  | 7.03    |
| 40  | 9.594999 | 4.25    | 9.812203 | 7.02    | 40  | 9.610147 | 4.17    | 9.837472 | 7.02    |
| 41  | .595254  | 4.25    | .812624  | 7.02    | 41  | .610397  | 4.15    | .837893  | 7.03    |
| 42  | .595509  | 4.25    | .813045  | 7.02    | 42  | .610646  | 4.17    | .838315  | 7.02    |
| 43  | .595764  | 4.25    | .813466  | 7.00    | 43  | .610896  | 4.15    | .838736  | 7.02    |
| 44  | .596019  | 4.25    | .813886  | 7.02    | 44  | .611145  | 4.15    | .839158  | 7.03    |
| 45  | 9.596274 | 4.23    | 9.814307 | 7.02    | 45  | 9.611394 | 4.15    | 9.839579 | 7.02    |
| 46  | .596528  | 4.25    | .814728  | 7.02    | 46  | .611644  | 4.17    | .840001  | 7.03    |
| 47  | .596783  | 4.25    | .815149  | 7.02    | 47  | .611893  | 4.15    | .840423  | 7.03    |
| 48  | .597038  | 4.23    | .815570  | 7.02    | 48  | .612142  | 4.15    | .840844  | 7.02    |
| 49  | .597292  | 4.23    | .815991  | 7.02    | 49  | .612391  | 4.15    | .841266  | 7.02    |
| 50  | 9.597546 | 4.25    | 9.816412 | 7.02    | 50  | 9.612640 | 4.13    | 9.841687 | 7.03    |
| 51  | .597801  | 4.23    | .816833  | 7.02    | 51  | .612888  | 4.15    | .842109  | 7.03    |
| 52  | .598055  | 4.23    | .817254  | 7.02    | 52  | .613137  | 4.15    | .842531  | 7.03    |
| 53  | .598309  | 4.23    | .817675  | 7.02    | 53  | .613386  | 4.15    | .842953  | 7.02    |
| 54  | .598563  | 4.23    | .818096  | 7.02    | 54  | .613634  | 4.13    | .843374  | 7.03    |
| 55  | 9.598817 | 4.23    | 9.818517 | 7.02    | 55  | 9.613883 | 4.15    | 9.843796 | 7.03    |
| 56  | .599071  | 4.22    | .818938  | 7.02    | 56  | .614131  | 4.13    | .844218  | 7.02    |
| 57  | .599324  | 4.23    | .819359  | 7.02    | 57  | .614379  | 4.13    | .844639  | 7.03    |
| 58  | .599578  | 4.22    | .819780  | 7.02    | 58  | .614627  | 4.13    | .845061  | 7.03    |
| 59  | .599831  | 4.22    | .820201  | 7.02    | 59  | .614876  | 4.15    | .845483  | 7.03    |
| 60  | 9.600085 | 4.23    | 9.820622 | 7.02    | 60  | 9.615124 | 4.13    | 9.845905 | 7.03    |

| 54° |          |        |          |        | 55° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.615124 |        | 9.845905 |        | 0   | 9.629841 |        | 9.871250 |        |
| 1   | .615371  | 4.12   | .846327  | 7.03   | 1   | .630084  | 4.05   | .871673  | 7.05   |
| 2   | .615619  | 4.13   | .846749  | 7.03   | 2   | .630326  | 4.03   | .872096  | 7.05   |
| 3   | .615867  | 4.13   | .847170  | 7.02   | 3   | .630569  | 4.05   | .872519  | 7.05   |
| 4   | .616115  | 4.12   | .847592  | 7.03   | 4   | .630811  | 4.03   | .872942  | 7.07   |
| 5   | 9.616362 | 4.13   | 9.848014 | 7.03   | 5   | 9.631054 | 4.05   | 9.873366 | 7.05   |
| 6   | .616610  | 4.12   | .848436  | 7.03   | 6   | .631296  | 4.03   | .873789  | 7.05   |
| 7   | .616857  | 4.12   | .848858  | 7.03   | 7   | .631538  | 4.03   | .874212  | 7.05   |
| 8   | .617104  | 4.12   | .849280  | 7.03   | 8   | .631780  | 4.03   | .874636  | 7.07   |
| 9   | .617351  | 4.12   | .849702  | 7.03   | 9   | .632022  | 4.03   | .875059  | 7.05   |
| 10  | 9.617598 |        | 9.850124 |        | 10  | 9.632264 | 4.03   | 9.875482 |        |
| 11  | .617845  | 4.12   | .850546  | 7.03   | 11  | .632505  | 4.02   | .875906  | 7.07   |
| 12  | .618092  | 4.12   | .850968  | 7.03   | 12  | .632747  | 4.03   | .876329  | 7.05   |
| 13  | .618339  | 4.12   | .851390  | 7.03   | 13  | .632989  | 4.03   | .876752  | 7.07   |
| 14  | .618586  | 4.12   | .851812  | 7.03   | 14  | .633230  | 4.02   | .877176  | 7.05   |
| 15  | 9.618833 | 4.12   | 9.852234 | 7.03   | 15  | 9.633472 | 4.03   | 9.877599 | 7.05   |
| 16  | .619079  | 4.10   | .852656  | 7.03   | 16  | .633713  | 4.02   | .878023  | 7.07   |
| 17  | .619326  | 4.12   | .853078  | 7.03   | 17  | .633954  | 4.02   | .878446  | 7.05   |
| 18  | .619572  | 4.10   | .853500  | 7.03   | 18  | .634196  | 4.03   | .878870  | 7.07   |
| 19  | .619818  | 4.12   | .853923  | 7.03   | 19  | .634437  | 4.02   | .879294  | 7.05   |
| 20  | 9.620065 | 4.10   | 9.854345 | 7.03   | 20  | 9.634678 | 4.02   | 9.879717 | 7.07   |
| 21  | .620311  | 4.10   | .854767  | 7.03   | 21  | .634919  | 4.00   | .880141  | 7.07   |
| 22  | .620557  | 4.10   | .855189  | 7.05   | 22  | .635159  | 4.02   | .880565  | 7.05   |
| 23  | .620803  | 4.08   | .855612  | 7.03   | 23  | .635400  | 4.02   | .880988  | 7.07   |
| 24  | .621048  | 4.10   | .856034  | 7.03   | 24  | .635641  | 4.02   | .881412  | 7.07   |
| 25  | 9.621294 | 4.10   | 9.856456 | 7.03   | 25  | 9.635881 | 4.02   | 9.881836 | 7.07   |
| 26  | .621540  | 4.10   | .856878  | 7.05   | 26  | .636122  | 4.00   | .882260  | 7.05   |
| 27  | .621786  | 4.08   | .857301  | 7.03   | 27  | .636362  | 4.00   | .882683  | 7.07   |
| 28  | .622031  | 4.08   | .857723  | 7.03   | 28  | .636603  | 4.02   | .883107  | 7.07   |
| 29  | .622276  | 4.10   | .858145  | 7.05   | 29  | .636843  | 4.00   | .883531  | 7.07   |
| 30  | 9.622522 | 4.08   | 9.858568 | 7.03   | 30  | 9.637083 | 4.00   | 9.883955 | 7.07   |
| 31  | .622767  | 4.08   | .858990  | 7.05   | 31  | .637323  | 4.00   | .884379  | 7.07   |
| 32  | .623012  | 4.08   | .859413  | 7.03   | 32  | .637563  | 4.00   | .884803  | 7.07   |
| 33  | .623257  | 4.08   | .859835  | 7.05   | 33  | .637803  | 4.00   | .885227  | 7.07   |
| 34  | .623502  | 4.08   | .860258  | 7.03   | 34  | .638043  | 4.00   | .885651  | 7.07   |
| 35  | 9.623747 | 4.08   | 9.860680 | 7.05   | 35  | 9.638283 | 3.98   | 9.886075 | 7.07   |
| 36  | .623992  | 4.08   | .861103  | 7.03   | 36  | .638522  | 4.00   | .886499  | 7.07   |
| 37  | .624237  | 4.07   | .861525  | 7.05   | 37  | .638762  | 3.98   | .886923  | 7.07   |
| 38  | .624481  | 4.08   | .861948  | 7.03   | 38  | .639001  | 4.00   | .887347  | 7.08   |
| 39  | .624726  | 4.07   | .862370  | 7.05   | 39  | .639241  | 3.98   | .887772  | 7.07   |
| 40  | 9.624970 | 4.08   | 9.862793 | 7.03   | 40  | 9.639480 | 3.98   | 9.888196 | 7.07   |
| 41  | .625215  | 4.07   | .863215  | 7.05   | 41  | .639719  | 3.98   | .888620  | 7.07   |
| 42  | .625459  | 4.07   | .863638  | 7.05   | 42  | .639958  | 3.98   | .889044  | 7.08   |
| 43  | .625703  | 4.07   | .864061  | 7.03   | 43  | .640197  | 3.98   | .889469  | 7.07   |
| 44  | .625947  | 4.07   | .864483  | 7.05   | 44  | .640436  | 3.98   | .889893  | 7.07   |
| 45  | 9.626191 | 4.07   | 9.864906 | 7.05   | 45  | 9.640675 | 3.98   | 9.890317 | 7.07   |
| 46  | .626435  | 4.07   | .865329  | 7.05   | 46  | .640914  | 3.98   | .890742  | 7.08   |
| 47  | .626679  | 4.07   | .865752  | 7.03   | 47  | .641153  | 3.98   | .891166  | 7.08   |
| 48  | .626923  | 4.05   | .866174  | 7.05   | 48  | .641391  | 3.97   | .891591  | 7.07   |
| 49  | .627166  | 4.07   | .866597  | 7.05   | 49  | .641630  | 3.97   | .892015  | 7.08   |
| 50  | 9.627410 | 4.07   | 9.867020 | 7.05   | 50  | 9.641868 | 3.98   | 9.892440 | 7.07   |
| 51  | .627654  | 4.05   | .867443  | 7.05   | 51  | .642107  | 3.97   | .892864  | 7.08   |
| 52  | .627897  | 4.05   | .867866  | 7.05   | 52  | .642345  | 3.97   | .893289  | 7.08   |
| 53  | .628140  | 4.07   | .868289  | 7.05   | 53  | .642583  | 3.97   | .893714  | 7.07   |
| 54  | .628384  | 4.05   | .868712  | 7.05   | 54  | .642822  | 3.97   | .894138  | 7.08   |
| 55  | 9.628627 | 4.05   | 9.869135 | 7.05   | 55  | 9.643060 | 3.97   | 9.894563 | 7.07   |
| 56  | .628870  | 4.05   | .869558  | 7.05   | 56  | .643298  | 3.97   | .894988  | 7.08   |
| 57  | .629113  | 4.05   | .869981  | 7.05   | 57  | .643535  | 3.95   | .895412  | 7.07   |
| 58  | .629356  | 4.05   | .870404  | 7.05   | 58  | .643773  | 3.97   | .895837  | 7.08   |
| 59  | .629598  | 4.03   | .870827  | 7.05   | 59  | .644011  | 3.97   | .896262  | 7.08   |
| 60  | 9.629841 | 4.05   | 9.871250 | 7.05   | 60  | 9.644249 | 3.97   | 9.896687 | 7.08   |

| 56° |          |         |          |         | 57° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. i''. | Exsec.   | D. i''. | M.  | Vers.    | D. i''. | Exsec.   | D. i''. |
| 0   | 9.644249 | 3.95    | 9.896687 | 7.08    | 0   | 9.658356 | 3.87    | 9.922247 | 7.12    |
| 1   | .644486  | 3.97    | .897112  | 7.08    | 1   | .658588  | 3.88    | .922674  | 7.13    |
| 2   | .644724  | 3.95    | .897537  | 7.08    | 2   | .658821  | 3.87    | .923102  | 7.12    |
| 3   | .644961  | 3.95    | .897962  | 7.08    | 3   | .659053  | 3.88    | .923529  | 7.12    |
| 4   | .645198  | 3.95    | .898387  | 7.08    | 4   | .659286  | 3.88    | .923956  | 7.13    |
| 5   | 9.645436 | 3.97    | 9.898812 | 7.08    | 5   | 9.659518 | 3.87    | 9.924384 | 7.12    |
| 6   | .645673  | 3.95    | .899237  | 7.08    | 6   | .659750  | 3.88    | .924811  | 7.13    |
| 7   | .645910  | 3.95    | .899662  | 7.08    | 7   | .659983  | 3.87    | .925239  | 7.12    |
| 8   | .646147  | 3.95    | .900087  | 7.08    | 8   | .660215  | 3.87    | .925666  | 7.13    |
| 9   | .646384  | 3.93    | .900512  | 7.10    | 9   | .660447  | 3.87    | .926094  | 7.12    |
| 10  | 9.646620 | 3.95    | 9.900938 | 7.08    | 10  | 9.660679 | 3.85    | 9.926521 | 7.13    |
| 11  | .646857  | 3.95    | .901363  | 7.08    | 11  | .660910  | 3.87    | .926949  | 7.13    |
| 12  | .647094  | 3.93    | .901788  | 7.08    | 12  | .661142  | 3.87    | .927377  | 7.12    |
| 13  | .647330  | 3.93    | .902213  | 7.10    | 13  | .661374  | 3.85    | .927804  | 7.13    |
| 14  | .647567  | 3.95    | .902639  | 7.08    | 14  | .661605  | 3.87    | .928232  | 7.13    |
| 15  | 9.647803 | 3.93    | 9.903064 | 7.10    | 15  | 9.661837 | 3.85    | 9.928660 | 7.13    |
| 16  | .648039  | 3.93    | .903490  | 7.08    | 16  | .662068  | 3.85    | .929088  | 7.13    |
| 17  | .648276  | 3.95    | .903915  | 7.08    | 17  | .662300  | 3.87    | .929516  | 7.13    |
| 18  | .648512  | 3.93    | .904341  | 7.10    | 18  | .662531  | 3.85    | .929944  | 7.13    |
| 19  | .648748  | 3.93    | .904766  | 7.10    | 19  | .662762  | 3.85    | .930372  | 7.13    |
| 20  | 9.648984 | 3.93    | 9.905192 | 7.08    | 20  | 9.662993 | 3.85    | 9.930800 | 7.13    |
| 21  | .649220  | 3.93    | .905617  | 7.10    | 21  | .663224  | 3.85    | .931228  | 7.13    |
| 22  | .649456  | 3.92    | .906043  | 7.10    | 22  | .663455  | 3.85    | .931656  | 7.15    |
| 23  | .649691  | 3.93    | .906469  | 7.08    | 23  | .663686  | 3.85    | .932085  | 7.13    |
| 24  | .649927  | 3.93    | .906894  | 7.10    | 24  | .663917  | 3.85    | .932513  | 7.13    |
| 25  | 9.650163 | 3.92    | 9.907320 | 7.10    | 25  | 9.664148 | 3.83    | 9.932941 | 7.13    |
| 26  | .650398  | 3.92    | .907746  | 7.10    | 26  | .664378  | 3.83    | .933369  | 7.13    |
| 27  | .650633  | 3.92    | .908171  | 7.10    | 27  | .664609  | 3.85    | .933798  | 7.13    |
| 28  | .650869  | 3.93    | .908598  | 7.10    | 28  | .664839  | 3.83    | .934226  | 7.15    |
| 29  | .651104  | 3.92    | .909024  | 7.10    | 29  | .665070  | 3.83    | .934655  | 7.13    |
| 30  | 9.651339 | 3.92    | 9.909450 | 7.10    | 30  | 9.665300 | 3.83    | 9.935083 | 7.15    |
| 31  | .651574  | 3.92    | .909876  | 7.10    | 31  | .665530  | 3.83    | .935512  | 7.15    |
| 32  | .651809  | 3.92    | .910302  | 7.10    | 32  | .665760  | 3.83    | .935941  | 7.13    |
| 33  | .652044  | 3.92    | .910728  | 7.10    | 33  | .665990  | 3.83    | .936369  | 7.15    |
| 34  | .652279  | 3.92    | .911154  | 7.10    | 34  | .666220  | 3.83    | .936798  | 7.15    |
| 35  | 9.652514 | 3.90    | 9.911580 | 7.10    | 35  | 9.666450 | 3.83    | 9.937227 | 7.15    |
| 36  | .652748  | 3.92    | .912006  | 7.10    | 36  | .666680  | 3.83    | .937656  | 7.15    |
| 37  | .652983  | 3.90    | .912432  | 7.12    | 37  | .666910  | 3.83    | .938085  | 7.13    |
| 38  | .653217  | 3.92    | .912859  | 7.10    | 38  | .667139  | 3.82    | .938513  | 7.15    |
| 39  | .653452  | 3.90    | .913285  | 7.10    | 39  | .667369  | 3.83    | .938942  | 7.15    |
| 40  | 9.653686 | 3.90    | 9.913711 | 7.12    | 40  | 9.667599 | 3.82    | 9.939371 | 7.17    |
| 41  | .653920  | 3.92    | .914138  | 7.10    | 41  | .667828  | 3.82    | .939801  | 7.15    |
| 42  | .654155  | 3.90    | .914564  | 7.12    | 42  | .668057  | 3.83    | .940230  | 7.15    |
| 43  | .654389  | 3.90    | .914991  | 7.10    | 43  | .668287  | 3.82    | .940659  | 7.15    |
| 44  | .654623  | 3.90    | .915417  | 7.12    | 44  | .668516  | 3.82    | .941088  | 7.15    |
| 45  | 9.654857 | 3.88    | 9.915844 | 7.10    | 45  | 9.668745 | 3.82    | 9.941517 | 7.17    |
| 46  | .655090  | 3.88    | .916270  | 7.12    | 46  | .668974  | 3.82    | .941947  | 7.15    |
| 47  | .655324  | 3.90    | .916697  | 7.12    | 47  | .669203  | 3.82    | .942376  | 7.15    |
| 48  | .655558  | 3.90    | .917124  | 7.10    | 48  | .669432  | 3.82    | .942806  | 7.17    |
| 49  | .655792  | 3.88    | .917550  | 7.12    | 49  | .669661  | 3.80    | .943235  | 7.17    |
| 50  | 9.656025 | 3.88    | 9.917977 | 7.12    | 50  | 9.669889 | 3.82    | 9.943665 | 7.15    |
| 51  | .656258  | 3.90    | .918404  | 7.12    | 51  | .670118  | 3.82    | .944094  | 7.17    |
| 52  | .656492  | 3.88    | .918831  | 7.12    | 52  | .670347  | 3.80    | .944524  | 7.15    |
| 53  | .656725  | 3.88    | .919258  | 7.12    | 53  | .670575  | 3.82    | .944953  | 7.17    |
| 54  | .656958  | 3.88    | .919685  | 7.12    | 54  | .670804  | 3.82    | .945383  | 7.17    |
| 55  | 9.657191 | 3.88    | 9.920112 | 7.12    | 55  | 9.671032 | 3.80    | 9.945813 | 7.17    |
| 56  | .657424  | 3.88    | .920539  | 7.12    | 56  | .671260  | 3.80    | .946243  | 7.17    |
| 57  | .657657  | 3.88    | .920966  | 7.12    | 57  | .671488  | 3.80    | .946673  | 7.17    |
| 58  | .657890  | 3.88    | .921393  | 7.12    | 58  | .671716  | 3.82    | .947103  | 7.17    |
| 59  | .658123  | 3.88    | .921820  | 7.12    | 59  | .671945  | 3.82    | .947533  | 7.17    |
| 60  | 9.658356 | 3.88    | 9.922247 | 7.12    | 60  | 9.672172 | 3.78    | 9.947963 | 7.17    |

| 58° |          |        |          |        | 59° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.672172 |        | 9.947963 |        | 0   | 9.685708 |        | 9.973868 |        |
| 1   | .672400  | 3.80   | .948393  | 7.17   | 1   | .685931  | 3.72   | .974302  | 7.23   |
| 2   | .672628  | 3.80   | .948823  | 7.17   | 2   | .686154  | 3.72   | .974736  | 7.22   |
| 3   | .672856  | 3.80   | .949253  | 7.17   | 3   | .686377  | 3.72   | .975169  | 7.23   |
| 4   | .673083  | 3.78   | .949683  | 7.17   | 4   | .686600  | 3.72   | .975603  | 7.23   |
| 5   | 9.673311 | 3.80   | 9.950114 | 7.18   | 5   | 9.686823 | 3.72   | 9.976037 | 7.23   |
| 6   | .673538  | 3.78   | .950544  | 7.17   | 6   | .687046  | 3.72   | .976471  | 7.23   |
| 7   | .673766  | 3.80   | .950975  | 7.18   | 7   | .687269  | 3.72   | .976905  | 7.23   |
| 8   | .673993  | 3.78   | .951405  | 7.17   | 8   | .687492  | 3.72   | .977339  | 7.23   |
| 9   | .674220  | 3.78   | .951836  | 7.18   | 9   | .687714  | 3.70   | .977773  | 7.23   |
| 10  | 9.674448 | 3.80   | 9.952266 | 7.17   | 10  | 9.687937 | 3.72   | 9.978207 | 7.23   |
| 11  | .674675  | 3.78   | .952697  | 7.18   | 11  | .688159  | 3.70   | .978641  | 7.23   |
| 12  | .674902  | 3.78   | .953128  | 7.18   | 12  | .688382  | 3.72   | .979075  | 7.23   |
| 13  | .675129  | 3.78   | .953558  | 7.17   | 13  | .688604  | 3.70   | .979510  | 7.23   |
| 14  | .675356  | 3.78   | .953989  | 7.18   | 14  | .688826  | 3.70   | .979944  | 7.25   |
| 15  | 9.675582 | 3.77   | 9.954420 | 7.18   | 15  | 9.689048 | 3.70   | 9.980379 | 7.23   |
| 16  | .675809  | 3.78   | .954851  | 7.18   | 16  | .689271  | 3.72   | .980813  | 7.23   |
| 17  | .676036  | 3.78   | .955282  | 7.18   | 17  | .689493  | 3.70   | .981248  | 7.23   |
| 18  | .676262  | 3.77   | .955713  | 7.18   | 18  | .689715  | 3.70   | .981682  | 7.23   |
| 19  | .676489  | 3.78   | .956144  | 7.18   | 19  | .689937  | 3.68   | .982117  | 7.25   |
| 20  | 9.676715 | 3.77   | 9.956575 | 7.18   | 20  | 9.690158 | 3.70   | 9.982552 | 7.25   |
| 21  | .676941  | 3.78   | .957006  | 7.20   | 21  | .690380  | 3.70   | .982987  | 7.25   |
| 22  | .677168  | 3.77   | .957437  | 7.18   | 22  | .690602  | 3.68   | .983422  | 7.25   |
| 23  | .677394  | 3.77   | .957869  | 7.18   | 23  | .690823  | 3.70   | .983857  | 7.25   |
| 24  | .677620  | 3.77   | .958300  | 7.18   | 24  | .691045  | 3.70   | .984292  | 7.25   |
| 25  | 9.677846 | 3.77   | 9.958732 | 7.20   | 25  | 9.691266 | 3.68   | 9.984727 | 7.25   |
| 26  | .678072  | 3.77   | .959163  | 7.18   | 26  | .691488  | 3.70   | .985162  | 7.25   |
| 27  | .678298  | 3.77   | .959595  | 7.20   | 27  | .691709  | 3.68   | .985597  | 7.25   |
| 28  | .678523  | 3.75   | .960026  | 7.18   | 28  | .691930  | 3.68   | .986033  | 7.27   |
| 29  | .678749  | 3.77   | .960458  | 7.20   | 29  | .692151  | 3.68   | .986468  | 7.27   |
| 30  | 9.678975 | 3.75   | 9.960890 | 7.18   | 30  | 9.692372 | 3.68   | 9.986904 | 7.25   |
| 31  | .679200  | 3.77   | .961321  | 7.20   | 31  | .692593  | 3.68   | .987339  | 7.27   |
| 32  | .679426  | 3.77   | .961753  | 7.20   | 32  | .692814  | 3.68   | .987775  | 7.27   |
| 33  | .679651  | 3.75   | .962185  | 7.20   | 33  | .693035  | 3.68   | .988210  | 7.25   |
| 34  | .679876  | 3.75   | .962617  | 7.20   | 34  | .693256  | 3.68   | .988646  | 7.27   |
| 35  | 9.680102 | 3.77   | 9.963049 | 7.20   | 35  | 9.693477 | 3.68   | 9.989082 | 7.27   |
| 36  | .680327  | 3.75   | .963481  | 7.20   | 36  | .693697  | 3.67   | .989518  | 7.27   |
| 37  | .680552  | 3.75   | .963913  | 7.20   | 37  | .693918  | 3.68   | .989954  | 7.27   |
| 38  | .680777  | 3.75   | .964345  | 7.20   | 38  | .694138  | 3.67   | .990390  | 7.27   |
| 39  | .681002  | 3.75   | .964778  | 7.22   | 39  | .694359  | 3.68   | .990826  | 7.27   |
| 40  | 9.681227 | 3.75   | 9.965210 | 7.20   | 40  | 9.694579 | 3.67   | 9.991262 | 7.27   |
| 41  | .681451  | 3.73   | .965642  | 7.20   | 41  | .694799  | 3.67   | .991698  | 7.27   |
| 42  | .681676  | 3.75   | .966075  | 7.22   | 42  | .695019  | 3.67   | .992134  | 7.27   |
| 43  | .681901  | 3.75   | .966507  | 7.20   | 43  | .695240  | 3.68   | .992571  | 7.28   |
| 44  | .682125  | 3.73   | .966940  | 7.22   | 44  | .695460  | 3.67   | .993007  | 7.28   |
| 45  | 9.682350 | 3.75   | 9.967372 | 7.20   | 45  | 9.695680 | 3.67   | 9.993444 | 7.28   |
| 46  | .682574  | 3.73   | .967805  | 7.22   | 46  | .695899  | 3.65   | .993880  | 7.27   |
| 47  | .682798  | 3.73   | .968238  | 7.22   | 47  | .696119  | 3.67   | .994317  | 7.28   |
| 48  | .683023  | 3.75   | .968670  | 7.20   | 48  | .696339  | 3.67   | .994754  | 7.28   |
| 49  | .683247  | 3.73   | .969103  | 7.22   | 49  | .696559  | 3.67   | .995191  | 7.27   |
| 50  | 9.683471 | 3.73   | 9.969536 | 7.22   | 50  | 9.696778 | 3.65   | 9.995627 | 7.28   |
| 51  | .683695  | 3.73   | .969969  | 7.22   | 51  | .696998  | 3.67   | .996064  | 7.28   |
| 52  | .683919  | 3.73   | .970402  | 7.22   | 52  | .697217  | 3.65   | .996501  | 7.28   |
| 53  | .684143  | 3.73   | .970835  | 7.22   | 53  | .697437  | 3.67   | .996938  | 7.28   |
| 54  | .684367  | 3.73   | .971268  | 7.22   | 54  | .697656  | 3.65   | .997376  | 7.30   |
| 55  | 9.684590 | 3.72   | 9.971701 | 7.22   | 55  | 9.697875 | 3.65   | 9.997813 | 7.28   |
| 56  | .684814  | 3.73   | .972135  | 7.23   | 56  | .698094  | 3.65   | .998250  | 7.28   |
| 57  | .685037  | 3.72   | .972568  | 7.22   | 57  | .698313  | 3.65   | .998687  | 7.28   |
| 58  | .685261  | 3.73   | .973001  | 7.22   | 58  | .698532  | 3.65   | .999125  | 7.30   |
| 59  | .685484  | 3.72   | .973435  | 7.23   | 59  | .698751  | 3.65   | .999562  | 7.28   |
| 60  | 9.685708 | 3.73   | 9.973868 | 7.22   | 60  | 9.698970 | 3.65   | 0.000000 | 7.30   |

| 60° |          |         |          |         | 61° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. | M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.698970 | 3.65    | 0.000000 | 7.30    | 0   | 9.711968 | 3.57    | 0.026397 | 7.37    |
| 1   | .699189  | 3.63    | .000438  | 7.28    | 1   | .712182  | 3.58    | .026839  | 7.37    |
| 2   | .699407  | 3.65    | .000875  | 7.30    | 2   | .712397  | 3.57    | .027281  | 7.38    |
| 3   | .699626  | 3.65    | .001313  | 7.30    | 3   | .712611  | 3.57    | .027724  | 7.38    |
| 4   | .699845  | 3.65    | .001751  | 7.30    | 4   | .712825  | 3.57    | .028167  | 7.37    |
| 5   | 9.700063 | 3.63    | 0.002189 | 7.30    | 5   | .713039  | 3.57    | 0.028609 | 7.38    |
| 6   | .700282  | 3.63    | .002627  | 7.30    | 6   | .713253  | 3.57    | .029052  | 7.38    |
| 7   | .700500  | 3.63    | .003065  | 7.30    | 7   | .713467  | 3.57    | .029495  | 7.38    |
| 8   | .700718  | 3.63    | .003503  | 7.30    | 8   | .713681  | 3.57    | .029938  | 7.38    |
| 9   | .700936  | 3.63    | .003942  | 7.32    | 9   | .713895  | 3.57    | .030381  | 7.40    |
|     |          |         |          | 7.30    |     |          |         |          |         |
| 10  | 9.701154 | 3.63    | 0.004380 | 7.30    | 10  | 9.714109 | 3.57    | 0.030825 | 7.38    |
| 11  | .701372  | 3.63    | .004818  | 7.32    | 11  | .714323  | 3.55    | .031268  | 7.38    |
| 12  | .701590  | 3.63    | .005257  | 7.30    | 12  | .714536  | 3.57    | .031711  | 7.40    |
| 13  | .701808  | 3.63    | .005695  | 7.32    | 13  | .714750  | 3.55    | .032155  | 7.38    |
| 14  | .702026  | 3.63    | .006134  | 7.32    | 14  | .714963  | 3.57    | .032598  | 7.40    |
| 15  | 9.702244 | 3.63    | 0.006573 | 7.32    | 15  | 9.715177 | 3.55    | 0.033042 | 7.40    |
| 16  | .702462  | 3.63    | .007012  | 7.30    | 16  | .715390  | 3.55    | .033486  | 7.38    |
| 17  | .702679  | 3.62    | .007450  | 7.32    | 17  | .715603  | 3.55    | .033929  | 7.40    |
| 18  | .702897  | 3.63    | .007889  | 7.32    | 18  | .715817  | 3.55    | .034373  | 7.40    |
| 19  | .703114  | 3.63    | .008328  | 7.32    | 19  | .716030  | 3.55    | .034817  | 7.40    |
|     |          |         |          | 7.32    |     |          |         |          |         |
| 20  | 9.703332 | 3.62    | 0.008767 | 7.33    | 20  | 9.716243 | 3.55    | 0.035261 | 7.40    |
| 21  | .703549  | 3.62    | .009207  | 7.32    | 21  | .716456  | 3.55    | .035705  | 7.42    |
| 22  | .703766  | 3.62    | .009646  | 7.32    | 22  | .716669  | 3.55    | .036150  | 7.40    |
| 23  | .703983  | 3.62    | .010085  | 7.33    | 23  | .716882  | 3.55    | .036594  | 7.40    |
| 24  | .704200  | 3.62    | .010525  | 7.33    | 24  | .717095  | 3.55    | .037038  | 7.42    |
| 25  | 9.704417 | 3.62    | 0.010964 | 7.33    | 25  | 9.717307 | 3.53    | 0.037483 | 7.42    |
| 26  | .704634  | 3.62    | .011404  | 7.32    | 26  | .717520  | 3.55    | .037928  | 7.40    |
| 27  | .704851  | 3.62    | .011843  | 7.32    | 27  | .717732  | 3.53    | .038372  | 7.42    |
| 28  | .705068  | 3.62    | .012283  | 7.33    | 28  | .717945  | 3.55    | .038817  | 7.42    |
| 29  | .705285  | 3.62    | .012723  | 7.33    | 29  | .718157  | 3.55    | .039262  | 7.42    |
|     |          | 3.60    |          | 7.33    |     |          |         |          |         |
| 30  | 9.705501 | 3.62    | 0.013163 | 7.33    | 30  | 9.718370 | 3.53    | 0.039707 | 7.42    |
| 31  | .705718  | 3.62    | .013603  | 7.33    | 31  | .718582  | 3.53    | .040152  | 7.42    |
| 32  | .705935  | 3.62    | .014043  | 7.33    | 32  | .718794  | 3.53    | .040597  | 7.42    |
| 33  | .706151  | 3.60    | .014483  | 7.33    | 33  | .719007  | 3.55    | .041042  | 7.43    |
| 34  | .706367  | 3.62    | .014923  | 7.33    | 34  | .719219  | 3.53    | .041488  | 7.42    |
| 35  | 9.706584 | 3.62    | 0.015363 | 7.35    | 35  | 9.719431 | 3.53    | 0.041933 | 7.42    |
| 36  | .706800  | 3.60    | .015804  | 7.33    | 36  | .719643  | 3.53    | .042379  | 7.43    |
| 37  | .707016  | 3.60    | .016244  | 7.33    | 37  | .719855  | 3.53    | .042824  | 7.42    |
| 38  | .707232  | 3.60    | .016684  | 7.33    | 38  | .720066  | 3.52    | .043270  | 7.43    |
| 39  | .707448  | 3.60    | .017125  | 7.35    | 39  | .720278  | 3.53    | .043716  | 7.43    |
|     |          |         |          | 7.35    |     |          |         |          |         |
| 40  | 9.707664 | 3.60    | 0.017566 | 7.35    | 40  | 9.720490 | 3.52    | 0.044162 | 7.43    |
| 41  | .707880  | 3.60    | .018007  | 7.33    | 41  | .720701  | 3.53    | .044608  | 7.43    |
| 42  | .708096  | 3.58    | .018447  | 7.35    | 42  | .720913  | 3.52    | .045054  | 7.43    |
| 43  | .708311  | 3.58    | .018888  | 7.35    | 43  | .721124  | 3.53    | .045500  | 7.43    |
| 44  | .708527  | 3.60    | .019329  | 7.35    | 44  | .721336  | 3.53    | .045946  | 7.45    |
| 45  | 9.708743 | 3.60    | 0.019770 | 7.35    | 45  | 9.721547 | 3.52    | 0.046393 | 7.43    |
| 46  | .708958  | 3.58    | .020212  | 7.37    | 46  | .721758  | 3.52    | .046839  | 7.45    |
| 47  | .709174  | 3.60    | .020653  | 7.35    | 47  | .721970  | 3.53    | .047286  | 7.43    |
| 48  | .709389  | 3.58    | .021094  | 7.35    | 48  | .722181  | 3.52    | .047732  | 7.45    |
| 49  | .709604  | 3.58    | .021535  | 7.37    | 49  | .722392  | 3.52    | .048179  | 7.45    |
|     |          |         |          | 7.37    |     |          |         |          |         |
| 50  | 9.709819 | 3.60    | 0.021977 | 7.37    | 50  | 9.722603 | 3.52    | 0.048626 | 7.45    |
| 51  | .710035  | 3.58    | .022419  | 7.35    | 51  | .722814  | 3.50    | .049073  | 7.45    |
| 52  | .710250  | 3.58    | .022860  | 7.37    | 52  | .723024  | 3.52    | .049520  | 7.45    |
| 53  | .710465  | 3.58    | .023302  | 7.37    | 53  | .723235  | 3.52    | .049967  | 7.45    |
| 54  | .710680  | 3.58    | .023744  | 7.37    | 54  | .723446  | 3.52    | .050414  | 7.45    |
| 55  | 9.710895 | 3.57    | 0.024186 | 7.37    | 55  | 9.723657 | 3.50    | 0.050861 | 7.47    |
| 56  | .711109  | 3.57    | .024628  | 7.37    | 56  | .723867  | 3.52    | .051309  | 7.45    |
| 57  | .711324  | 3.58    | .025070  | 7.37    | 57  | .724078  | 3.52    | .051756  | 7.47    |
| 58  | .711539  | 3.58    | .025512  | 7.37    | 58  | .724288  | 3.50    | .052204  | 7.47    |
| 59  | .711753  | 3.57    | .025954  | 7.37    | 59  | .724498  | 3.50    | .052652  | 7.47    |
| 60  | 9.711968 | 3.58    | 0.026397 | 7.38    | 60  | 9.724709 | 3.52    | 0.053099 | 7.45    |

| 62° |          |         |          |         | 63° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. | M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.724709 |         | 0.053099 |         | 0   | 9.737200 |         | 0.080153 | 7.58    |
| 1   | .724919  | 3.50    | .053547  | 7.47    | 1   | .737406  | 3.43    | .080608  | 7.57    |
| 2   | .725129  | 3.50    | .053995  | 7.47    | 2   | .737612  | 3.43    | .081062  | 7.57    |
| 3   | .725339  | 3.50    | .054443  | 7.47    | 3   | .737818  | 3.43    | .081516  | 7.57    |
| 4   | .725549  | 3.50    | .054892  | 7.48    | 4   | .738024  | 3.43    | .081971  | 7.58    |
| 5   | 9.725759 | 3.50    | 0.055340 | 7.47    | 5   | 9.738230 | 3.43    | 0.082425 | 7.57    |
| 6   | .725969  | 3.50    | .055788  | 7.47    | 6   | .738436  | 3.43    | .082880  | 7.58    |
| 7   | .726179  | 3.48    | .056237  | 7.47    | 7   | .738642  | 3.43    | .083335  | 7.58    |
| 8   | .726388  | 3.48    | .056685  | 7.48    | 8   | .738847  | 3.42    | .083790  | 7.58    |
| 9   | .726598  | 3.50    | .057134  | 7.48    | 9   | .739053  | 3.43    | .084245  | 7.58    |
| 10  | 9.726808 | 3.48    | 0.057583 | 7.48    | 10  | 9.739258 | 3.42    | 0.084700 | 7.58    |
| 11  | .727017  | 3.50    | .058032  | 7.48    | 11  | .739464  | 3.42    | .085155  | 7.60    |
| 12  | .727227  | 3.48    | .058481  | 7.48    | 12  | .739669  | 3.42    | .085611  | 7.58    |
| 13  | .727436  | 3.48    | .058930  | 7.48    | 13  | .739875  | 3.43    | .086066  | 7.60    |
| 14  | .727645  | 3.48    | .059379  | 7.48    | 14  | .740080  | 3.42    | .086522  | 7.58    |
| 15  | 9.727855 | 3.50    | 0.059828 | 7.50    | 15  | 9.740285 | 3.42    | 0.086977 | 7.60    |
| 16  | .728064  | 3.48    | .060278  | 7.48    | 16  | .740490  | 3.42    | .087433  | 7.60    |
| 17  | .728273  | 3.48    | .060727  | 7.48    | 17  | .740695  | 3.42    | .087889  | 7.60    |
| 18  | .728482  | 3.48    | .061177  | 7.50    | 18  | .740900  | 3.42    | .088345  | 7.60    |
| 19  | .728691  | 3.48    | .061626  | 7.48    | 19  | .741105  | 3.42    | .088801  | 7.62    |
| 20  | 9.728900 | 3.48    | 0.062076 | 7.50    | 20  | 9.741310 | 3.42    | 0.089258 | 7.60    |
| 21  | .729109  | 3.47    | .062526  | 7.50    | 21  | .741515  | 3.40    | .089714  | 7.62    |
| 22  | .729317  | 3.48    | .062976  | 7.50    | 22  | .741719  | 3.42    | .090171  | 7.60    |
| 23  | .729526  | 3.48    | .063426  | 7.50    | 23  | .741924  | 3.42    | .090627  | 7.62    |
| 24  | .729735  | 3.47    | .063876  | 7.52    | 24  | .742129  | 3.42    | .091084  | 7.62    |
| 25  | 9.729943 | 3.48    | 0.064327 | 7.50    | 25  | 9.742333 | 3.40    | 0.091541 | 7.62    |
| 26  | .730152  | 3.47    | .064777  | 7.50    | 26  | .742538  | 3.42    | .091998  | 7.62    |
| 27  | .730360  | 3.47    | .065227  | 7.52    | 27  | .742742  | 3.40    | .092455  | 7.62    |
| 28  | .730569  | 3.48    | .065678  | 7.52    | 28  | .742946  | 3.40    | .092912  | 7.63    |
| 29  | .730777  | 3.47    | .066129  | 7.52    | 29  | .743150  | 3.42    | .093370  | 7.62    |
| 30  | 9.730985 | 3.47    | 0.066580 | 7.50    | 30  | 9.743355 | 3.40    | 0.093827 | 7.63    |
| 31  | .731193  | 3.47    | .067030  | 7.53    | 31  | .743559  | 3.40    | .094285  | 7.63    |
| 32  | .731401  | 3.47    | .067482  | 7.52    | 32  | .743763  | 3.40    | .094743  | 7.62    |
| 33  | .731609  | 3.47    | .067933  | 7.52    | 33  | .743967  | 3.40    | .095200  | 7.63    |
| 34  | .731817  | 3.47    | .068385  | 7.52    | 34  | .744171  | 3.40    | .095658  | 7.63    |
| 35  | 9.732025 | 3.47    | 0.068835 | 7.53    | 35  | 9.744375 | 3.38    | 0.096116 | 7.65    |
| 36  | .732233  | 3.47    | .069287  | 7.52    | 36  | .744578  | 3.40    | .096575  | 7.63    |
| 37  | .732441  | 3.47    | .069738  | 7.52    | 37  | .744782  | 3.40    | .097033  | 7.63    |
| 38  | .732648  | 3.45    | .070190  | 7.53    | 38  | .744986  | 3.40    | .097491  | 7.65    |
| 39  | .732856  | 3.47    | .070642  | 7.52    | 39  | .745189  | 3.38    | .097950  | 7.63    |
| 40  | 9.733064 | 3.45    | 0.071093 | 7.53    | 40  | 9.745393 | 3.38    | 0.098408 | 7.65    |
| 41  | .733271  | 3.45    | .071545  | 7.55    | 41  | .745596  | 3.40    | .098867  | 7.65    |
| 42  | .733478  | 3.47    | .071998  | 7.53    | 42  | .745800  | 3.38    | .099326  | 7.65    |
| 43  | .733686  | 3.45    | .072450  | 7.53    | 43  | .746003  | 3.38    | .099785  | 7.65    |
| 44  | .733893  | 3.45    | .072902  | 7.53    | 44  | .746206  | 3.38    | .100244  | 7.67    |
| 45  | 9.734100 | 3.45    | 0.073354 | 7.55    | 45  | 9.746409 | 3.40    | 0.100704 | 7.65    |
| 46  | .734307  | 3.47    | .073807  | 7.55    | 46  | .746613  | 3.38    | .101163  | 7.67    |
| 47  | .734515  | 3.43    | .074260  | 7.53    | 47  | .746816  | 3.38    | .101623  | 7.65    |
| 48  | .734721  | 3.45    | .074712  | 7.55    | 48  | .747019  | 3.38    | .102082  | 7.67    |
| 49  | .734928  | 3.45    | .075165  | 7.55    | 49  | .747222  | 3.37    | .102542  | 7.67    |
| 50  | 9.735135 | 3.45    | 0.075618 | 7.55    | 50  | 9.747424 | 3.38    | 0.103002 | 7.67    |
| 51  | .735342  | 3.45    | .076071  | 7.55    | 51  | .747627  | 3.38    | .103462  | 7.67    |
| 52  | .735549  | 3.43    | .076524  | 7.55    | 52  | .747830  | 3.38    | .103922  | 7.67    |
| 53  | .735755  | 3.45    | .076977  | 7.57    | 53  | .748033  | 3.38    | .104382  | 7.68    |
| 54  | .735962  | 3.45    | .077431  | 7.55    | 54  | .748235  | 3.37    | .104843  | 7.67    |
| 55  | 9.736169 | 3.43    | 0.077884 | 7.57    | 55  | 9.748438 | 3.38    | 0.105303 | 7.68    |
| 56  | .736375  | 3.43    | .078338  | 7.57    | 56  | .748640  | 3.37    | .105764  | 7.67    |
| 57  | .736581  | 3.45    | .078792  | 7.55    | 57  | .748843  | 3.37    | .106224  | 7.68    |
| 58  | .736788  | 3.43    | .079245  | 7.57    | 58  | .749045  | 3.37    | .106685  | 7.68    |
| 59  | .736994  | 3.43    | .079699  | 7.57    | 59  | .749247  | 3.37    | .107146  | 7.68    |
| 60  | 9.737200 | 3.43    | 0.080153 | 7.57    | 60  | 9.749449 | 3.37    | 0.107607 | 7.68    |



| 64° |          |        |          |        | 65° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.749449 |        | 0.107607 | 7.70   | 0   | 9.761463 |        | 0.135515 | 7.82   |
| 1   | .749652  | 3.38   | .108069  | 7.68   | 1   | .761661  | 3.30   | .135984  | 7.83   |
| 2   | .749854  | 3.37   | .108530  | 7.70   | 2   | .761860  | 3.32   | .136454  | 7.82   |
| 3   | .750056  | 3.37   | .108992  | 7.68   | 3   | .762058  | 3.30   | .136923  | 7.83   |
| 4   | .750258  | 3.37   | .109453  | 7.70   | 4   | .762256  | 3.30   | .137393  | 7.83   |
| 5   | 9.750459 | 3.35   | 0.109915 | 7.70   | 5   | 9.762454 | 3.30   | 0.137863 | 7.83   |
| 6   | .750661  | 3.37   | .110377  | 7.70   | 6   | .762652  | 3.30   | .138333  | 7.83   |
| 7   | .750863  | 3.37   | .110839  | 7.70   | 7   | .762850  | 3.30   | .138803  | 7.83   |
| 8   | .751065  | 3.37   | .111301  | 7.70   | 8   | .763047  | 3.28   | .139273  | 7.83   |
| 9   | .751266  | 3.35   | .111763  | 7.70   | 9   | .763245  | 3.30   | .139744  | 7.83   |
| 10  |          | 3.37   |          | 7.72   | 10  |          | 3.30   |          | 7.83   |
| 11  | 9.751468 | 3.35   | 0.112226 | 7.70   | 11  | 9.763443 | 3.30   | 0.140214 | 7.85   |
| 12  | .751669  | 3.37   | .112688  | 7.72   | 12  | .763641  | 3.28   | .140685  | 7.85   |
| 13  | .751871  | 3.35   | .113151  | 7.72   | 13  | .763838  | 3.30   | .141156  | 7.85   |
| 14  | .752072  | 3.35   | .113614  | 7.72   | 14  | .764036  | 3.28   | .141627  | 7.85   |
| 15  | .752273  | 3.35   | .114077  | 7.72   | 15  | .764233  | 3.28   | .142098  | 7.85   |
| 16  | 9.752475 | 3.37   | 0.114540 | 7.72   | 16  | 9.764430 | 3.28   | 0.142569 | 7.87   |
| 17  | .752676  | 3.35   | .115003  | 7.72   | 17  | .764628  | 3.28   | .143041  | 7.85   |
| 18  | .752877  | 3.35   | .115466  | 7.72   | 18  | .764825  | 3.28   | .143512  | 7.87   |
| 19  | .753078  | 3.35   | .115929  | 7.73   | 19  | .765022  | 3.28   | .143984  | 7.87   |
| 20  | .753279  | 3.35   | .116393  | 7.73   | 20  | .765219  | 3.28   | .144456  | 7.87   |
| 21  |          | 3.35   |          | 7.73   | 21  |          | 3.28   |          | 7.87   |
| 22  | 9.753480 | 3.35   | 0.116857 | 7.73   | 22  | 9.765416 | 3.28   | 0.144928 | 7.87   |
| 23  | .753681  | 3.38   | .117321  | 7.73   | 23  | .765613  | 3.28   | .145400  | 7.87   |
| 24  | .753881  | 3.35   | .117785  | 7.73   | 24  | .765810  | 3.28   | .145872  | 7.88   |
| 25  | .754082  | 3.35   | .118249  | 7.73   | 25  | .766007  | 3.28   | .146345  | 7.88   |
| 26  | .754283  | 3.35   | .118713  | 7.73   | 26  | .766204  | 3.28   | .146818  | 7.87   |
| 27  | .754483  | 3.33   | .119177  | 7.75   | 27  | 9.766401 | 3.27   | 0.147290 | 7.88   |
| 28  | .754684  | 3.35   | .119642  | 7.75   | 28  | .766597  | 3.28   | .147763  | 7.88   |
| 29  | .754884  | 3.33   | .120106  | 7.75   | 29  | .766794  | 3.28   | .148236  | 7.90   |
| 30  | .755085  | 3.35   | .120571  | 7.75   | 30  | .766991  | 3.28   | .148710  | 7.88   |
| 31  | .755285  | 3.33   | .121036  | 7.75   | 31  | .767187  | 3.28   | .149183  | 7.90   |
| 32  |          | 3.33   |          | 7.75   | 32  |          | 3.27   |          | 7.88   |
| 33  | 9.755485 | 3.33   | 0.121501 | 7.75   | 33  | 9.767384 | 3.27   | 0.149657 | 7.88   |
| 34  | .755685  | 3.35   | .121966  | 7.75   | 34  | .767580  | 3.27   | .150130  | 7.90   |
| 35  | .755886  | 3.33   | .122431  | 7.75   | 35  | .767776  | 3.27   | .150604  | 7.90   |
| 36  | .756086  | 3.33   | .122897  | 7.75   | 36  | .767972  | 3.28   | .151078  | 7.90   |
| 37  | .756286  | 3.33   | .123362  | 7.75   | 37  | .768169  | 3.28   | .151552  | 7.92   |
| 38  | 9.756486 | 3.33   | 0.123828 | 7.77   | 38  | 9.768365 | 3.27   | 0.152027 | 7.92   |
| 39  | .756685  | 3.32   | .124294  | 7.77   | 39  | .768561  | 3.27   | .152501  | 7.90   |
| 40  | .756885  | 3.33   | .124760  | 7.77   | 40  | .768757  | 3.27   | .152976  | 7.92   |
| 41  | .757085  | 3.33   | .125226  | 7.77   | 41  | .768953  | 3.27   | .153450  | 7.92   |
| 42  | .757285  | 3.32   | .125692  | 7.77   | 42  | .769149  | 3.25   | .153925  | 7.92   |
| 43  |          | 3.32   |          | 7.78   | 43  |          | 3.27   |          | 7.93   |
| 44  | 9.757484 | 3.33   | 0.126158 | 7.78   | 44  | 9.769344 | 3.27   | 0.154400 | 7.93   |
| 45  | .757684  | 3.32   | .126625  | 7.78   | 45  | .769540  | 3.27   | .154876  | 7.92   |
| 46  | .757883  | 3.32   | .127092  | 7.78   | 46  | .769736  | 3.27   | .155351  | 7.92   |
| 47  | .758083  | 3.33   | .127558  | 7.77   | 47  | .769931  | 3.25   | .155826  | 7.92   |
| 48  | .758282  | 3.32   | .128025  | 7.78   | 48  | .770127  | 3.27   | .156302  | 7.93   |
| 49  | 9.758481 | 3.32   | 0.128492 | 7.78   | 49  | .770323  | 3.27   | 0.156778 | 7.93   |
| 50  | .758681  | 3.33   | .128960  | 7.80   | 50  | 9.770518 | 3.25   | .157254  | 7.93   |
| 51  | .758880  | 3.32   | .129427  | 7.78   | 51  | .770713  | 3.25   | .157730  | 7.93   |
| 52  | .759079  | 3.32   | .129894  | 7.78   | 52  | .770909  | 3.27   | .158206  | 7.93   |
| 53  | .759278  | 3.32   | .130362  | 7.80   | 53  | .771104  | 3.25   | .158683  | 7.95   |
| 54  |          | 3.32   |          | 7.80   | 54  |          | 3.25   |          | 7.93   |
| 55  | 9.759477 | 3.32   | 0.130830 | 7.80   | 55  | 9.771299 | 3.25   | 0.159159 | 7.95   |
| 56  | .759676  | 3.32   | .131298  | 7.80   | 56  | .771494  | 3.25   | .159636  | 7.95   |
| 57  | .759875  | 3.32   | .131766  | 7.80   | 57  | .771689  | 3.25   | .160113  | 7.95   |
| 58  | .760073  | 3.30   | .132234  | 7.80   | 58  | .771884  | 3.25   | .160590  | 7.95   |
| 59  | .760272  | 3.32   | .132702  | 7.80   | 59  | .772079  | 3.25   | .161067  | 7.97   |
| 60  | 9.760471 | 3.32   | 0.133170 | 7.82   | 60  | 9.772274 | 3.25   | 0.161545 | 7.97   |
|     | .760669  | 3.30   | .133639  | 7.82   |     | .772469  | 3.25   | .162022  | 7.95   |
|     | .760868  | 3.32   | .134108  | 7.82   |     | .772664  | 3.25   | .162500  | 7.97   |
|     | .761066  | 3.30   | .134577  | 7.82   |     | .772859  | 3.23   | .162978  | 7.97   |
|     | .761265  | 3.32   | .135046  | 7.82   |     | .773053  | 3.25   | .163456  | 7.97   |
|     | 9.761463 | 3.30   | 0.135515 | 7.82   |     | 9.773248 | 3.25   | 0.163934 | 7.97   |

| 66° |          |         |          |         | 67° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. | M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.773248 | 3.23    | 0.163934 | 7.98    | 0   | 9.784809 | 3.18    | 0.192931 | 8.15    |
| 1   | .773442  | 3.23    | 1.64413  | 7.97    | 1   | .785000  | 3.18    | .193420  | 8.13    |
| 2   | .773636  | 3.25    | 164891   | 7.98    | 2   | .785191  | 3.17    | .193908  | 8.15    |
| 3   | .773831  | 3.23    | 165370   | 7.98    | 3   | .785381  | 3.18    | .194397  | 8.15    |
| 4   | .774025  | 3.23    | 165849   | 7.98    | 4   | .785572  | 3.18    | .194886  | 8.17    |
| 5   | 9.774219 | 3.25    | 0.166328 | 7.98    | 5   | 9.785763 | 3.17    | 0.195376 | 8.15    |
| 6   | .774414  | 3.23    | 166807   | 7.98    | 6   | .785953  | 3.18    | .195865  | 8.17    |
| 7   | .774608  | 3.23    | 167286   | 8.00    | 7   | .786144  | 3.18    | .196355  | 8.17    |
| 8   | .774802  | 3.23    | 167766   | 7.98    | 8   | .786334  | 3.17    | .196845  | 8.17    |
| 9   | .774996  | 3.23    | 168245   | 8.00    | 9   | .786524  | 3.18    | .197335  | 8.17    |
| 10  | 9.775190 | 3.23    | 0.168725 | 8.00    | 10  | 9.786715 | 3.17    | 0.197825 | 8.17    |
| 11  | .775384  | 3.22    | 169205   | 8.00    | 11  | .786905  | 3.17    | .198315  | 8.18    |
| 12  | .775577  | 3.23    | 169685   | 8.00    | 12  | .787095  | 3.17    | .198806  | 8.18    |
| 13  | .775771  | 3.23    | 170165   | 8.02    | 13  | .787285  | 3.17    | .199297  | 8.18    |
| 14  | .775965  | 3.23    | 170646   | 8.02    | 14  | .787475  | 3.17    | .199788  | 8.18    |
| 15  | 9.776159 | 3.23    | 0.171127 | 8.00    | 15  | 9.787665 | 3.17    | 0.200279 | 8.18    |
| 16  | .776352  | 3.23    | 171607   | 8.02    | 16  | .787855  | 3.17    | .200770  | 8.20    |
| 17  | .776546  | 3.22    | 172088   | 8.02    | 17  | .788045  | 3.17    | .201262  | 8.20    |
| 18  | .776739  | 3.23    | 172569   | 8.03    | 18  | .788235  | 3.17    | .201753  | 8.20    |
| 19  | .776933  | 3.22    | 173051   | 8.02    | 19  | .788425  | 3.15    | .202245  | 8.20    |
| 20  | 9.777126 | 3.22    | 0.173532 | 8.03    | 20  | 9.788614 | 3.17    | 0.202737 | 8.20    |
| 21  | .777319  | 3.22    | 174014   | 8.03    | 21  | .788804  | 3.15    | .203229  | 8.22    |
| 22  | .777512  | 3.22    | 174496   | 8.03    | 22  | .788993  | 3.17    | .203722  | 8.22    |
| 23  | .777705  | 3.23    | 174978   | 8.03    | 23  | .789183  | 3.15    | .204215  | 8.20    |
| 24  | .777899  | 3.22    | 175460   | 8.03    | 24  | .789372  | 3.17    | .204707  | 8.22    |
| 25  | 9.778092 | 3.22    | 0.175942 | 8.05    | 25  | 9.789562 | 3.15    | 0.205200 | 8.23    |
| 26  | .778285  | 3.20    | 176425   | 8.03    | 26  | .789751  | 3.15    | .205694  | 8.22    |
| 27  | .778477  | 3.22    | 176907   | 8.05    | 27  | .789940  | 3.17    | .206187  | 8.23    |
| 28  | .778670  | 3.22    | 177390   | 8.05    | 28  | .790130  | 3.15    | .206681  | 8.22    |
| 29  | .778863  | 3.22    | 177873   | 8.05    | 29  | .790319  | 3.15    | .207174  | 8.23    |
| 30  | 9.779056 | 3.20    | 0.178356 | 8.05    | 30  | 9.790508 | 3.15    | 0.207668 | 8.23    |
| 31  | .779248  | 3.22    | 178839   | 8.07    | 31  | .790697  | 3.15    | .208162  | 8.25    |
| 32  | .779441  | 3.22    | 179323   | 8.07    | 32  | .790886  | 3.15    | .208657  | 8.23    |
| 33  | .779634  | 3.20    | 179807   | 8.05    | 33  | .791075  | 3.15    | .209151  | 8.25    |
| 34  | .779826  | 3.20    | 180290   | 8.07    | 34  | .791264  | 3.15    | .209646  | 8.25    |
| 35  | 9.780018 | 3.22    | 0.180774 | 8.08    | 35  | 9.791453 | 3.13    | 0.210141 | 8.25    |
| 36  | .780211  | 3.20    | 181259   | 8.07    | 36  | .791641  | 3.15    | .210636  | 8.25    |
| 37  | .780403  | 3.20    | 181743   | 8.07    | 37  | .791830  | 3.15    | .211131  | 8.27    |
| 38  | .780595  | 3.20    | 182227   | 8.08    | 38  | .792019  | 3.13    | .211627  | 8.27    |
| 39  | .780787  | 3.22    | 182712   | 8.08    | 39  | .792207  | 3.15    | .212123  | 8.25    |
| 40  | 9.780980 | 3.20    | 0.183197 | 8.08    | 40  | 9.792396 | 3.13    | 0.212618 | 8.28    |
| 41  | .781172  | 3.20    | 183682   | 8.08    | 41  | .792584  | 3.13    | .213115  | 8.27    |
| 42  | .781364  | 3.20    | 184167   | 8.10    | 42  | .792772  | 3.15    | .213611  | 8.27    |
| 43  | .781556  | 3.18    | 184653   | 8.08    | 43  | .792961  | 3.13    | .214107  | 8.28    |
| 44  | .781747  | 3.20    | 185138   | 8.10    | 44  | .793149  | 3.13    | .214604  | 8.28    |
| 45  | 9.781939 | 3.20    | 0.185624 | 8.10    | 45  | 9.793337 | 3.13    | 0.215101 | 8.28    |
| 46  | .782131  | 3.20    | 186110   | 8.10    | 46  | .793525  | 3.15    | .215598  | 8.28    |
| 47  | .782323  | 3.18    | 186596   | 8.10    | 47  | .793714  | 3.13    | .216095  | 8.30    |
| 48  | .782514  | 3.20    | 187082   | 8.10    | 48  | .793902  | 3.13    | .216593  | 8.28    |
| 49  | .782706  | 3.18    | 187568   | 8.12    | 49  | .794090  | 3.12    | .217090  | 8.30    |
| 50  | 9.782897 | 3.20    | 0.188055 | 8.12    | 50  | 9.794277 | 3.13    | 0.217588 | 8.30    |
| 51  | .783089  | 3.18    | 188542   | 8.12    | 51  | .794465  | 3.13    | .218086  | 8.32    |
| 52  | .783280  | 3.18    | 189029   | 8.12    | 52  | .794653  | 3.13    | .218585  | 8.30    |
| 53  | .783471  | 3.20    | 189516   | 8.12    | 53  | .794841  | 3.12    | .219083  | 8.32    |
| 54  | .783663  | 3.18    | 190003   | 8.13    | 54  | .795028  | 3.13    | .219582  | 8.32    |
| 55  | 9.783854 | 3.18    | 0.190491 | 8.12    | 55  | 9.795216 | 3.13    | 0.220081 | 8.32    |
| 56  | .784045  | 3.18    | 190978   | 8.13    | 56  | .795404  | 3.12    | .220580  | 8.32    |
| 57  | .784236  | 3.18    | 191466   | 8.13    | 57  | .795591  | 3.12    | .221079  | 8.32    |
| 58  | .784427  | 3.18    | 191954   | 8.15    | 58  | .795779  | 3.13    | .221578  | 8.32    |
| 59  | .784618  | 3.18    | 192443   | 8.13    | 59  | .795966  | 3.12    | .222078  | 8.33    |
| 60  | 9.784809 | 3.18    | 0.192931 | 8.13    | 60  | 9.796153 | 3.12    | 0.222578 | 8.33    |

| 68° |          |        |          |        | 69° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.796153 |        | 0.222578 |        | 0   | 9.807286 |        | 0.252957 |        |
| 1   | .796341  | 3.13   | .223078  | 8.33   | 1   | .807470  | 3.07   | .253470  | 8.55   |
| 2   | .796528  | 3.12   | .223578  | 8.35   | 2   | .807654  | 3.07   | .253983  | 8.55   |
| 3   | .796715  | 3.12   | .224079  | 8.35   | 3   | .807837  | 3.05   | .254497  | 8.57   |
| 4   | .796902  | 3.12   | .224579  | 8.35   | 4   | .808021  | 3.07   | .255010  | 8.55   |
| 5   | 9.797089 | 3.12   | 0.225080 | 8.35   | 5   | 9.808204 | 3.05   | 0.255524 | 8.57   |
| 6   | .797276  | 3.12   | .225581  | 8.35   | 6   | .808388  | 3.07   | .256039  | 8.58   |
| 7   | .797463  | 3.12   | .226083  | 8.35   | 7   | .808571  | 3.05   | .256553  | 8.57   |
| 8   | .797650  | 3.12   | .226584  | 8.35   | 8   | .808755  | 3.07   | .257068  | 8.58   |
| 9   | .797837  | 3.10   | .227086  | 8.37   | 9   | .808938  | 3.05   | .257582  | 8.57   |
| 10  | 9.798023 | 3.12   | 0.227588 | 8.37   | 10  | 9.809121 | 3.05   | 0.258098 | 8.58   |
| 11  | .798210  | 3.12   | .228090  | 8.37   | 11  | .809305  | 3.07   | .258613  | 8.58   |
| 12  | .798397  | 3.10   | .228592  | 8.38   | 12  | .809488  | 3.05   | .259129  | 8.58   |
| 13  | .798583  | 3.12   | .229095  | 8.38   | 13  | .809671  | 3.05   | .259644  | 8.60   |
| 14  | .798770  | 3.10   | .229598  | 8.38   | 14  | .809854  | 3.05   | .260160  | 8.62   |
| 15  | 9.798956 | 3.10   | 0.230101 | 8.38   | 15  | 9.810037 | 3.05   | 0.260677 | 8.60   |
| 16  | .799142  | 3.12   | .230604  | 8.38   | 16  | .810220  | 3.05   | .261193  | 8.62   |
| 17  | .799329  | 3.10   | .231107  | 8.40   | 17  | .810403  | 3.05   | .261710  | 8.62   |
| 18  | .799515  | 3.10   | .231611  | 8.40   | 18  | .810585  | 3.03   | .262227  | 8.62   |
| 19  | .799701  | 3.10   | .232115  | 8.40   | 19  | .810768  | 3.05   | .262744  | 8.63   |
| 20  | 9.799887 | 3.12   | 0.232619 | 8.40   | 20  | 9.810951 | 3.05   | 0.263262 | 8.62   |
| 21  | .800074  | 3.10   | .233123  | 8.40   | 21  | .811134  | 3.03   | .263779  | 8.63   |
| 22  | .800260  | 3.10   | .233627  | 8.42   | 22  | .811316  | 3.05   | .264297  | 8.63   |
| 23  | .800446  | 3.08   | .234132  | 8.42   | 23  | .811499  | 3.03   | .264815  | 8.65   |
| 24  | .800631  | 3.10   | .234637  | 8.42   | 24  | .811681  | 3.05   | .265334  | 8.65   |
| 25  | 9.800817 | 3.10   | 0.235142 | 8.42   | 25  | 9.811864 | 3.05   | 0.265853 | 8.63   |
| 26  | .801003  | 3.10   | .235647  | 8.42   | 26  | .812046  | 3.03   | .266371  | 8.67   |
| 27  | .801189  | 3.10   | .236153  | 8.43   | 27  | .812228  | 3.03   | .266891  | 8.65   |
| 28  | .801375  | 3.10   | .236658  | 8.43   | 28  | .812410  | 3.03   | .267410  | 8.67   |
| 29  | .801560  | 3.10   | .237164  | 8.43   | 29  | .812593  | 3.05   | .267930  | 8.65   |
| 30  | 9.801746 | 3.08   | 0.237670 | 8.45   | 30  | 9.812775 | 3.03   | 0.268449 | 8.68   |
| 31  | .801931  | 3.10   | .238177  | 8.43   | 31  | .812957  | 3.03   | .268970  | 8.67   |
| 32  | .802117  | 3.08   | .238683  | 8.45   | 32  | .813139  | 3.03   | .269490  | 8.68   |
| 33  | .802302  | 3.08   | .239190  | 8.45   | 33  | .813321  | 3.03   | .270011  | 8.67   |
| 34  | .802487  | 3.08   | .239697  | 8.45   | 34  | .813503  | 3.03   | .270531  | 8.68   |
| 35  | 9.802673 | 3.10   | 0.240204 | 8.47   | 35  | 9.813685 | 3.03   | 0.271052 | 8.70   |
| 36  | .802858  | 3.08   | .240712  | 8.45   | 36  | .813868  | 3.02   | .271574  | 8.68   |
| 37  | .803043  | 3.08   | .241219  | 8.47   | 37  | .814048  | 3.03   | .272095  | 8.70   |
| 38  | .803228  | 3.08   | .241727  | 8.47   | 38  | .814230  | 3.03   | .272617  | 8.70   |
| 39  | .803413  | 3.08   | .242235  | 8.48   | 39  | .814411  | 3.02   | .273139  | 8.72   |
| 40  | 9.803598 | 3.08   | 0.242744 | 8.47   | 40  | 9.814593 | 3.03   | 0.273662 | 8.70   |
| 41  | .803783  | 3.08   | .243252  | 8.48   | 41  | .814775  | 3.02   | .274184  | 8.72   |
| 42  | .803968  | 3.08   | .243761  | 8.48   | 42  | .814956  | 3.02   | .274707  | 8.72   |
| 43  | .804153  | 3.08   | .244270  | 8.48   | 43  | .815137  | 3.02   | .275230  | 8.72   |
| 44  | .804338  | 3.07   | .244779  | 8.50   | 44  | .815319  | 3.03   | .275753  | 8.73   |
| 45  | 9.804522 | 3.08   | 0.245289 | 8.48   | 45  | 9.815500 | 3.02   | 0.276277 | 8.73   |
| 46  | .804707  | 3.08   | .245798  | 8.50   | 46  | .815681  | 3.02   | .276801  | 8.73   |
| 47  | .804892  | 3.08   | .246308  | 8.50   | 47  | .815862  | 3.02   | .277325  | 8.73   |
| 48  | .805076  | 3.07   | .246818  | 8.52   | 48  | .816044  | 3.03   | .277849  | 8.75   |
| 49  | .805261  | 3.08   | .247329  | 8.50   | 49  | .816225  | 3.02   | .278374  | 8.75   |
| 50  | 9.805445 | 3.07   | 0.247839 | 8.52   | 50  | 9.816406 | 3.02   | 0.278899 | 8.75   |
| 51  | .805629  | 3.08   | .248350  | 8.52   | 51  | .816587  | 3.00   | .279424  | 8.75   |
| 52  | .805814  | 3.07   | .248861  | 8.52   | 52  | .816767  | 3.02   | .279949  | 8.77   |
| 53  | .805998  | 3.07   | .249372  | 8.52   | 53  | .816948  | 3.02   | .280475  | 8.75   |
| 54  | .806182  | 3.07   | .249883  | 8.53   | 54  | .817129  | 3.02   | .281000  | 8.78   |
| 55  | 9.806366 | 3.07   | 0.250395 | 8.53   | 55  | 9.817310 | 3.02   | 0.281527 | 8.77   |
| 56  | .806550  | 3.07   | .250907  | 8.53   | 56  | .817491  | 3.00   | .282053  | 8.77   |
| 57  | .806734  | 3.07   | .251419  | 8.53   | 57  | .817671  | 3.02   | .282580  | 8.78   |
| 58  | .806918  | 3.07   | .251932  | 8.55   | 58  | .817852  | 3.02   | .283106  | 8.80   |
| 59  | .807102  | 3.07   | .252444  | 8.55   | 59  | .818032  | 3.00   | .283634  | 8.78   |
| 60  | 9.807286 | 3.07   | 0.252957 | 8.55   | 60  | 9.818213 | 3.02   | 0.284161 | 8.78   |

| 70° |          |         |          |         | 71° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. | M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.818213 | 3.00    | 0.284161 | 8.80    | 0   | 9.828938 | 2.95    | 0.316296 | 9.07    |
| 1   | .818393  | 3.00    | .284689  | 8.78    | 1   | .829115  | 2.95    | .316840  | 9.08    |
| 2   | .818573  | 3.02    | .285216  | 8.82    | 2   | .829292  | 2.95    | .317385  | 9.07    |
| 3   | .818754  | 3.02    | .285745  | 8.80    | 3   | .829469  | 2.95    | .317929  | 9.10    |
| 4   | .818934  | 3.00    | .286273  | 8.82    | 4   | .829646  | 2.95    | .318475  | 9.08    |
| 5   | 9.819114 | 3.00    | 0.286802 | 8.82    | 5   | 9.829823 | 2.95    | 0.319020 | 9.08    |
| 6   | .819294  | 3.00    | .287331  | 8.82    | 6   | .830000  | 2.95    | .319565  | 9.08    |
| 7   | .819474  | 3.00    | .287860  | 8.82    | 7   | .830177  | 2.95    | .320111  | 9.10    |
| 8   | .819654  | 3.00    | .288389  | 8.82    | 8   | .830353  | 2.93    | .320658  | 9.12    |
| 9   | .819834  | 3.00    | .288919  | 8.83    | 9   | .830530  | 2.95    | .321204  | 9.10    |
| 10  | 9.820014 | 3.00    | 0.289449 | 8.83    | 10  | 9.830706 | 2.95    | 0.321751 | 9.12    |
| 11  | .820194  | 3.00    | .289979  | 8.85    | 11  | .830883  | 2.93    | .322298  | 9.12    |
| 12  | .820374  | 2.98    | .290510  | 8.85    | 12  | .831059  | 2.95    | .322845  | 9.13    |
| 13  | .820553  | 3.00    | .291041  | 8.85    | 13  | .831236  | 2.95    | .323393  | 9.13    |
| 14  | .820733  | 3.00    | .291572  | 8.85    | 14  | .831412  | 2.93    | .323941  | 9.13    |
| 15  | 9.820913 | 3.00    | 0.292103 | 8.85    | 15  | 9.831589 | 2.95    | 0.324489 | 9.13    |
| 16  | .821092  | 2.98    | .292635  | 8.87    | 16  | .831765  | 2.93    | .325038  | 9.15    |
| 17  | .821272  | 3.00    | .293166  | 8.85    | 17  | .831941  | 2.93    | .325587  | 9.15    |
| 18  | .821451  | 2.98    | .293698  | 8.87    | 18  | .832117  | 2.93    | .326136  | 9.15    |
| 19  | .821631  | 3.00    | .294231  | 8.88    | 19  | .832293  | 2.93    | .326686  | 9.17    |
| 20  | 9.821810 | 2.98    | 0.294764 | 8.88    | 20  | 9.832469 | 2.93    | 0.327235 | 9.15    |
| 21  | .821989  | 2.98    | .295296  | 8.87    | 21  | .832645  | 2.93    | .327786  | 9.18    |
| 22  | .822168  | 3.00    | .295830  | 8.90    | 22  | .832821  | 2.93    | .328336  | 9.17    |
| 23  | .822348  | 2.98    | .296363  | 8.88    | 23  | .832997  | 2.93    | .328887  | 9.18    |
| 24  | .822527  | 2.98    | .296897  | 8.90    | 24  | .833173  | 2.93    | .329438  | 9.18    |
| 25  | 9.822706 | 2.98    | 0.297431 | 8.90    | 25  | 9.833349 | 2.93    | 0.329989 | 9.20    |
| 26  | .822885  | 2.98    | .297965  | 8.92    | 26  | .833525  | 2.93    | .330541  | 9.20    |
| 27  | .823064  | 2.98    | .298500  | 8.90    | 27  | .833700  | 2.92    | .331093  | 9.20    |
| 28  | .823243  | 2.97    | .299034  | 8.90    | 28  | .833876  | 2.93    | .331645  | 9.20    |
| 29  | .823421  | 2.98    | .299570  | 8.93    | 29  | .834051  | 2.92    | .332198  | 9.22    |
| 30  | 9.823600 | 2.98    | 0.300105 | 8.92    | 30  | 9.834227 | 2.93    | 0.332750 | 9.22    |
| 31  | .823779  | 2.98    | .300641  | 8.92    | 31  | .834402  | 2.92    | .333304  | 9.23    |
| 32  | .823958  | 2.97    | .301176  | 8.95    | 32  | .834578  | 2.93    | .333857  | 9.22    |
| 33  | .824136  | 2.98    | .301713  | 8.93    | 33  | .834753  | 2.92    | .334411  | 9.23    |
| 34  | .824315  | 2.97    | .302249  | 8.95    | 34  | .834928  | 2.92    | .334965  | 9.23    |
| 35  | 9.824493 | 2.98    | 0.302786 | 8.95    | 35  | 9.835104 | 2.93    | 0.335520 | 9.25    |
| 36  | .824672  | 2.98    | .303323  | 8.95    | 36  | .835279  | 2.92    | .336074  | 9.23    |
| 37  | .824850  | 2.97    | .303860  | 8.95    | 37  | .835454  | 2.92    | .336629  | 9.25    |
| 38  | .825028  | 2.97    | .304398  | 8.97    | 38  | .835629  | 2.92    | .337185  | 9.27    |
| 39  | .825207  | 2.98    | .304936  | 8.97    | 39  | .835804  | 2.92    | .337741  | 9.27    |
| 40  | 9.825385 | 2.97    | 0.305474 | 8.97    | 40  | 9.835979 | 2.92    | 0.338297 | 9.27    |
| 41  | .825563  | 2.97    | .306012  | 8.98    | 41  | .836154  | 2.92    | .338853  | 9.28    |
| 42  | .825741  | 2.97    | .306551  | 8.98    | 42  | .836329  | 2.92    | .339410  | 9.28    |
| 43  | .825919  | 2.97    | .307090  | 8.98    | 43  | .836504  | 2.92    | .339967  | 9.28    |
| 44  | .826097  | 2.97    | .307629  | 8.98    | 44  | .836678  | 2.92    | .340524  | 9.28    |
| 45  | 9.826275 | 2.97    | 0.308169 | 9.00    | 45  | 9.836853 | 2.92    | 0.341082 | 9.30    |
| 46  | .826453  | 2.97    | .308708  | 8.98    | 46  | .837028  | 2.92    | .341640  | 9.30    |
| 47  | .826631  | 2.97    | .309249  | 9.02    | 47  | .837202  | 2.90    | .342198  | 9.30    |
| 48  | .826809  | 2.97    | .309789  | 9.00    | 48  | .837377  | 2.92    | .342756  | 9.30    |
| 49  | .826987  | 2.97    | .310330  | 9.02    | 49  | .837551  | 2.92    | .343315  | 9.32    |
| 50  | 9.827164 | 2.95    | 0.310871 | 9.02    | 50  | 9.837726 | 2.92    | 0.343875 | 9.33    |
| 51  | .827342  | 2.95    | .311412  | 9.02    | 51  | .837900  | 2.90    | .344434  | 9.32    |
| 52  | .827519  | 2.95    | .311953  | 9.02    | 52  | .838075  | 2.92    | .344994  | 9.33    |
| 53  | .827697  | 2.95    | .312495  | 9.03    | 53  | .838249  | 2.90    | .345554  | 9.33    |
| 54  | .827874  | 2.95    | .313037  | 9.03    | 54  | .838423  | 2.90    | .346115  | 9.35    |
| 55  | 9.828052 | 2.95    | 0.313580 | 9.03    | 55  | 9.838597 | 2.90    | 0.346676 | 9.35    |
| 56  | .828229  | 2.95    | .314122  | 9.05    | 56  | .838771  | 2.90    | .347237  | 9.35    |
| 57  | .828406  | 2.95    | .314665  | 9.05    | 57  | .838945  | 2.90    | .347798  | 9.35    |
| 58  | .828584  | 2.95    | .315209  | 9.07    | 58  | .839119  | 2.90    | .348360  | 9.37    |
| 59  | .828761  | 2.95    | .315752  | 9.05    | 59  | .839293  | 2.90    | .348922  | 9.37    |
| 60  | 9.828938 | 2.95    | 0.316296 | 9.07    | 60  | 9.839467 | 2.90    | 0.349485 | 9.38    |

| 72° |          |        |          |        | 73° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.839467 | 2.90   | 0.349485 | 9.38   | 0   | 9.849805 | 2.85   | 0.383870 |        |
| 1   | .839641  | 2.90   | .350048  | 9.38   | 1   | .849976  | 2.85   | .384454  | 9.73   |
| 2   | .839815  | 2.90   | .350611  | 9.40   | 2   | .850147  | 2.83   | .385038  | 9.73   |
| 3   | .839989  | 2.88   | .351175  | 9.38   | 3   | .850317  | 2.85   | .385623  | 9.75   |
| 4   | .840162  | 2.90   | .351738  | 9.42   | 4   | .850488  | 2.85   | .386209  | 9.77   |
| 5   | 9.840336 | 2.90   | 0.352303 | 9.42   | 5   | 9.850658 | 2.83   | 0.386794 | 9.75   |
| 6   | .840510  | 2.90   | .352867  | 9.40   | 6   | .850829  | 2.85   | .387380  | 9.77   |
| 7   | .840683  | 2.88   | .353432  | 9.42   | 7   | .850999  | 2.83   | .387967  | 9.78   |
| 8   | .840857  | 2.90   | .353997  | 9.42   | 8   | .851169  | 2.85   | .388554  | 9.78   |
| 9   | .841030  | 2.90   | .354563  | 9.43   | 9   | .851340  | 2.83   | .389141  | 9.78   |
| 10  | 9.841204 | 2.88   | 0.355129 | 9.43   | 10  | 9.851510 | 2.83   | 0.389728 | 9.80   |
| 11  | .841377  | 2.88   | .355695  | 9.43   | 11  | .851680  | 2.83   | .390316  | 9.82   |
| 12  | .841550  | 2.88   | .356261  | 9.45   | 12  | .851850  | 2.83   | .390905  | 9.80   |
| 13  | .841723  | 2.88   | .356828  | 9.45   | 13  | .852020  | 2.83   | .391493  | 9.83   |
| 14  | .841896  | 2.90   | .357395  | 9.45   | 14  | .852190  | 2.83   | .392082  | 9.82   |
| 15  | 9.842070 | 2.88   | 0.357963 | 9.47   | 15  | 9.852360 | 2.83   | 0.392672 | 9.83   |
| 16  | .842243  | 2.88   | .358531  | 9.47   | 16  | .852530  | 2.83   | .393262  | 9.83   |
| 17  | .842416  | 2.88   | .359099  | 9.47   | 17  | .852700  | 2.83   | .393852  | 9.83   |
| 18  | .842589  | 2.88   | .359668  | 9.48   | 18  | .852870  | 2.83   | .394443  | 9.85   |
| 19  | .842762  | 2.87   | .360237  | 9.48   | 19  | .853040  | 2.82   | .395034  | 9.85   |
| 20  | 9.842934 | 2.88   | 0.360806 | 9.50   | 20  | 9.853209 | 2.83   | 0.395625 | 9.87   |
| 21  | .843107  | 2.88   | .361376  | 9.50   | 21  | .853379  | 2.83   | .396217  | 9.87   |
| 22  | .843280  | 2.88   | .361946  | 9.50   | 22  | .853549  | 2.82   | .396809  | 9.88   |
| 23  | .843453  | 2.87   | .362516  | 9.52   | 23  | .853718  | 2.83   | .397402  | 9.88   |
| 24  | .843625  | 2.88   | .363087  | 9.52   | 24  | .853888  | 2.83   | .397995  | 9.88   |
| 25  | 9.843798 | 2.87   | 0.363658 | 9.52   | 25  | 9.854057 | 2.82   | 0.398589 | 9.90   |
| 26  | .843970  | 2.88   | .364229  | 9.52   | 26  | .854227  | 2.83   | .399182  | 9.88   |
| 27  | .844143  | 2.88   | .364801  | 9.53   | 27  | .854396  | 2.82   | .399777  | 9.92   |
| 28  | .844315  | 2.87   | .365373  | 9.53   | 28  | .854565  | 2.82   | .400371  | 9.90   |
| 29  | .844488  | 2.88   | .365945  | 9.53   | 29  | .854735  | 2.83   | .400966  | 9.92   |
| 30  | 9.844660 | 2.87   | 0.366518 | 9.55   | 30  | 9.854904 | 2.82   | 0.401562 | 9.93   |
| 31  | .844832  | 2.87   | .367091  | 9.55   | 31  | .855073  | 2.82   | .402154  | 9.93   |
| 32  | .845004  | 2.88   | .367665  | 9.57   | 32  | .855242  | 2.82   | .402754  | 9.93   |
| 33  | .845177  | 2.87   | .368239  | 9.57   | 33  | .855411  | 2.82   | .403351  | 9.95   |
| 34  | .845349  | 2.87   | .368813  | 9.57   | 34  | .855580  | 2.82   | .403948  | 9.95   |
| 35  | 9.845521 | 2.87   | 0.369387 | 9.57   | 35  | 9.855749 | 2.82   | 0.404545 | 9.95   |
| 36  | .845693  | 2.87   | .369962  | 9.58   | 36  | .855918  | 2.82   | .405143  | 9.97   |
| 37  | .845865  | 2.87   | .370538  | 9.60   | 37  | .856087  | 2.82   | .405742  | 9.98   |
| 38  | .846037  | 2.87   | .371113  | 9.58   | 38  | .856255  | 2.82   | .406340  | 9.97   |
| 39  | .846208  | 2.87   | .371689  | 9.62   | 39  | .856424  | 2.82   | .406939  | 9.98   |
| 40  | 9.846380 | 2.87   | 0.372266 | 9.60   | 40  | 9.856593 | 2.82   | 0.407539 | 10.00  |
| 41  | .846552  | 2.87   | .372842  | 9.62   | 41  | .856762  | 2.82   | .408139  | 10.00  |
| 42  | .846724  | 2.85   | .373419  | 9.62   | 42  | .856930  | 2.82   | .408739  | 10.00  |
| 43  | .846895  | 2.85   | .373997  | 9.63   | 43  | .857099  | 2.82   | .409340  | 10.02  |
| 44  | .847067  | 2.85   | .374575  | 9.63   | 44  | .857267  | 2.82   | .409941  | 10.02  |
| 45  | 9.847238 | 2.87   | 0.375153 | 9.63   | 45  | 9.857436 | 2.82   | 0.410543 | 10.03  |
| 46  | .847410  | 2.85   | .375731  | 9.65   | 46  | .857604  | 2.82   | .411145  | 10.03  |
| 47  | .847581  | 2.85   | .376310  | 9.67   | 47  | .857772  | 2.82   | .411747  | 10.03  |
| 48  | .847753  | 2.85   | .376890  | 9.67   | 48  | .857941  | 2.82   | .412350  | 10.05  |
| 49  | .847924  | 2.85   | .377469  | 9.65   | 49  | .858109  | 2.82   | .412954  | 10.07  |
| 50  | 9.848095 | 2.87   | 0.378049 | 9.67   | 50  | 9.858277 | 2.82   | 0.413557 | 10.07  |
| 51  | .848267  | 2.85   | .378630  | 9.68   | 51  | .858445  | 2.82   | .414161  | 10.08  |
| 52  | .848438  | 2.85   | .379210  | 9.70   | 52  | .858613  | 2.82   | .414766  | 10.08  |
| 53  | .848609  | 2.85   | .379792  | 9.68   | 53  | .858781  | 2.82   | .415371  | 10.08  |
| 54  | .848780  | 2.85   | .380373  | 9.70   | 54  | .858949  | 2.82   | .415976  | 10.10  |
| 55  | 9.848951 | 2.85   | 0.380955 | 9.70   | 55  | 9.859117 | 2.82   | 0.416582 | 10.10  |
| 56  | .849122  | 2.85   | .381537  | 9.72   | 56  | .859285  | 2.82   | .417189  | 10.12  |
| 57  | .849293  | 2.85   | .382120  | 9.72   | 57  | .859453  | 2.82   | .417795  | 10.12  |
| 58  | .849464  | 2.83   | .382703  | 9.72   | 58  | .859621  | 2.78   | .418402  | 10.13  |
| 59  | .849634  | 2.85   | .383286  | 9.72   | 59  | .859788  | 2.80   | .419010  | 10.13  |
| 60  | 9.849805 | 2.85   | 0.383870 | 9.73   | 60  | 9.859956 | 2.80   | 0.419618 | 10.13  |

| 74° |          |         |          |         | 75° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. r''. | Exsec.   | D. r''. | M.  | Vers.    | D. r''. | Exsec.   | D. r''. |
| 0   | 9.859956 | 2.80    | 0.419618 | 10.13   | 0   | 9.869924 |         | 0.456928 |         |
| 1   | .860124  | 2.78    | .420226  | 10.15   | 1   | .870089  | 2.75    | .457564  | 10.60   |
| 2   | .860291  | 2.80    | .420835  | 10.17   | 2   | .870253  | 2.73    | .458201  | 10.62   |
| 3   | .860459  | 2.78    | .421445  | 10.15   | 3   | .870418  | 2.75    | .458839  | 10.63   |
| 4   | .860626  | 2.80    | .422054  | 10.17   | 4   | .870582  | 2.73    | .459476  | 10.62   |
| 5   | 9.860794 | 2.78    | 0.422664 | 10.18   | 5   | 9.870747 | 2.75    | 0.460115 | 10.65   |
| 6   | .860961  | 2.78    | .423275  | 10.18   | 6   | .870911  | 2.73    | .460754  | 10.65   |
| 7   | .861128  | 2.78    | .423886  | 10.18   | 7   | .871076  | 2.75    | .461393  | 10.65   |
| 8   | .861296  | 2.80    | .424498  | 10.20   | 8   | .871240  | 2.73    | .462033  | 10.67   |
| 9   | .861463  | 2.78    | .425110  | 10.20   | 9   | .871404  | 2.73    | .462673  | 10.68   |
| 10  | 9.861630 | 2.78    | 0.425722 | 10.22   | 10  | 9.871568 | 2.73    | 0.463314 | 10.70   |
| 11  | .861797  | 2.78    | .426335  | 10.22   | 11  | .871732  | 2.73    | .463956  | 10.70   |
| 12  | .861964  | 2.78    | .426948  | 10.23   | 12  | .871896  | 2.73    | .464598  | 10.70   |
| 13  | .862131  | 2.78    | .427562  | 10.23   | 13  | .872060  | 2.73    | .465240  | 10.70   |
| 14  | .862298  | 2.78    | .428176  | 10.23   | 14  | .872224  | 2.73    | .465883  | 10.72   |
| 15  | 9.862465 | 2.78    | 0.428790 | 10.23   | 15  | 9.872388 | 2.73    | 0.466527 | 10.73   |
| 16  | .862632  | 2.78    | .429406  | 10.27   | 16  | .872552  | 2.73    | .467171  | 10.73   |
| 17  | .862799  | 2.77    | .430021  | 10.25   | 17  | .872716  | 2.73    | .467815  | 10.73   |
| 18  | .862966  | 2.78    | .430637  | 10.27   | 18  | .872880  | 2.73    | .468460  | 10.75   |
| 19  | .863132  | 2.78    | .431253  | 10.28   | 19  | .873043  | 2.72    | .469106  | 10.77   |
| 20  | 9.863299 | 2.77    | 0.431870 | 10.30   | 20  | 9.873207 | 2.73    | 0.469752 | 10.77   |
| 21  | .863465  | 2.78    | .432488  | 10.28   | 21  | .873371  | 2.72    | .470398  | 10.78   |
| 22  | .863632  | 2.78    | .433105  | 10.32   | 22  | .873534  | 2.73    | .471045  | 10.80   |
| 23  | .863799  | 2.77    | .433724  | 10.30   | 23  | .873698  | 2.72    | .471693  | 10.80   |
| 24  | .863965  | 2.77    | .434342  | 10.32   | 24  | .873861  | 2.73    | .472341  | 10.82   |
| 25  | 9.864131 | 2.78    | 0.434961 | 10.33   | 25  | 9.874025 | 2.72    | 0.472990 | 10.82   |
| 26  | .864298  | 2.77    | .435581  | 10.33   | 26  | .874188  | 2.72    | .473639  | 10.83   |
| 27  | .864464  | 2.77    | .436201  | 10.33   | 27  | .874351  | 2.73    | .474289  | 10.83   |
| 28  | .864630  | 2.78    | .436821  | 10.35   | 28  | .874515  | 2.72    | .474939  | 10.85   |
| 29  | .864797  | 2.77    | .437442  | 10.37   | 29  | .874678  | 2.72    | .475590  | 10.87   |
| 30  | 9.864963 | 2.77    | 0.438064 | 10.37   | 30  | 9.874841 | 2.72    | 0.476242 | 10.85   |
| 31  | .865129  | 2.77    | .438686  | 10.37   | 31  | .875004  | 2.72    | .476893  | 10.88   |
| 32  | .865295  | 2.77    | .439308  | 10.38   | 32  | .875167  | 2.72    | .477545  | 10.88   |
| 33  | .865461  | 2.77    | .439931  | 10.38   | 33  | .875330  | 2.72    | .478199  | 10.88   |
| 34  | .865627  | 2.77    | .440554  | 10.40   | 34  | .875493  | 2.72    | .478852  | 10.90   |
| 35  | 9.865793 | 2.77    | 0.441178 | 10.40   | 35  | 9.875656 | 2.72    | 0.479506 | 10.92   |
| 36  | .865959  | 2.75    | .441802  | 10.42   | 36  | .875819  | 2.72    | .480161  | 10.92   |
| 37  | .866124  | 2.75    | .442427  | 10.42   | 37  | .875982  | 2.72    | .480816  | 10.92   |
| 38  | .866290  | 2.77    | .443052  | 10.43   | 38  | .876145  | 2.72    | .481472  | 10.93   |
| 39  | .866456  | 2.77    | .443678  | 10.43   | 39  | .876308  | 2.70    | .482128  | 10.95   |
| 40  | 9.866622 | 2.75    | 0.444304 | 10.45   | 40  | 9.876470 | 2.72    | 0.482785 | 10.95   |
| 41  | .866787  | 2.77    | .444931  | 10.45   | 41  | .876633  | 2.72    | .483442  | 10.97   |
| 42  | .866953  | 2.75    | .445558  | 10.45   | 42  | .876796  | 2.70    | .484100  | 10.98   |
| 43  | .867118  | 2.77    | .446185  | 10.47   | 43  | .876958  | 2.72    | .484759  | 10.98   |
| 44  | .867284  | 2.75    | .446813  | 10.48   | 44  | .877121  | 2.70    | .485418  | 10.98   |
| 45  | 9.867449 | 2.75    | 0.447442 | 10.48   | 45  | 9.877283 | 2.70    | 0.486077 | 11.02   |
| 46  | .867614  | 2.77    | .448071  | 10.48   | 46  | .877445  | 2.72    | .486738  | 11.00   |
| 47  | .867780  | 2.75    | .448700  | 10.50   | 47  | .877608  | 2.70    | .487398  | 11.02   |
| 48  | .867945  | 2.75    | .449330  | 10.52   | 48  | .877770  | 2.70    | .488059  | 11.03   |
| 49  | .868110  | 2.75    | .449961  | 10.52   | 49  | .877932  | 2.72    | .488721  | 11.05   |
| 50  | 9.868275 | 2.75    | 0.450592 | 10.52   | 50  | 9.878095 | 2.70    | 0.489384 | 11.05   |
| 51  | .868440  | 2.77    | .451223  | 10.53   | 51  | .878257  | 2.70    | .490047  | 11.05   |
| 52  | .868606  | 2.75    | .451855  | 10.53   | 52  | .878419  | 2.70    | .490710  | 11.07   |
| 53  | .868771  | 2.75    | .452487  | 10.55   | 53  | .878581  | 2.70    | .491374  | 11.08   |
| 54  | .868936  | 2.73    | .453120  | 10.57   | 54  | .878743  | 2.70    | .492039  | 11.08   |
| 55  | 9.869100 | 2.75    | 0.453754 | 10.57   | 55  | 9.878905 | 2.70    | 0.492704 | 11.10   |
| 56  | .869265  | 2.75    | .454388  | 10.57   | 56  | .879067  | 2.70    | .493370  | 11.10   |
| 57  | .869430  | 2.75    | .455022  | 10.57   | 57  | .879229  | 2.68    | .494036  | 11.12   |
| 58  | .869595  | 2.75    | .455657  | 10.58   | 58  | .879390  | 2.70    | .494703  | 11.13   |
| 59  | .869760  | 2.73    | .456292  | 10.60   | 59  | .879552  | 2.70    | .495371  | 11.13   |
| 60  | 9.869924 |         | 0.456928 |         | 60  | 9.879714 |         | 0.496039 |         |

| 75° |          |        |          |        | 77° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.879714 | 2.70   | 0.496039 | 11.13  | 0   | 9.889329 | 2.65   | 0.537241 | 11.77  |
| 1   | .879876  | 2.68   | .496707  | 11.17  | 1   | .889488  | 2.65   | .537947  | 11.78  |
| 2   | .880037  | 2.70   | .497377  | 11.17  | 2   | .889647  | 2.65   | .538654  | 11.80  |
| 3   | .880199  | 2.68   | .498047  | 11.17  | 3   | .889805  | 2.65   | .539362  | 11.82  |
| 4   | .880360  | 2.70   | .498717  | 11.18  | 4   | .889964  | 2.65   | .540071  | 11.82  |
| 5   | 9.880522 | 2.68   | 0.499388 | 11.20  | 5   | 9.890123 | 2.65   | 0.540780 | 11.83  |
| 6   | .880683  | 2.70   | .500060  | 11.20  | 6   | .890281  | 2.63   | .541490  | 11.83  |
| 7   | .880845  | 2.70   | .500732  | 11.22  | 7   | .890440  | 2.65   | .542200  | 11.83  |
| 8   | .881006  | 2.68   | .501405  | 11.22  | 8   | .890598  | 2.63   | .542911  | 11.85  |
| 9   | .881167  | 2.68   | .502078  | 11.23  | 9   | .890757  | 2.65   | .543623  | 11.88  |
| 10  | 9.881328 | 2.70   | 0.502752 | 11.23  | 10  | 9.890915 | 2.63   | 0.544336 | 11.88  |
| 11  | .881490  | 2.68   | .503426  | 11.27  | 11  | .891073  | 2.65   | .545049  | 11.90  |
| 12  | .881651  | 2.68   | .504102  | 11.25  | 12  | .891232  | 2.63   | .545763  | 11.90  |
| 13  | .881812  | 2.68   | .504777  | 11.28  | 13  | .891390  | 2.63   | .546477  | 11.93  |
| 14  | .881973  | 2.68   | .505454  | 11.28  | 14  | .891548  | 2.63   | .547193  | 11.93  |
| 15  | 9.882134 | 2.68   | 0.506131 | 11.28  | 15  | 9.891706 | 2.63   | 0.547909 | 11.95  |
| 16  | .882295  | 2.68   | .506808  | 11.30  | 16  | .891864  | 2.63   | .548626  | 11.95  |
| 17  | .882456  | 2.68   | .507486  | 11.32  | 17  | .892022  | 2.63   | .549343  | 11.97  |
| 18  | .882617  | 2.67   | .508165  | 11.32  | 18  | .892180  | 2.63   | .550061  | 11.98  |
| 19  | .882777  | 2.68   | .508844  | 11.33  | 19  | .892338  | 2.63   | .550780  | 12.00  |
| 20  | 9.882938 | 2.68   | 0.509524 | 11.35  | 20  | 9.892496 | 2.63   | 0.551500 | 12.00  |
| 21  | .883099  | 2.68   | .510205  | 11.35  | 21  | .892654  | 2.63   | .552220  | 12.02  |
| 22  | .883260  | 2.67   | .510886  | 11.37  | 22  | .892812  | 2.62   | .552941  | 12.03  |
| 23  | .883420  | 2.68   | .511568  | 11.37  | 23  | .892969  | 2.63   | .553663  | 12.03  |
| 24  | .883581  | 2.67   | .512250  | 11.38  | 24  | .893127  | 2.63   | .554385  | 12.07  |
| 25  | 9.883741 | 2.68   | 0.512933 | 11.40  | 25  | 9.893285 | 2.62   | 0.555109 | 12.07  |
| 26  | .883902  | 2.67   | .513617  | 11.40  | 26  | .893442  | 2.63   | .555833  | 12.07  |
| 27  | .884062  | 2.68   | .514301  | 11.42  | 27  | .893600  | 2.63   | .556557  | 12.10  |
| 28  | .884223  | 2.67   | .514986  | 11.43  | 28  | .893758  | 2.62   | .557283  | 12.10  |
| 29  | .884383  | 2.67   | .515672  | 11.43  | 29  | .893915  | 2.62   | .558009  | 12.12  |
| 30  | 9.884543 | 2.67   | 0.516358 | 11.45  | 30  | 9.894072 | 2.63   | 0.558736 | 12.12  |
| 31  | .884703  | 2.68   | .517045  | 11.45  | 31  | .894230  | 2.62   | .559463  | 12.15  |
| 32  | .884864  | 2.67   | .517732  | 11.47  | 32  | .894387  | 2.62   | .560192  | 12.15  |
| 33  | .885024  | 2.67   | .518420  | 11.48  | 33  | .894544  | 2.63   | .560921  | 12.17  |
| 34  | .885184  | 2.67   | .519109  | 11.48  | 34  | .894702  | 2.62   | .561651  | 12.17  |
| 35  | 9.885344 | 2.67   | 0.519798 | 11.50  | 35  | 9.894859 | 2.62   | 0.562381 | 12.20  |
| 36  | .885504  | 2.67   | .520488  | 11.50  | 36  | .895016  | 2.62   | .563113  | 12.20  |
| 37  | .885664  | 2.67   | .521179  | 11.52  | 37  | .895173  | 2.62   | .563845  | 12.20  |
| 38  | .885824  | 2.65   | .521870  | 11.53  | 38  | .895330  | 2.62   | .564577  | 12.23  |
| 39  | .885983  | 2.67   | .522562  | 11.53  | 39  | .895487  | 2.62   | .565311  | 12.23  |
| 40  | 9.886143 | 2.67   | 0.523254 | 11.55  | 40  | 9.895644 | 2.62   | 0.566045 | 12.27  |
| 41  | .886303  | 2.67   | .523947  | 11.57  | 41  | .895801  | 2.62   | .566781  | 12.25  |
| 42  | .886463  | 2.65   | .524641  | 11.57  | 42  | .895958  | 2.62   | .567517  | 12.28  |
| 43  | .886622  | 2.67   | .525335  | 11.58  | 43  | .896115  | 2.62   | .568253  | 12.28  |
| 44  | .886782  | 2.65   | .526030  | 11.60  | 44  | .896272  | 2.60   | .568990  | 12.32  |
| 45  | 9.886941 | 2.67   | 0.526726 | 11.62  | 45  | 9.896428 | 2.62   | 0.569729 | 12.32  |
| 46  | .887101  | 2.65   | .527423  | 11.62  | 46  | .896585  | 2.62   | .570468  | 12.32  |
| 47  | .887260  | 2.67   | .528120  | 11.62  | 47  | .896742  | 2.60   | .571207  | 12.35  |
| 48  | .887420  | 2.65   | .528817  | 11.65  | 48  | .896898  | 2.62   | .571948  | 12.35  |
| 49  | .887579  | 2.67   | .529516  | 11.65  | 49  | .897055  | 2.60   | .572689  | 12.37  |
| 50  | 9.887739 | 2.65   | 0.530215 | 11.65  | 50  | 9.897211 | 2.62   | 0.573431 | 12.38  |
| 51  | .887898  | 2.65   | .530914  | 11.67  | 51  | .897368  | 2.60   | .574174  | 12.38  |
| 52  | .888057  | 2.65   | .531614  | 11.68  | 52  | .897524  | 2.60   | .574917  | 12.42  |
| 53  | .888216  | 2.65   | .532315  | 11.70  | 53  | .897680  | 2.62   | .575662  | 12.42  |
| 54  | .888375  | 2.65   | .533017  | 11.70  | 54  | .897837  | 2.60   | .576407  | 12.43  |
| 55  | 9.888534 | 2.65   | 0.533719 | 11.72  | 55  | 9.897993 | 2.60   | 0.577153 | 12.45  |
| 56  | .888693  | 2.65   | .534422  | 11.73  | 56  | .898149  | 2.60   | .577900  | 12.45  |
| 57  | .888852  | 2.65   | .535126  | 11.73  | 57  | .898305  | 2.60   | .578647  | 12.48  |
| 58  | .889011  | 2.65   | .535830  | 11.75  | 58  | .898461  | 2.62   | .579396  | 12.48  |
| 59  | .889170  | 2.65   | .536535  | 11.75  | 59  | .898618  | 2.62   | .580145  | 12.48  |
| 60  | 9.889329 | 2.65   | 0.537241 | 11.77  | 60  | 9.898774 | 2.60   | 0.580895 | 12.50  |

| 78° |          |         |          |         | 79° |          |         |          |         |
|-----|----------|---------|----------|---------|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. | M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.898774 | 2.60    | 0.580895 | 12.50   | 0   | 9.908051 | 2.55    | 0.627452 | 13.40   |
| 1   | .898930  | 2.60    | .581645  | 12.53   | 1   | .908204  | 2.55    | .628256  | 13.40   |
| 2   | .899086  | 2.58    | .582397  | 12.53   | 2   | .908357  | 2.57    | .629060  | 13.43   |
| 3   | .899241  | 2.60    | .583149  | 12.57   | 3   | .908511  | 2.55    | .629866  | 13.45   |
| 4   | .899397  | 2.60    | .583903  | 12.57   | 4   | .908664  | 2.55    | .630673  | 13.45   |
| 5   | 9.899553 | 2.60    | 0.584657 | 12.57   | 5   | 9.908817 | 2.55    | 0.631480 | 13.48   |
| 6   | .899709  | 2.60    | .585411  | 12.60   | 6   | .908970  | 2.55    | .632289  | 13.48   |
| 7   | .899865  | 2.58    | .586167  | 12.60   | 7   | .909123  | 2.55    | .633098  | 13.52   |
| 8   | .900020  | 2.60    | .586923  | 12.63   | 8   | .909276  | 2.55    | .633909  | 13.52   |
| 9   | .900176  | 2.58    | .587681  | 12.63   | 9   | .909428  | 2.55    | .634720  | 13.55   |
| 10  | 9.900331 | 2.60    | 0.588439 | 12.65   | 10  | 9.909581 | 2.55    | 0.635533 | 13.55   |
| 11  | .900487  | 2.58    | .589198  | 12.65   | 11  | .909734  | 2.55    | .636346  | 13.58   |
| 12  | .900642  | 2.60    | .589957  | 12.68   | 12  | .909887  | 2.53    | .637161  | 13.58   |
| 13  | .900798  | 2.58    | .590718  | 12.68   | 13  | .910039  | 2.55    | .637976  | 13.60   |
| 14  | .900953  | 2.58    | .591479  | 12.72   | 14  | .910192  | 2.55    | .638792  | 13.63   |
| 15  | 9.901108 | 2.60    | 0.592242 | 12.72   | 15  | 9.910345 | 2.55    | 0.639610 | 13.63   |
| 16  | .901264  | 2.58    | .593005  | 12.73   | 16  | .910497  | 2.53    | .640428  | 13.67   |
| 17  | .901419  | 2.58    | .593769  | 12.73   | 17  | .910650  | 2.55    | .641248  | 13.67   |
| 18  | .901574  | 2.58    | .594533  | 12.77   | 18  | .910802  | 2.55    | .642068  | 13.70   |
| 19  | .901729  | 2.58    | .595299  | 12.78   | 19  | .910955  | 2.53    | .642890  | 13.72   |
| 20  | 9.901884 | 2.60    | 0.596066 | 12.80   | 20  | 9.911107 | 2.53    | 0.643713 | 13.72   |
| 21  | .902040  | 2.58    | .596833  | 12.80   | 21  | .911259  | 2.55    | .644536  | 13.75   |
| 22  | .902195  | 2.58    | .597601  | 12.82   | 22  | .911412  | 2.53    | .645361  | 13.75   |
| 23  | .902350  | 2.57    | .598370  | 12.83   | 23  | .911564  | 2.53    | .646186  | 13.78   |
| 24  | .902504  | 2.58    | .599140  | 12.85   | 24  | .911716  | 2.53    | .647013  | 13.80   |
| 25  | 9.902659 | 2.58    | 0.599911 | 12.85   | 25  | 9.911868 | 2.53    | 0.647841 | 13.82   |
| 26  | .902814  | 2.58    | .600682  | 12.88   | 26  | .912020  | 2.53    | .648670  | 13.82   |
| 27  | .902969  | 2.58    | .601455  | 12.88   | 27  | .912172  | 2.53    | .649499  | 13.85   |
| 28  | .903124  | 2.57    | .602228  | 12.92   | 28  | .912324  | 2.53    | .650330  | 13.87   |
| 29  | .903278  | 2.58    | .603003  | 12.92   | 29  | .912476  | 2.53    | .651162  | 13.88   |
| 30  | 9.903433 | 2.58    | 0.603778 | 12.93   | 30  | 9.912628 | 2.53    | 0.651995 | 13.90   |
| 31  | .903588  | 2.57    | .604554  | 12.95   | 31  | .912780  | 2.53    | .652829  | 13.92   |
| 32  | .903742  | 2.58    | .605331  | 12.95   | 32  | .912932  | 2.53    | .653664  | 13.95   |
| 33  | .903897  | 2.57    | .606108  | 12.98   | 33  | .913084  | 2.52    | .654501  | 13.95   |
| 34  | .904051  | 2.58    | .606887  | 13.00   | 34  | .913235  | 2.53    | .655338  | 13.97   |
| 35  | 9.904206 | 2.57    | 0.607667 | 13.00   | 35  | 9.913387 | 2.53    | 0.656176 | 14.00   |
| 36  | .904360  | 2.57    | .608447  | 13.02   | 36  | .913539  | 2.52    | .657016  | 14.00   |
| 37  | .904514  | 2.57    | .609228  | 13.03   | 37  | .913690  | 2.53    | .657856  | 14.03   |
| 38  | .904668  | 2.58    | .610010  | 13.07   | 38  | .913842  | 2.52    | .658698  | 14.03   |
| 39  | .904823  | 2.57    | .610794  | 13.07   | 39  | .913993  | 2.53    | .659540  | 14.07   |
| 40  | 9.904977 | 2.57    | 0.611578 | 13.08   | 40  | 9.914145 | 2.52    | 0.660384 | 14.08   |
| 41  | .905131  | 2.57    | .612363  | 13.08   | 41  | .914296  | 2.53    | .661229  | 14.10   |
| 42  | .905285  | 2.57    | .613148  | 13.12   | 42  | .914448  | 2.52    | .662075  | 14.12   |
| 43  | .905439  | 2.57    | .613935  | 13.13   | 43  | .914599  | 2.52    | .662922  | 14.13   |
| 44  | .905593  | 2.57    | .614723  | 13.13   | 44  | .914750  | 2.53    | .663770  | 14.15   |
| 45  | 9.905747 | 2.57    | 0.615511 | 13.17   | 45  | 9.914902 | 2.52    | 0.664619 | 14.18   |
| 46  | .905901  | 2.57    | .616301  | 13.17   | 46  | .915053  | 2.52    | .665470  | 14.18   |
| 47  | .906055  | 2.57    | .617091  | 13.20   | 47  | .915204  | 2.52    | .666321  | 14.22   |
| 48  | .906209  | 2.57    | .617883  | 13.20   | 48  | .915355  | 2.52    | .667174  | 14.23   |
| 49  | .906363  | 2.55    | .618675  | 13.22   | 49  | .915506  | 2.52    | .668028  | 14.25   |
| 50  | 9.906516 | 2.57    | 0.619468 | 13.23   | 50  | 9.915657 | 2.52    | 0.668883 | 14.27   |
| 51  | .906670  | 2.57    | .620262  | 13.25   | 51  | .915808  | 2.52    | .669739  | 14.28   |
| 52  | .906824  | 2.55    | .621057  | 13.27   | 52  | .915959  | 2.52    | .670596  | 14.30   |
| 53  | .906977  | 2.57    | .621853  | 13.28   | 53  | .916110  | 2.52    | .671454  | 14.33   |
| 54  | .907131  | 2.55    | .622650  | 13.30   | 54  | .916261  | 2.52    | .672314  | 14.33   |
| 55  | 9.907284 | 2.57    | 0.623447 | 13.32   | 55  | 9.916412 | 2.50    | 0.673174 | 14.37   |
| 56  | .907438  | 2.55    | .624247  | 13.33   | 56  | .916562  | 2.52    | .674036  | 14.38   |
| 57  | .907591  | 2.55    | .625047  | 13.35   | 57  | .916713  | 2.52    | .674899  | 14.40   |
| 58  | .907744  | 2.57    | .625848  | 13.37   | 58  | .916864  | 2.50    | .675763  | 14.42   |
| 59  | .907898  | 2.55    | .626650  | 13.37   | 59  | .917014  | 2.52    | .676628  | 14.42   |
| 60  | 9.908051 | 2.55    | 0.627452 | 13.37   | 60  | 9.917165 | 2.52    | 0.677495 | 14.45   |



| 80° |          |        |          |        | 81° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.917165 | 2.52   | 0.677495 | 14.45  | 0   | 9.926119 | 2.47   | 0.731786 | 15.78  |
| 1   | .917316  | 2.50   | .678362  | 14.48  | 1   | .926267  | 2.47   | .732733  | 15.78  |
| 2   | .917466  | 2.50   | .679231  | 14.50  | 2   | .926415  | 2.47   | .733680  | 15.83  |
| 3   | .917616  | 2.52   | .680101  | 14.52  | 3   | .926562  | 2.45   | .734630  | 15.83  |
| 4   | .917767  | 2.50   | .680972  | 14.55  | 4   | .926710  | 2.47   | .735580  | 15.83  |
| 5   | 9.917917 | 2.50   | 0.681845 | 14.55  | 5   | 9.926858 | 2.47   | 0.736532 | 15.87  |
| 6   | .918068  | 2.52   | .682718  | 14.55  | 6   | .927006  | 2.47   | .737486  | 15.90  |
| 7   | .918218  | 2.50   | .683593  | 14.58  | 7   | .927153  | 2.45   | .738441  | 15.92  |
| 8   | .918368  | 2.50   | .684469  | 14.60  | 8   | .927301  | 2.47   | .739398  | 15.95  |
| 9   | .918518  | 2.50   | .685346  | 14.62  | 9   | .927448  | 2.45   | .740356  | 15.97  |
|     |          | 2.50   |          | 14.63  |     |          | 2.47   |          | 16.00  |
| 10  | 9.918668 | 2.50   | 0.686224 | 14.67  | 10  | 9.927596 | 2.45   | 0.741316 | 16.02  |
| 11  | .918818  | 2.50   | .687104  | 14.68  | 11  | .927743  | 2.45   | .742277  | 16.02  |
| 12  | .918968  | 2.50   | .687985  | 14.70  | 12  | .927891  | 2.47   | .743239  | 16.03  |
| 13  | .919118  | 2.50   | .688867  | 14.72  | 13  | .928038  | 2.45   | .744204  | 16.08  |
| 14  | .919268  | 2.50   | .689750  | 14.74  | 14  | .928185  | 2.45   | .745169  | 16.08  |
| 15  | 9.919418 | 2.50   | 0.690634 | 14.73  | 15  | 9.928333 | 2.47   | 0.746137 | 16.13  |
| 16  | .919568  | 2.50   | .691520  | 14.77  | 16  | .928480  | 2.45   | .747105  | 16.13  |
| 17  | .919718  | 2.50   | .692407  | 14.78  | 17  | .928627  | 2.45   | .748076  | 16.18  |
| 18  | .919868  | 2.50   | .693295  | 14.80  | 18  | .928774  | 2.45   | .749048  | 16.20  |
| 19  | .920018  | 2.48   | .694185  | 14.83  | 19  | .928921  | 2.45   | .750021  | 16.22  |
|     |          |        |          | 14.83  |     |          | 2.45   |          | 16.25  |
| 20  | 9.920167 | 2.50   | 0.695075 | 14.87  | 20  | 9.929068 | 2.45   | 0.750996 | 16.28  |
| 21  | .920317  | 2.48   | .695967  | 14.90  | 21  | .929215  | 2.45   | .751973  | 16.30  |
| 22  | .920466  | 2.50   | .696861  | 14.90  | 22  | .929362  | 2.45   | .752951  | 16.33  |
| 23  | .920616  | 2.50   | .697755  | 14.93  | 23  | .929509  | 2.45   | .753931  | 16.35  |
| 24  | .920766  | 2.48   | .698651  | 14.93  | 24  | .929656  | 2.45   | .754912  | 16.38  |
| 25  | 9.920915 | 2.48   | 0.699548 | 14.95  | 25  | 9.929803 | 2.45   | 0.755895 | 16.38  |
| 26  | .921064  | 2.48   | .700446  | 14.97  | 26  | .929950  | 2.45   | .756880  | 16.42  |
| 27  | .921214  | 2.50   | .701346  | 15.00  | 27  | .930097  | 2.45   | .757866  | 16.43  |
| 28  | .921363  | 2.48   | .702247  | 15.02  | 28  | .930243  | 2.43   | .758854  | 16.47  |
| 29  | .921512  | 2.48   | .703149  | 15.03  | 29  | .930390  | 2.45   | .759844  | 16.50  |
|     |          | 2.50   |          | 15.05  |     |          | 2.45   |          | 16.52  |
| 30  | 9.921662 | 2.48   | 0.704052 | 15.08  | 30  | 9.930537 | 2.43   | 0.760835 | 16.53  |
| 31  | .921811  | 2.48   | .704957  | 15.10  | 31  | .930683  | 2.43   | .761827  | 16.58  |
| 32  | .921960  | 2.48   | .705863  | 15.13  | 32  | .930830  | 2.45   | .762822  | 16.60  |
| 33  | .922109  | 2.48   | .706771  | 15.13  | 33  | .930976  | 2.43   | .763818  | 16.62  |
| 34  | .922258  | 2.48   | .707680  | 15.15  | 34  | .931123  | 2.45   | .764815  | 16.62  |
| 35  | 9.922407 | 2.48   | 0.708590 | 15.17  | 35  | 9.931269 | 2.43   | 0.765815 | 16.67  |
| 36  | .922556  | 2.48   | .709501  | 15.18  | 36  | .931416  | 2.45   | .766816  | 16.68  |
| 37  | .922705  | 2.48   | .710414  | 15.22  | 37  | .931562  | 2.43   | .767819  | 16.72  |
| 38  | .922854  | 2.48   | .711328  | 15.23  | 38  | .931708  | 2.43   | .768823  | 16.73  |
| 39  | .923003  | 2.48   | .712243  | 15.25  | 39  | .931855  | 2.45   | .769829  | 16.77  |
|     |          | 2.48   |          | 15.28  |     |          | 2.43   |          | 16.80  |
| 40  | 9.923152 | 2.48   | 0.713160 | 15.30  | 40  | 9.932001 | 2.43   | 0.770837 | 16.82  |
| 41  | .923301  | 2.47   | .714078  | 15.33  | 41  | .932147  | 2.43   | .771846  | 16.87  |
| 42  | .923449  | 2.48   | .714998  | 15.35  | 42  | .932293  | 2.43   | .772858  | 16.87  |
| 43  | .923598  | 2.48   | .715919  | 15.35  | 43  | .932439  | 2.43   | .773870  | 16.92  |
| 44  | .923747  | 2.47   | .716841  | 15.37  | 44  | .932585  | 2.43   | .774885  | 16.92  |
| 45  | 9.923895 | 2.48   | 0.717764 | 15.38  | 45  | 9.932731 | 2.43   | 0.775902 | 16.95  |
| 46  | .924044  | 2.48   | .718689  | 15.42  | 46  | .932877  | 2.43   | .776920  | 16.97  |
| 47  | .924192  | 2.47   | .719616  | 15.45  | 47  | .933023  | 2.43   | .777940  | 17.00  |
| 48  | .924341  | 2.48   | .720543  | 15.45  | 48  | .933169  | 2.43   | .778961  | 17.02  |
| 49  | .924489  | 2.47   | .721472  | 15.48  | 49  | .933315  | 2.43   | .779985  | 17.07  |
|     |          | 2.47   |          | 15.52  |     |          | 2.42   |          | 17.08  |
| 50  | 9.924637 | 2.48   | 0.722403 | 15.53  | 50  | 9.933460 | 2.43   | 0.781010 | 17.12  |
| 51  | .924786  | 2.47   | .723335  | 15.55  | 51  | .933606  | 2.43   | .782037  | 17.13  |
| 52  | .924934  | 2.47   | .724268  | 15.58  | 52  | .933752  | 2.43   | .783065  | 17.18  |
| 53  | .925082  | 2.48   | .725203  | 15.60  | 53  | .933897  | 2.43   | .784096  | 17.20  |
| 54  | .925231  | 2.48   | .726139  | 15.63  | 54  | .934043  | 2.43   | .785128  | 17.20  |
| 55  | 9.925379 | 2.47   | 0.727077 | 15.65  | 55  | 9.934189 | 2.43   | 0.786162 | 17.23  |
| 56  | .925527  | 2.47   | .728016  | 15.65  | 56  | .934334  | 2.42   | .787198  | 17.27  |
| 57  | .925675  | 2.47   | .728956  | 15.67  | 57  | .934480  | 2.43   | .788236  | 17.30  |
| 58  | .925823  | 2.47   | .729898  | 15.70  | 58  | .934625  | 2.42   | .789276  | 17.33  |
| 59  | .925971  | 2.47   | .730842  | 15.73  | 59  | .934770  | 2.42   | .790317  | 17.35  |
| 60  | 9.926119 | 2.47   | 0.731786 | 15.73  | 60  | 9.934916 | 2.43   | 0.791361 | 17.40  |

| 82° |          |        |          |        | 83° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.934916 |        | 0.791361 | 17.42  | 0   | 9.943559 | 2.38   | 0.857665 | 19.55  |
| 1   | .935061  | 2.42   | .792406  | 17.45  | 1   | .943702  | 2.38   | .858838  | 19.58  |
| 2   | .935206  | 2.43   | .793453  | 17.48  | 2   | .943845  | 2.37   | .860013  | 19.63  |
| 3   | .935352  | 2.42   | .794502  | 17.50  | 3   | .943987  | 2.38   | .861191  | 19.67  |
| 4   | .935497  | 2.42   | .795552  | 17.55  | 4   | .944130  | 2.38   | .862371  | 19.72  |
| 5   | 9.935642 | 2.42   | 0.796605 | 17.58  | 5   | 9.944273 | 2.37   | 0.863554 | 19.75  |
| 6   | .935787  | 2.42   | .797660  | 17.60  | 6   | .944415  | 2.38   | .864739  | 19.80  |
| 7   | .935932  | 2.42   | .798716  | 17.63  | 7   | .944558  | 2.37   | .865927  | 19.83  |
| 8   | .936077  | 2.42   | .799774  | 17.68  | 8   | .944700  | 2.38   | .867117  | 19.88  |
| 9   | .936222  | 2.42   | .800835  | 17.70  | 9   | .944843  | 2.37   | .868310  | 19.92  |
| 10  | 9.936367 | 2.42   | 0.801897 | 17.73  | 10  | 9.944985 | 2.37   | 0.869505 | 19.97  |
| 11  | .936512  | 2.42   | .802961  | 17.77  | 11  | .945127  | 2.38   | .870703  | 20.00  |
| 12  | .936657  | 2.40   | .804027  | 17.80  | 12  | .945270  | 2.37   | .871903  | 20.05  |
| 13  | .936801  | 2.42   | .805095  | 17.83  | 13  | .945412  | 2.37   | .873106  | 20.10  |
| 14  | .936946  | 2.42   | .806165  | 17.87  | 14  | .945554  | 2.37   | .874312  | 20.13  |
| 15  | 9.937091 | 2.42   | 0.807237 | 17.90  | 15  | 9.945696 | 2.37   | 0.875520 | 20.18  |
| 16  | .937236  | 2.40   | .808311  | 17.93  | 16  | .945838  | 2.38   | .876731  | 20.23  |
| 17  | .937380  | 2.42   | .809387  | 17.97  | 17  | .945981  | 2.37   | .877945  | 20.27  |
| 18  | .937525  | 2.40   | .810465  | 18.00  | 18  | .946123  | 2.37   | .879167  | 20.30  |
| 19  | .937669  | 2.42   | .811545  | 18.03  | 19  | .946265  | 2.37   | .880379  | 20.37  |
| 20  | 9.937814 | 2.40   | 0.812627 | 18.07  | 20  | 9.946407 | 2.37   | 0.881601 | 20.40  |
| 21  | .937958  | 2.42   | .813711  | 18.10  | 21  | .946549  | 2.35   | .882825  | 20.45  |
| 22  | .938103  | 2.40   | .814797  | 18.13  | 22  | .946690  | 2.37   | .884052  | 20.48  |
| 23  | .938247  | 2.40   | .815885  | 18.17  | 23  | .946832  | 2.37   | .885281  | 20.55  |
| 24  | .938391  | 2.42   | .816975  | 18.20  | 24  | .946974  | 2.37   | .886514  | 20.58  |
| 25  | 9.938536 | 2.40   | 0.818067 | 18.23  | 25  | 9.947116 | 2.37   | 0.887749 | 20.62  |
| 26  | .938680  | 2.40   | .819161  | 18.27  | 26  | .947258  | 2.35   | .888986  | 20.68  |
| 27  | .938824  | 2.40   | .820257  | 18.32  | 27  | .947399  | 2.37   | .890227  | 20.72  |
| 28  | .938968  | 2.40   | .821356  | 18.33  | 28  | .947541  | 2.37   | .891470  | 20.77  |
| 29  | .939112  | 2.42   | .822456  | 18.38  | 29  | .947683  | 2.35   | .892716  | 20.82  |
| 30  | 9.939257 | 2.40   | 0.823559 | 18.42  | 30  | 9.947824 | 2.37   | 0.893965 | 20.87  |
| 31  | .939401  | 2.40   | .824664  | 18.43  | 31  | .947966  | 2.35   | .895217  | 20.92  |
| 32  | .939545  | 2.38   | .825770  | 18.48  | 32  | .948107  | 2.37   | .896472  | 20.95  |
| 33  | .939688  | 2.40   | .826879  | 18.52  | 33  | .948249  | 2.35   | .897729  | 21.00  |
| 34  | .939832  | 2.40   | .827990  | 18.57  | 34  | .948390  | 2.35   | .898989  | 21.07  |
| 35  | 9.939976 | 2.40   | 0.829104 | 18.58  | 35  | 9.948531 | 2.37   | 0.900253 | 21.10  |
| 36  | .940120  | 2.40   | .830219  | 18.63  | 36  | .948673  | 2.35   | .901519  | 21.15  |
| 37  | .940264  | 2.40   | .831337  | 18.65  | 37  | .948814  | 2.35   | .902788  | 21.20  |
| 38  | .940408  | 2.38   | .832456  | 18.70  | 38  | .948955  | 2.35   | .904060  | 21.25  |
| 39  | .940551  | 2.40   | .833578  | 18.75  | 39  | .949096  | 2.35   | .905335  | 21.30  |
| 40  | 9.940695 | 2.40   | 0.834703 | 18.77  | 40  | 9.949237 | 2.37   | 0.906613 | 21.33  |
| 41  | .940839  | 2.38   | .835829  | 18.80  | 41  | .949379  | 2.35   | .907893  | 21.40  |
| 42  | .940982  | 2.40   | .836957  | 18.85  | 42  | .949520  | 2.35   | .909177  | 21.45  |
| 43  | .941126  | 2.38   | .838088  | 18.88  | 43  | .949661  | 2.35   | .910464  | 21.50  |
| 44  | .941269  | 2.40   | .839221  | 18.93  | 44  | .949802  | 2.35   | .911754  | 21.55  |
| 45  | 9.941413 | 2.38   | 0.840357 | 18.95  | 45  | 9.949943 | 2.33   | 0.913047 | 21.60  |
| 46  | .941556  | 2.38   | .841494  | 19.00  | 46  | .950083  | 2.35   | .914343  | 21.65  |
| 47  | .941699  | 2.40   | .842634  | 19.03  | 47  | .950224  | 2.35   | .915642  | 21.70  |
| 48  | .941843  | 2.38   | .843776  | 19.08  | 48  | .950365  | 2.35   | .916944  | 21.75  |
| 49  | .941986  | 2.38   | .844921  | 19.12  | 49  | .950506  | 2.35   | .918249  | 21.82  |
| 50  | 9.942129 | 2.38   | 0.846068 | 19.15  | 50  | 9.950647 | 2.33   | 0.919558 | 21.85  |
| 51  | .942272  | 2.38   | .847217  | 19.18  | 51  | .950787  | 2.35   | .920869  | 21.92  |
| 52  | .942415  | 2.40   | .848368  | 19.23  | 52  | .950928  | 2.35   | .922184  | 21.97  |
| 53  | .942559  | 2.38   | .849522  | 19.27  | 53  | .951069  | 2.33   | .923502  | 22.02  |
| 54  | .942702  | 2.38   | .850678  | 19.30  | 54  | .951209  | 2.35   | .924823  | 22.07  |
| 55  | 9.942845 | 2.38   | 0.851836 | 19.35  | 55  | 9.951350 | 2.33   | 0.926147 | 22.13  |
| 56  | .942988  | 2.38   | .852997  | 19.40  | 56  | .951490  | 2.35   | .927475  | 22.17  |
| 57  | .943131  | 2.37   | .854161  | 19.42  | 57  | .951631  | 2.35   | .928805  | 22.23  |
| 58  | .943273  | 2.38   | .855326  | 19.47  | 58  | .951771  | 2.33   | .930139  | 22.30  |
| 59  | .943416  | 2.38   | .856494  | 19.52  | 59  | .951911  | 2.35   | .931477  | 22.33  |
| 60  | 9.943559 |        | 0.857665 |        | 60  | 9.952052 |        | 0.932817 |        |

| 84° |          |        |          |        | 85° |          |        |          |        |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|--------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1". |
| 0   | 9.952052 | 2.33   | 0.932817 | 22.40  | 0   | 9.960397 | 2.30   | I.020101 | 26.40  |
| 1   | .952192  | 2.33   | .934161  | 22.45  | 1   | .960535  | 2.28   | .021685  | 26.48  |
| 2   | .952332  | 2.35   | .935508  | 22.52  | 2   | .960672  | 2.30   | .023274  | 26.57  |
| 3   | .952473  | 2.33   | .936859  | 22.57  | 3   | .960810  | 2.30   | .024868  | 26.65  |
| 4   | .952613  | 2.33   | .938213  | 22.62  | 4   | .960948  | 2.30   | .026467  | 26.73  |
| 5   | 9.952753 | 2.33   | 0.939570 | 22.68  | 5   | 9.961086 | 2.28   | I.028071 | 26.80  |
| 6   | .952893  | 2.33   | .940931  | 22.75  | 6   | .961223  | 2.28   | .029679  | 26.90  |
| 7   | .953033  | 2.33   | .942296  | 22.78  | 7   | .961361  | 2.28   | .031293  | 26.98  |
| 8   | .953173  | 2.33   | .943663  | 22.85  | 8   | .961498  | 2.30   | .032912  | 27.07  |
| 9   | .953313  | 2.33   | .945034  | 22.92  | 9   | .961636  | 2.28   | .034536  | 27.13  |
| 10  | 9.953453 | 2.33   | 0.946409 | 22.97  | 10  | 9.961773 | 2.30   | I.036164 | 27.23  |
| 11  | .953593  | 2.32   | .947787  | 23.03  | 11  | .961911  | 2.28   | .037798  | 27.33  |
| 12  | .953732  | 2.33   | .949169  | 23.08  | 12  | .962048  | 2.30   | .039438  | 27.40  |
| 13  | .953872  | 2.33   | .950554  | 23.15  | 13  | .962186  | 2.28   | .041082  | 27.50  |
| 14  | .954012  | 2.33   | .951943  | 23.22  | 14  | .962323  | 2.28   | .042732  | 27.58  |
| 15  | 9.954152 | 2.32   | 0.953336 | 23.27  | 15  | 9.962460 | 2.28   | I.044387 | 27.67  |
| 16  | .954291  | 2.33   | .954732  | 23.33  | 16  | .962597  | 2.30   | .046047  | 27.77  |
| 17  | .954431  | 2.33   | .956132  | 23.38  | 17  | .962735  | 2.28   | .047713  | 27.85  |
| 18  | .954571  | 2.32   | .957535  | 23.45  | 18  | .962872  | 2.28   | .049384  | 27.93  |
| 19  | .954710  | 2.33   | .958942  | 23.52  | 19  | .963009  | 2.28   | .051060  | 28.03  |
| 20  | 9.954850 | 2.32   | 0.960353 | 23.57  | 20  | 9.963146 | 2.28   | I.052742 | 28.13  |
| 21  | .954989  | 2.33   | .961767  | 23.65  | 21  | .963283  | 2.28   | .054430  | 28.22  |
| 22  | .955129  | 2.32   | .963186  | 23.70  | 22  | .963420  | 2.28   | .056123  | 28.30  |
| 23  | .955268  | 2.32   | .964608  | 23.77  | 23  | .963557  | 2.28   | .057821  | 28.40  |
| 24  | .955407  | 2.33   | .966034  | 23.82  | 24  | .963694  | 2.28   | .059525  | 28.50  |
| 25  | 9.955547 | 2.32   | 0.967463 | 23.90  | 25  | 9.963831 | 2.28   | I.061235 | 28.60  |
| 26  | .955686  | 2.32   | .968897  | 23.95  | 26  | .963968  | 2.28   | .062951  | 28.68  |
| 27  | .955825  | 2.32   | .970334  | 24.02  | 27  | .964104  | 2.28   | .064672  | 28.78  |
| 28  | .955964  | 2.32   | .971775  | 24.10  | 28  | .964241  | 2.28   | .066399  | 28.88  |
| 29  | .956103  | 2.33   | .973221  | 24.15  | 29  | .964378  | 2.28   | .068132  | 28.98  |
| 30  | 9.956243 | 2.32   | 0.974670 | 24.22  | 30  | 9.964515 | 2.27   | I.069871 | 29.08  |
| 31  | .956382  | 2.32   | .976123  | 24.28  | 31  | .964651  | 2.28   | .071616  | 29.18  |
| 32  | .956521  | 2.32   | .977580  | 24.35  | 32  | .964788  | 2.27   | .073367  | 29.28  |
| 33  | .956660  | 2.32   | .979041  | 24.42  | 33  | .964924  | 2.28   | .075124  | 29.38  |
| 34  | .956799  | 2.30   | .980506  | 24.48  | 34  | .965061  | 2.28   | .076887  | 29.48  |
| 35  | 9.956937 | 2.32   | 0.981975 | 24.55  | 35  | 9.965197 | 2.28   | I.078656 | 29.58  |
| 36  | .957076  | 2.32   | .983448  | 24.63  | 36  | .965334  | 2.27   | .080431  | 29.68  |
| 37  | .957215  | 2.32   | .984926  | 24.68  | 37  | .965470  | 2.28   | .082212  | 29.80  |
| 38  | .957354  | 2.32   | .986407  | 24.77  | 38  | .965607  | 2.27   | .084000  | 29.90  |
| 39  | .957493  | 2.30   | .987893  | 24.83  | 39  | .965743  | 2.27   | .085794  | 30.00  |
| 40  | 9.957631 | 2.32   | 0.989383 | 24.90  | 40  | 9.965879 | 2.28   | I.087594 | 30.12  |
| 41  | .957770  | 2.32   | .990877  | 24.97  | 41  | .966016  | 2.27   | .089401  | 30.22  |
| 42  | .957909  | 2.30   | .992375  | 25.03  | 42  | .966152  | 2.27   | .091214  | 30.32  |
| 43  | .958047  | 2.32   | .993877  | 25.12  | 43  | .966288  | 2.27   | .093033  | 30.43  |
| 44  | .958186  | 2.30   | .995384  | 25.18  | 44  | .966424  | 2.27   | .094859  | 30.55  |
| 45  | 9.958324 | 2.32   | 0.996895 | 25.27  | 45  | 9.966560 | 2.27   | I.096692 | 30.67  |
| 46  | .958463  | 2.30   | .998411  | 25.33  | 46  | .966696  | 2.27   | .098532  | 30.77  |
| 47  | .958601  | 2.30   | .999931  | 25.40  | 47  | .966832  | 2.27   | .099378  | 30.87  |
| 48  | .958739  | 2.32   | I.001455 | 25.48  | 48  | .966968  | 2.27   | .102230  | 31.00  |
| 49  | .958878  | 2.30   | .002984  | 25.55  | 49  | .967104  | 2.27   | .104090  | 31.12  |
| 50  | 9.959016 | 2.30   | I.004517 | 25.63  | 50  | 9.967240 | 2.27   | I.105957 | 31.22  |
| 51  | .959154  | 2.30   | .006055  | 25.70  | 51  | .967376  | 2.27   | .107830  | 31.35  |
| 52  | .959292  | 2.32   | .007597  | 25.78  | 52  | .967512  | 2.25   | .109711  | 31.45  |
| 53  | .959431  | 2.30   | .009144  | 25.85  | 53  | .967647  | 2.27   | .111598  | 31.58  |
| 54  | .959569  | 2.30   | .010695  | 25.93  | 54  | .967783  | 2.27   | .113493  | 31.68  |
| 55  | 9.959707 | 2.30   | I.012251 | 26.00  | 55  | 9.967919 | 2.25   | I.115394 | 31.82  |
| 56  | .959845  | 2.30   | .013811  | 26.10  | 56  | .968054  | 2.27   | .117303  | 31.93  |
| 57  | .959983  | 2.30   | .015377  | 26.17  | 57  | .968190  | 2.27   | .119219  | 32.07  |
| 58  | .960121  | 2.30   | .016947  | 26.23  | 58  | .968326  | 2.25   | .121143  | 32.18  |
| 59  | .960259  | 2.30   | .018521  | 26.33  | 59  | .968461  | 2.27   | .123074  | 32.30  |
| 60  | 9.960397 | 2.30   | I.020101 |        | 60  | 9.968597 | 2.27   | I.125012 |        |

| 86° |          |         |          |         |
|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.968597 | 2.25    | 1.125012 | 32.43   |
| 1   | .968732  | 2.27    | .126958  | 32.55   |
| 2   | .968868  | 2.25    | .128911  | 32.70   |
| 3   | .969003  | 2.25    | .130873  | 32.80   |
| 4   | .969138  | 2.27    | .132841  | 32.95   |
| 5   | 9.969274 | 2.25    | 1.134818 | 33.07   |
| 6   | .969409  | 2.25    | .136802  | 33.22   |
| 7   | .969544  | 2.25    | .138795  | 33.33   |
| 8   | .969679  | 2.25    | .140793  | 33.47   |
| 9   | .969814  | 2.25    | .142803  | 33.62   |
| 10  | 9.969949 | 2.25    | 1.144820 | 33.73   |
| 11  | .970084  | 2.25    | .146844  | 33.88   |
| 12  | .970219  | 2.25    | .148877  | 34.02   |
| 13  | .970354  | 2.25    | .150918  | 34.17   |
| 14  | .970489  | 2.25    | .152968  | 34.30   |
| 15  | 9.970624 | 2.25    | 1.155026 | 34.43   |
| 16  | .970759  | 2.25    | .157092  | 34.60   |
| 17  | .970894  | 2.25    | .159168  | 34.73   |
| 18  | .971029  | 2.25    | .161252  | 34.87   |
| 19  | .971164  | 2.23    | .163344  | 35.03   |
| 20  | 9.971298 | 2.25    | 1.165446 | 35.17   |
| 21  | .971433  | 2.25    | .167556  | 35.33   |
| 22  | .971568  | 2.23    | .169676  | 35.48   |
| 23  | .971702  | 2.25    | .171805  | 35.63   |
| 24  | .971837  | 2.23    | .173943  | 35.78   |
| 25  | 9.971971 | 2.25    | 1.176090 | 35.93   |
| 26  | .972106  | 2.23    | .178246  | 36.10   |
| 27  | .972240  | 2.23    | .180412  | 36.27   |
| 28  | .972374  | 2.25    | .182588  | 36.42   |
| 29  | .972509  | 2.23    | .184773  | 36.58   |
| 30  | 9.972643 | 2.23    | 1.186968 | 36.75   |
| 31  | .972777  | 2.25    | .189173  | 36.90   |
| 32  | .972912  | 2.23    | .191387  | 37.08   |
| 33  | .973046  | 2.23    | .193612  | 37.25   |
| 34  | .973180  | 2.23    | .195847  | 37.42   |
| 35  | 9.973314 | 2.23    | 1.198092 | 37.58   |
| 36  | .973448  | 2.23    | .200347  | 37.77   |
| 37  | .973582  | 2.23    | .202613  | 37.93   |
| 38  | .973716  | 2.23    | .204889  | 38.12   |
| 39  | .973850  | 2.23    | .207176  | 38.28   |
| 40  | 9.973984 | 2.23    | 1.209473 | 38.47   |
| 41  | .974118  | 2.23    | .211781  | 38.67   |
| 42  | .974252  | 2.23    | .214101  | 38.83   |
| 43  | .974386  | 2.22    | .216431  | 39.03   |
| 44  | .974519  | 2.23    | .218773  | 39.20   |
| 45  | 9.974653 | 2.23    | 1.221125 | 39.42   |
| 46  | .974787  | 2.22    | .223490  | 39.58   |
| 47  | .974920  | 2.23    | .225865  | 39.80   |
| 48  | .975054  | 2.23    | .228253  | 39.98   |
| 49  | .975188  | 2.22    | .230652  | 40.18   |
| 50  | 9.975321 | 2.23    | 1.233063 | 40.38   |
| 51  | .975455  | 2.22    | .235486  | 40.58   |
| 52  | .975588  | 2.23    | .237921  | 40.78   |
| 53  | .975722  | 2.22    | .240368  | 41.00   |
| 54  | .975855  | 2.22    | .242828  | 41.20   |
| 55  | 9.975988 | 2.23    | 1.245300 | 41.42   |
| 56  | .976122  | 2.22    | .247785  | 41.63   |
| 57  | .976255  | 2.22    | .250283  | 41.83   |
| 58  | .976388  | 2.22    | .252793  | 42.07   |
| 59  | .976521  | 2.22    | .255317  | 42.28   |
| 60  | 9.976654 | 2.22    | 1.257854 | 42.28   |

| 87° |          |         |          |         |
|-----|----------|---------|----------|---------|
| M.  | Vers.    | D. 1''. | Exsec.   | D. 1''. |
| 0   | 9.976654 | 2.23    | 1.257854 | 42.52   |
| 1   | .976788  | 2.22    | .260405  | 42.73   |
| 2   | .976921  | 2.22    | .262969  | 42.95   |
| 3   | .977054  | 2.22    | .265546  | 43.20   |
| 4   | .977187  | 2.22    | .268138  | 43.42   |
| 5   | 9.977320 | 2.22    | 1.270743 | 43.67   |
| 6   | .977452  | 2.22    | .273363  | 43.88   |
| 7   | .977585  | 2.22    | .275996  | 44.15   |
| 8   | .977718  | 2.22    | .278645  | 44.38   |
| 9   | .977851  | 2.22    | .281308  | 44.63   |
| 10  | 9.977984 | 2.20    | 1.283986 | 44.88   |
| 11  | .978116  | 2.22    | .286679  | 45.13   |
| 12  | .978249  | 2.22    | .289387  | 45.38   |
| 13  | .978382  | 2.20    | .292110  | 45.65   |
| 14  | .978514  | 2.22    | .294849  | 45.92   |
| 15  | 9.978647 | 2.22    | 1.297604 | 46.17   |
| 16  | .978779  | 2.20    | .300374  | 46.45   |
| 17  | .978912  | 2.20    | .303161  | 46.72   |
| 18  | .979044  | 2.22    | .305964  | 47.00   |
| 19  | .979177  | 2.20    | .308784  | 47.27   |
| 20  | 9.979309 | 2.22    | 1.311620 | 47.55   |
| 21  | .979442  | 2.20    | .314473  | 47.83   |
| 22  | .979574  | 2.20    | .317343  | 48.13   |
| 23  | .979706  | 2.20    | .320231  | 48.43   |
| 24  | .979838  | 2.20    | .323137  | 48.72   |
| 25  | 9.979970 | 2.22    | 1.326060 | 49.02   |
| 26  | .980103  | 2.22    | .329001  | 49.33   |
| 27  | .980235  | 2.20    | .331961  | 49.63   |
| 28  | .980367  | 2.20    | .334939  | 49.93   |
| 29  | .980499  | 2.20    | .337935  | 50.27   |
| 30  | 9.980631 | 2.20    | 1.340951 | 50.58   |
| 31  | .980763  | 2.20    | .343986  | 50.92   |
| 32  | .980895  | 2.18    | .347041  | 51.23   |
| 33  | .981026  | 2.20    | .350115  | 51.58   |
| 34  | .981158  | 2.20    | .353210  | 51.92   |
| 35  | 9.981290 | 2.20    | 1.356325 | 52.25   |
| 36  | .981422  | 2.20    | .359460  | 52.62   |
| 37  | .981554  | 2.18    | .362617  | 52.95   |
| 38  | .981685  | 2.20    | .365794  | 53.32   |
| 39  | .981817  | 2.20    | .368993  | 53.68   |
| 40  | 9.981949 | 2.18    | 1.372214 | 54.07   |
| 41  | .982080  | 2.20    | .375458  | 54.42   |
| 42  | .982212  | 2.18    | .378723  | 54.80   |
| 43  | .982343  | 2.20    | .382011  | 55.20   |
| 44  | .982475  | 2.18    | .385323  | 55.58   |
| 45  | 9.982606 | 2.18    | 1.388658 | 55.97   |
| 46  | .982737  | 2.20    | .392016  | 56.38   |
| 47  | .982869  | 2.18    | .395399  | 56.80   |
| 48  | .983000  | 2.18    | .398807  | 57.20   |
| 49  | .983131  | 2.18    | .402239  | 57.62   |
| 50  | 9.983262 | 2.20    | 1.405606 | 58.07   |
| 51  | .983394  | 2.18    | .409180  | 58.48   |
| 52  | .983525  | 2.18    | .412689  | 58.93   |
| 53  | .983656  | 2.18    | .416225  | 59.38   |
| 54  | .983787  | 2.18    | .419788  | 59.83   |
| 55  | 9.983918 | 2.18    | 1.423378 | 60.28   |
| 56  | .984049  | 2.18    | .426995  | 60.77   |
| 57  | .984180  | 2.18    | .430641  | 61.25   |
| 58  | .984311  | 2.18    | .434316  | 61.73   |
| 59  | .984442  | 2.16    | .438020  | 62.22   |
| 60  | 9.984573 | 2.16    | 1.441753 | 62.22   |

| 88° |          |        |          |        | 89° |          |        |          |         |
|-----|----------|--------|----------|--------|-----|----------|--------|----------|---------|
| M.  | Vers.    | D. 1". | Exsec.   | D. 1". | M.  | Vers.    | D. 1". | Exsec.   | D. 1".  |
| 0   | 9.984573 | 2.17   | I.441753 | 62.73  | 0   | 9.992354 | 2.13   | I.750498 | 123.78  |
| 1   | .984703  | 2.18   | .445517  | 63.23  | 1   | .992482  | 2.15   | .757925  | 125.87  |
| 2   | .984834  | 2.18   | .449311  | 63.77  | 2   | .992611  | 2.13   | .765477  | 128.02  |
| 3   | .984965  | 2.18   | .453137  | 64.28  | 3   | .992739  | 2.15   | .773158  | 130.25  |
| 4   | .985096  | 2.17   | .456994  | 64.82  | 4   | .992868  | 2.15   | .780973  | 132.55  |
| 5   | 9.985226 | 2.18   | I.460883 | 65.37  | 5   | 9.992996 | 2.13   | I.788926 | 134.93  |
| 6   | .985357  | 2.17   | .464805  | 65.93  | 6   | .993124  | 2.15   | .797022  | 137.43  |
| 7   | .985487  | 2.18   | .468761  | 66.50  | 7   | .993253  | 2.13   | .805268  | 140.00  |
| 8   | .985618  | 2.17   | .472751  | 67.07  | 8   | .993381  | 2.13   | .813668  | 142.68  |
| 9   | .985748  | 2.18   | .476775  | 67.65  | 9   | .993509  | 2.13   | .822229  | 145.45  |
| 10  | 9.985879 | 2.17   | I.480834 | 68.25  | 10  | 9.993637 | 2.13   | I.830956 | 148.37  |
| 11  | .985009  | 2.18   | .484929  | 68.87  | 11  | .993765  | 2.15   | .839358  | 151.37  |
| 12  | .986140  | 2.17   | .489061  | 69.48  | 12  | .993894  | 2.13   | .848940  | 154.52  |
| 13  | .986270  | 2.17   | .493230  | 70.12  | 13  | .994022  | 2.13   | .858211  | 157.80  |
| 14  | .986400  | 2.18   | .497437  | 70.77  | 14  | .994150  | 2.13   | .867679  | 161.20  |
| 15  | 9.986531 | 2.17   | I.501683 | 71.42  | 15  | 9.994278 | 2.13   | I.877351 | 164.80  |
| 16  | .986661  | 2.17   | .505968  | 72.08  | 16  | .994406  | 2.13   | .887239  | 168.52  |
| 17  | .986791  | 2.17   | .510293  | 72.77  | 17  | .994534  | 2.13   | .897350  | 172.45  |
| 18  | .986921  | 2.17   | .514659  | 73.45  | 18  | .994662  | 2.12   | .907697  | 176.55  |
| 19  | .987051  | 2.17   | .519066  | 74.17  | 19  | .994789  | 2.13   | .918290  | 180.85  |
| 20  | 9.987181 | 2.17   | I.523516 | 74.90  | 20  | 9.994917 | 2.13   | I.929141 | 185.38  |
| 21  | .987311  | 2.17   | .528010  | 75.63  | 21  | .995045  | 2.13   | .940264  | 190.13  |
| 22  | .987441  | 2.17   | .532548  | 76.38  | 22  | .995173  | 2.13   | .951672  | 195.15  |
| 23  | .987571  | 2.17   | .537131  | 77.15  | 23  | .995301  | 2.12   | .963381  | 200.45  |
| 24  | .987701  | 2.17   | .541760  | 77.95  | 24  | .995428  | 2.13   | .975408  | 206.02  |
| 25  | 9.987831 | 2.17   | I.546437 | 78.73  | 25  | 9.995556 | 2.12   | I.987769 | 211.93  |
| 26  | .987961  | 2.17   | .551161  | 79.57  | 26  | .995683  | 2.13   | 2.000485 | 218.22  |
| 27  | .988091  | 2.17   | .555935  | 80.40  | 27  | .995811  | 2.13   | .013578  | 224.85  |
| 28  | .988221  | 2.15   | .560759  | 81.25  | 28  | .995939  | 2.12   | .027069  | 231.97  |
| 29  | .988350  | 2.17   | .565634  | 82.12  | 29  | .996066  | 2.12   | .040984  | 239.42  |
| 30  | 9.988480 | 2.17   | I.570561 | 83.02  | 30  | 9.996193 | 2.13   | 2.053352 | 247.50  |
| 31  | .988610  | 2.15   | .575542  | 83.93  | 31  | .996321  | 2.12   | .070202  | 256.12  |
| 32  | .988739  | 2.17   | .580578  | 84.87  | 32  | .996448  | 2.13   | .085569  | 265.35  |
| 33  | .988869  | 2.15   | .585670  | 85.82  | 33  | .996576  | 2.12   | .101490  | 275.30  |
| 34  | .988998  | 2.17   | .590819  | 86.80  | 34  | .996703  | 2.12   | .118008  | 286.09  |
| 35  | 9.989128 | 2.15   | I.596027 | 87.80  | 35  | 9.996830 | 2.12   | 2.135168 | 297.60  |
| 36  | .989257  | 2.17   | .601295  | 88.83  | 36  | .996957  | 2.13   | .153024  | 310.17  |
| 37  | .989387  | 2.17   | .606625  | 89.88  | 37  | .997085  | 2.12   | .171634  | 323.87  |
| 38  | .989516  | 2.15   | .612018  | 90.95  | 38  | .997212  | 2.12   | .191066  | 338.83  |
| 39  | .989646  | 2.15   | .617475  | 92.05  | 39  | .997339  | 2.12   | .211396  | 355.27  |
| 40  | 9.989775 | 2.15   | I.622998 | 93.18  | 40  | 9.997466 | 2.12   | 2.232712 | 373.40  |
| 41  | .989904  | 2.17   | .628589  | 94.35  | 41  | .997593  | 2.12   | .255116  | 393.45  |
| 42  | .990034  | 2.15   | .634250  | 95.53  | 42  | .997720  | 2.12   | .278723  | 415.85  |
| 43  | .990163  | 2.15   | .639982  | 96.77  | 43  | .997847  | 2.12   | .303674  | 440.92  |
| 44  | .990292  | 2.15   | .645788  | 98.00  | 44  | .997974  | 2.12   | .330129  | 469.27  |
| 45  | 9.990421 | 2.15   | I.651668 | 99.30  | 45  | 9.998101 | 2.12   | 2.358285 | 501.50  |
| 46  | .990550  | 2.15   | .657626  | 100.62 | 46  | .998228  | 2.12   | .388375  | 538.52  |
| 47  | .990679  | 2.15   | .663663  | 101.97 | 47  | .998355  | 2.10   | .420686  | 581.48  |
| 48  | .990808  | 2.15   | .669781  | 103.38 | 48  | .998481  | 2.12   | .455575  | 631.92  |
| 49  | .990937  | 2.15   | .675984  | 104.80 | 49  | .998608  | 2.12   | .493490  | 691.98  |
| 50  | 9.991066 | 2.15   | I.682272 | 106.28 | 50  | 9.998735 | 2.12   | 2.535009 | 764.73  |
| 51  | .991195  | 2.15   | .688649  | 107.80 | 51  | .998862  | 2.10   | .580893  | 854.65  |
| 52  | .991324  | 2.15   | .695117  | 109.37 | 52  | .998988  | 2.12   | .632172  | 958.65  |
| 53  | .991453  | 2.15   | .701679  | 110.98 | 53  | .999115  | 2.10   | .690291  | 1117.88 |
| 54  | .991582  | 2.13   | .708338  | 112.65 | 54  | .999241  | 2.12   | .757364  | 1321.80 |
| 55  | 9.991710 | 2.15   | I.715097 | 114.35 | 55  | 9.999368 | 2.10   | 2.836672 | 1617.27 |
| 56  | .991839  | 2.15   | .721953  | 116.12 | 56  | .999494  | 2.12   | .933708  | 2084.43 |
| 57  | .991968  | 2.13   | .728925  | 117.95 | 57  | .999621  | 2.10   | 3.058774 | 2936.95 |
| 58  | .992096  | 2.15   | .736002  | 119.83 | 58  | .999747  | 2.12   | .234991  | 5019.28 |
| 59  | .992225  | 2.15   | .743192  | 121.77 | 59  | .999874  | 2.10   | .536148  | ∞       |
| 60  | 9.992354 | 2.15   | I.750498 |        | 60  | 0.000000 |        |          |         |

第十八表 正弦餘弦真數表

| M  | 0°     |        | 1°     |        | 2°     |        | 3°     |        | 4°     |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   |    |
| 0  | .00000 | 1.0000 | .01745 | .99985 | .03490 | .99939 | .05234 | .99863 | .06976 | .99756 | 60 |
| 1  | .029   | .999   | .774   | .984   | .519   | .938   | .263   | .861   | .07005 | .99754 | 59 |
| 2  | .058   | .998   | .803   | .984   | .548   | .937   | .292   | .860   | .07034 | .99752 | 58 |
| 3  | .087   | .997   | .832   | .983   | .577   | .936   | .321   | .858   | .07063 | .99750 | 57 |
| 4  | .116   | .996   | .862   | .983   | .606   | .935   | .350   | .857   | .07092 | .99748 | 56 |
| 5  | .00145 | 1.0000 | .01891 | .99982 | .03635 | .99934 | .05379 | .99855 | .07121 | .99746 | 55 |
| 6  | .175   | .999   | .920   | .982   | .664   | .933   | .408   | .854   | .150   | .744   | 54 |
| 7  | .204   | .999   | .949   | .981   | .693   | .932   | .437   | .852   | .179   | .742   | 53 |
| 8  | .233   | .998   | .978   | .980   | .723   | .931   | .466   | .851   | .208   | .740   | 52 |
| 9  | .262   | .998   | .02007 | .980   | .752   | .930   | .495   | .849   | .237   | .738   | 51 |
| 10 | .00291 | 1.0000 | .02036 | .99979 | .03781 | .99929 | .05524 | .99847 | .07266 | .99736 | 50 |
| 11 | .320   | .99999 | .065   | .979   | .810   | .927   | .553   | .846   | .295   | .734   | 49 |
| 12 | .349   | .999   | .094   | .978   | .839   | .926   | .582   | .844   | .324   | .731   | 48 |
| 13 | .378   | .999   | .123   | .977   | .868   | .925   | .611   | .842   | .353   | .729   | 47 |
| 14 | .407   | .999   | .152   | .977   | .897   | .924   | .640   | .841   | .382   | .727   | 46 |
| 15 | .00436 | .99999 | .02181 | .99976 | .03926 | .99923 | .05669 | .99839 | .07411 | .99725 | 45 |
| 16 | .465   | .999   | .211   | .976   | .955   | .922   | .668   | .838   | .440   | .723   | 44 |
| 17 | .495   | .999   | .240   | .975   | .984   | .921   | .727   | .836   | .469   | .721   | 43 |
| 18 | .524   | .999   | .269   | .974   | .04013 | .919   | .756   | .834   | .498   | .719   | 42 |
| 19 | .553   | .998   | .298   | .974   | .042   | .918   | .785   | .833   | .527   | .716   | 41 |
| 20 | .00582 | .99998 | .02327 | .99973 | .04071 | .99917 | .05814 | .99831 | .07556 | .99714 | 40 |
| 21 | .611   | .999   | .356   | .972   | .100   | .916   | .844   | .829   | .585   | .712   | 39 |
| 22 | .640   | .998   | .385   | .972   | .129   | .915   | .873   | .827   | .614   | .710   | 38 |
| 23 | .669   | .998   | .414   | .971   | .159   | .913   | .902   | .826   | .643   | .708   | 37 |
| 24 | .698   | .998   | .443   | .970   | .188   | .912   | .931   | .824   | .672   | .705   | 36 |
| 25 | .00727 | .99997 | .02472 | .99969 | .04217 | .99911 | .05969 | .99822 | .07701 | .99703 | 35 |
| 26 | .756   | .997   | .501   | .969   | .246   | .910   | .989   | .821   | .730   | .701   | 34 |
| 27 | .785   | .997   | .530   | .968   | .275   | .909   | .06018 | .819   | .759   | .699   | 33 |
| 28 | .814   | .997   | .560   | .967   | .304   | .907   | .047   | .817   | .788   | .696   | 32 |
| 29 | .844   | .996   | .589   | .966   | .333   | .906   | .076   | .815   | .817   | .694   | 31 |
| 30 | .00873 | .99996 | .02618 | .99966 | .04362 | .99905 | .06105 | .99813 | .07846 | .99692 | 30 |
| 31 | .902   | .996   | .647   | .965   | .391   | .904   | .134   | .812   | .875   | .689   | 29 |
| 32 | .931   | .996   | .676   | .964   | .420   | .902   | .163   | .810   | .904   | .687   | 28 |
| 33 | .960   | .995   | .705   | .963   | .449   | .901   | .192   | .808   | .933   | .685   | 27 |
| 34 | .989   | .995   | .734   | .963   | .478   | .900   | .221   | .806   | .962   | .683   | 26 |
| 35 | .01018 | .99995 | .02763 | .99962 | .04507 | .99898 | .06250 | .99804 | .07991 | .99680 | 25 |
| 36 | .047   | .995   | .792   | .961   | .536   | .897   | .279   | .803   | .08020 | .678   | 24 |
| 37 | .076   | .994   | .821   | .960   | .565   | .896   | .308   | .801   | .049   | .676   | 23 |
| 38 | .105   | .994   | .850   | .959   | .594   | .894   | .337   | .799   | .078   | .673   | 22 |
| 39 | .134   | .994   | .879   | .959   | .623   | .893   | .366   | .797   | .107   | .671   | 21 |
| 40 | .01164 | .99993 | .02908 | .99958 | .04653 | .99892 | .06395 | .99795 | .08136 | .99668 | 20 |
| 41 | .193   | .993   | .938   | .957   | .682   | .890   | .424   | .793   | .165   | .666   | 19 |
| 42 | .222   | .993   | .967   | .956   | .711   | .889   | .453   | .792   | .194   | .664   | 18 |
| 43 | .251   | .992   | .996   | .955   | .740   | .888   | .482   | .790   | .223   | .661   | 17 |
| 44 | .280   | .992   | .03025 | .954   | .769   | .886   | .511   | .788   | .252   | .659   | 16 |
| 45 | .01309 | .99991 | .03054 | .99953 | .04798 | .99885 | .06540 | .99786 | .08281 | .99657 | 15 |
| 46 | .338   | .991   | .083   | .952   | .827   | .883   | .569   | .784   | .310   | .654   | 14 |
| 47 | .367   | .991   | .112   | .952   | .856   | .882   | .598   | .782   | .339   | .652   | 13 |
| 48 | .396   | .990   | .141   | .951   | .885   | .881   | .627   | .780   | .368   | .649   | 12 |
| 49 | .425   | .990   | .170   | .950   | .914   | .879   | .656   | .778   | .397   | .647   | 11 |
| 50 | .01454 | .99989 | .03199 | .99949 | .04943 | .99878 | .06685 | .99776 | .08426 | .99644 | 10 |
| 51 | .483   | .989   | .228   | .948   | .972   | .876   | .714   | .774   | .455   | .642   | 9  |
| 52 | .513   | .989   | .257   | .947   | .05001 | .875   | .743   | .772   | .484   | .639   | 8  |
| 53 | .542   | .988   | .286   | .946   | .030   | .873   | .773   | .770   | .513   | .637   | 7  |
| 54 | .571   | .988   | .316   | .945   | .059   | .872   | .802   | .768   | .542   | .635   | 6  |
| 55 | .01600 | .99987 | .03345 | .99944 | .05088 | .99870 | .06831 | .99766 | .08571 | .99632 | 5  |
| 56 | .629   | .987   | .374   | .943   | .117   | .869   | .860   | .764   | .600   | .630   | 4  |
| 57 | .658   | .986   | .403   | .942   | .146   | .867   | .889   | .762   | .629   | .627   | 3  |
| 58 | .687   | .986   | .432   | .941   | .175   | .866   | .918   | .760   | .658   | .625   | 2  |
| 59 | .716   | .985   | .461   | .940   | .205   | .864   | .947   | .758   | .687   | .622   | 1  |
| 60 | .01745 | .99985 | .03490 | .99939 | .05234 | .99863 | .06976 | .99756 | .08716 | .99619 | 0  |
|    | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | M. |
|    | 89°    |        | 88°    |        | 87°    |        | 86°    |        | 85°    |        |    |

| M. | 5°     |        | 6°     |        | 7°     |        | 8°     |        | 9°     |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   |    |
| 0  | .08716 | .99619 | .10453 | .99452 | .12187 | .99255 | .13917 | .99027 | .15643 | .98769 | 60 |
| 1  | 745    | 617    | 482    | 449    | 216    | 251    | 946    | 023    | 672    | 764    | 59 |
| 2  | 774    | 614    | 511    | 446    | 245    | 248    | 975    | 019    | 701    | 760    | 58 |
| 3  | 803    | 612    | 540    | 443    | 274    | 244    | 14004  | 015    | 730    | 755    | 57 |
| 4  | 831    | 609    | 569    | 440    | 302    | 240    | 033    | 011    | 758    | 751    | 56 |
| 5  | .08860 | .99607 | .10597 | .99437 | .12331 | .99237 | .14061 | .99006 | .15787 | .98746 | 55 |
| 6  | 889    | 604    | 626    | 434    | 360    | 233    | 090    | 002    | 816    | 741    | 54 |
| 7  | 918    | 602    | 655    | 431    | 389    | 230    | 119    | .98998 | 845    | 737    | 53 |
| 8  | 947    | 599    | 684    | 428    | 418    | 226    | 148    | 994    | 873    | 732    | 52 |
| 9  | 976    | 596    | 713    | 424    | 447    | 222    | 177    | 990    | 902    | 728    | 51 |
| 10 | .09005 | .99594 | .10742 | .99421 | .12476 | .99219 | .14205 | .98986 | .15931 | .98723 | 50 |
| 11 | 034    | 591    | 771    | 418    | 504    | 215    | 234    | 982    | 959    | 718    | 49 |
| 12 | 063    | 588    | 800    | 415    | 533    | 211    | 263    | 978    | 988    | 714    | 48 |
| 13 | 092    | 586    | 829    | 412    | 562    | 208    | 292    | 973    | .16017 | 709    | 47 |
| 14 | 121    | 583    | 858    | 409    | 591    | 204    | 320    | 969    | 046    | 704    | 46 |
| 15 | .09150 | .99580 | .10887 | .99406 | .12620 | .99200 | .14349 | .98965 | .16074 | .98700 | 45 |
| 16 | 179    | 578    | 916    | 402    | 649    | 197    | 378    | 961    | 103    | 695    | 44 |
| 17 | 208    | 575    | 945    | 399    | 678    | 193    | 407    | 957    | 132    | 690    | 43 |
| 18 | 237    | 572    | 973    | 396    | 706    | 189    | 436    | 953    | 160    | 686    | 42 |
| 19 | 266    | 570    | .11002 | 393    | 735    | 186    | 464    | 948    | 189    | 681    | 41 |
| 20 | .09295 | .99567 | .11031 | .99390 | .12764 | .99182 | .14493 | .98944 | .16218 | .98676 | 40 |
| 21 | 324    | 564    | 060    | 386    | 793    | 178    | 522    | 940    | 246    | 671    | 39 |
| 22 | 353    | 562    | 089    | 383    | 822    | 175    | 551    | 936    | 275    | 667    | 38 |
| 23 | 382    | 559    | 118    | 380    | 851    | 171    | 580    | 931    | 304    | 662    | 37 |
| 24 | 411    | 556    | 147    | 377    | 880    | 167    | 608    | 927    | 333    | 657    | 36 |
| 25 | .09440 | .99553 | .11176 | .99374 | .12908 | .99165 | .14637 | .98923 | .16361 | .98652 | 35 |
| 26 | 469    | 551    | 205    | 370    | 937    | 160    | 666    | 919    | 390    | 648    | 34 |
| 27 | 498    | 548    | 234    | 367    | 966    | 156    | 695    | 914    | 419    | 643    | 33 |
| 28 | 527    | 545    | 263    | 364    | 995    | 152    | 723    | 910    | 447    | 638    | 32 |
| 29 | 556    | 542    | 291    | 360    | .13024 | 148    | 752    | 906    | 476    | 633    | 31 |
| 30 | .09585 | .99540 | .11320 | .99357 | .13053 | .99144 | .14781 | .98902 | .16505 | .98629 | 30 |
| 31 | 614    | 537    | 349    | 354    | 081    | 141    | 810    | 897    | 533    | 624    | 29 |
| 32 | 642    | 534    | 378    | 351    | 110    | 137    | 838    | 893    | 562    | 619    | 28 |
| 33 | 671    | 531    | 407    | 347    | 139    | 133    | 867    | 889    | 591    | 614    | 27 |
| 34 | 700    | 528    | 436    | 344    | 168    | 129    | 896    | 884    | 620    | 609    | 26 |
| 35 | .09729 | .99526 | .11465 | .99341 | .13197 | .99125 | .14925 | .98880 | .16648 | .98604 | 25 |
| 36 | 758    | 523    | 494    | 337    | 226    | 122    | 954    | 876    | 677    | 600    | 24 |
| 37 | 787    | 520    | 523    | 334    | 254    | 118    | 982    | 871    | 706    | 595    | 23 |
| 38 | 816    | 517    | 552    | 331    | 283    | 114    | .15011 | 867    | 734    | 590    | 22 |
| 39 | 845    | 514    | 580    | 327    | 312    | 110    | 040    | 863    | 763    | 585    | 21 |
| 40 | .09874 | .99511 | .11609 | .99324 | .13341 | .99106 | .15069 | .98858 | .16792 | .98580 | 20 |
| 41 | 903    | 508    | 638    | 320    | 370    | 102    | 097    | 854    | 820    | 575    | 19 |
| 42 | 932    | 506    | 667    | 317    | 399    | 098    | 126    | 849    | 849    | 570    | 18 |
| 43 | 961    | 503    | 696    | 314    | 427    | 094    | 155    | 845    | 878    | 565    | 17 |
| 44 | 990    | 500    | 725    | 310    | 456    | 091    | 184    | 841    | 906    | 561    | 16 |
| 45 | .10019 | .99497 | .11754 | .99307 | .13485 | .99087 | .15212 | .98836 | .16935 | .98556 | 15 |
| 46 | 048    | 494    | 783    | 303    | 514    | 083    | 241    | 832    | 964    | 551    | 14 |
| 47 | 077    | 491    | 812    | 300    | 543    | 079    | 270    | 827    | 992    | 546    | 13 |
| 48 | 106    | 488    | 840    | 297    | 572    | 075    | 299    | 823    | .17021 | 541    | 12 |
| 49 | 135    | 485    | 869    | 293    | 600    | 071    | 327    | 818    | 050    | 536    | 11 |
| 50 | .10164 | .99482 | .11898 | .99290 | .13629 | .99067 | .15356 | .98814 | .17078 | .98531 | 10 |
| 51 | 192    | 479    | 927    | 286    | 658    | 063    | 385    | 809    | 107    | 526    | 9  |
| 52 | 221    | 476    | 956    | 283    | 687    | 059    | 414    | 805    | 136    | 521    | 8  |
| 53 | 250    | 473    | 985    | 279    | 716    | 055    | 442    | 800    | 164    | 516    | 7  |
| 54 | 279    | 470    | .12014 | 276    | 744    | 051    | 471    | 796    | 193    | 511    | 6  |
| 55 | .10308 | .99467 | .12043 | .99272 | .13773 | .99047 | .15500 | .98791 | .17222 | .98506 | 5  |
| 56 | 337    | 464    | 071    | 269    | 802    | 043    | 529    | 787    | 250    | 501    | 4  |
| 57 | 366    | 461    | 100    | 265    | 831    | 039    | 557    | 782    | 279    | 496    | 3  |
| 58 | 395    | 458    | 129    | 262    | 860    | 035    | 586    | 778    | 308    | 491    | 2  |
| 59 | 424    | 455    | 158    | 258    | 889    | 031    | 615    | 773    | 336    | 486    | 1  |
| 60 | .10453 | .99452 | .12187 | .99255 | .13917 | .99027 | .15643 | .98769 | .17365 | .98481 | 0  |
|    | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | M. |
|    | 84°    |        | 83°    |        | 82°    |        | 81°    |        | 80°    |        |    |

| M. | 10°    |        | 11°    |        | 12°    |        | 13°    |        | 14°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   |    |
| 0  | .17365 | .98481 | .19081 | .98163 | .20791 | .97815 | .22495 | .97437 | .24192 | .97030 | 60 |
| 1  | 393    | 476    | 109    | 157    | 820    | 809    | 523    | 430    | 220    | 023    | 59 |
| 2  | 422    | 471    | 138    | 152    | 848    | 803    | 552    | 424    | 249    | 015    | 58 |
| 3  | 451    | 466    | 167    | 146    | 877    | 797    | 580    | 417    | 277    | 008    | 57 |
| 4  | 479    | 461    | 195    | 140    | 905    | 791    | 608    | 411    | 305    | 001    | 56 |
| 5  | .17508 | .98455 | .19224 | .98135 | .20933 | .97784 | .22637 | .97404 | .24333 | .96994 | 55 |
| 6  | 537    | 450    | 252    | 129    | 962    | 778    | 665    | 398    | 362    | 987    | 54 |
| 7  | 565    | 445    | 281    | 124    | 990    | 772    | 693    | 391    | 390    | 980    | 53 |
| 8  | 594    | 440    | 309    | 118    | .21019 | 766    | 722    | 384    | 418    | 973    | 52 |
| 9  | 623    | 435    | 338    | 112    | 047    | 760    | 750    | 378    | 446    | 966    | 51 |
| 10 | .17651 | .98430 | .19366 | .98107 | .21076 | .97754 | .22778 | .97371 | .24474 | .96959 | 50 |
| 11 | 680    | 425    | 395    | 101    | 104    | 748    | 807    | 365    | 503    | 952    | 49 |
| 12 | 708    | 420    | 423    | 096    | 132    | 742    | 835    | 358    | 531    | 945    | 48 |
| 13 | 737    | 414    | 452    | 090    | 161    | 735    | 863    | 351    | 559    | 937    | 47 |
| 14 | 766    | 409    | 481    | 084    | 189    | 729    | 892    | 345    | 587    | 930    | 46 |
| 15 | .17794 | .98404 | .19509 | .98079 | .21218 | .97723 | .22920 | .97338 | .24615 | .96923 | 45 |
| 16 | 823    | 399    | 538    | 073    | 246    | 717    | 948    | 331    | 644    | 910    | 44 |
| 17 | 852    | 394    | 566    | 067    | 275    | 711    | 977    | 325    | 672    | 909    | 43 |
| 18 | 880    | 389    | 595    | 061    | 303    | 705    | .23005 | 318    | 700    | 902    | 42 |
| 19 | 909    | 383    | 623    | 056    | 331    | 698    | 033    | 311    | 728    | 894    | 41 |
| 20 | .17937 | .98378 | .19652 | .98050 | .21360 | .97692 | .23062 | .97304 | .24756 | .96887 | 40 |
| 21 | 966    | 373    | 680    | 044    | 388    | 686    | 090    | 298    | 784    | 880    | 39 |
| 22 | 995    | 368    | 709    | 039    | 417    | 680    | 118    | 291    | 813    | 873    | 38 |
| 23 | .18023 | 362    | 737    | 033    | 445    | 673    | 146    | 284    | 841    | 866    | 37 |
| 24 | 052    | 357    | 766    | 027    | 474    | 667    | 175    | 278    | 869    | 858    | 36 |
| 25 | .18081 | .98352 | .19794 | .98021 | .21502 | .97661 | .23203 | .97271 | .24897 | .96851 | 35 |
| 26 | 109    | 347    | 823    | 016    | 530    | 655    | 231    | 264    | 925    | 844    | 34 |
| 27 | 138    | 341    | 851    | 010    | 559    | 648    | 260    | 257    | 954    | 837    | 33 |
| 28 | 166    | 336    | 880    | 004    | 587    | 642    | 288    | 251    | 982    | 829    | 32 |
| 29 | 195    | 331    | 908    | .97998 | 616    | 636    | 316    | 244    | .25010 | 822    | 31 |
| 30 | .18224 | .98325 | .19937 | .97992 | .21644 | .97630 | .23345 | .97237 | .25038 | .96815 | 30 |
| 31 | 252    | 320    | 965    | 987    | 672    | 623    | 373    | 230    | 066    | 807    | 29 |
| 32 | 281    | 315    | 994    | 981    | 701    | 617    | 401    | 223    | 094    | 800    | 28 |
| 33 | 309    | 310    | .20022 | 975    | 729    | 611    | 429    | 217    | 122    | 793    | 27 |
| 34 | 338    | 304    | 051    | 969    | 758    | 604    | 458    | 210    | 151    | 786    | 26 |
| 35 | .18367 | .98299 | .20079 | .97963 | .21786 | .97598 | .23486 | .97203 | .25179 | .96778 | 25 |
| 36 | 395    | 294    | 108    | 958    | 814    | 592    | 514    | 196    | 207    | 771    | 24 |
| 37 | 424    | 288    | 136    | 952    | 843    | 585    | 542    | 189    | 235    | 764    | 23 |
| 38 | 452    | 283    | 165    | 946    | 871    | 579    | 571    | 182    | 263    | 756    | 22 |
| 39 | 481    | 277    | 193    | 940    | 899    | 573    | 599    | 176    | 291    | 749    | 21 |
| 40 | .18509 | .98272 | .20222 | .97934 | .21928 | .97566 | .23627 | .97169 | .25320 | .96742 | 20 |
| 41 | 538    | 267    | 250    | 928    | 956    | 560    | 656    | 162    | 348    | 734    | 19 |
| 42 | 567    | 261    | 279    | 922    | 985    | 553    | 684    | 155    | 376    | 727    | 18 |
| 43 | 595    | 256    | 307    | 916    | .22013 | 547    | 712    | 148    | 404    | 719    | 17 |
| 44 | 624    | 250    | 336    | 910    | 041    | 541    | 740    | 141    | 432    | 712    | 16 |
| 45 | .18652 | .98245 | .20364 | .97905 | .22070 | .97534 | .23769 | .97134 | .25460 | .96705 | 15 |
| 46 | 681    | 240    | 393    | 899    | 098    | 528    | 797    | 127    | 488    | 697    | 14 |
| 47 | 710    | 234    | 421    | 893    | 126    | 521    | 825    | 120    | 516    | 690    | 13 |
| 48 | 738    | 229    | 450    | 887    | 155    | 515    | 853    | 113    | 545    | 682    | 12 |
| 49 | 767    | 223    | 478    | 881    | 183    | 508    | 882    | 106    | 573    | 675    | 11 |
| 50 | .18795 | .98218 | .20507 | .97875 | .22212 | .97502 | .23910 | .97100 | .25601 | .96667 | 10 |
| 51 | 824    | 212    | 535    | 869    | 240    | 496    | 938    | 093    | 629    | 660    | 9  |
| 52 | 852    | 207    | 563    | 863    | 268    | 489    | 966    | 086    | 657    | 653    | 8  |
| 53 | 881    | 201    | 592    | 857    | 297    | 483    | 995    | 079    | 685    | 645    | 7  |
| 54 | 910    | 196    | 620    | 851    | 325    | 476    | .24023 | 072    | 713    | 638    | 6  |
| 55 | .18938 | .98190 | .20649 | .97845 | .22353 | .97470 | .24051 | .97065 | .25741 | .96630 | 5  |
| 56 | 967    | 185    | 677    | 839    | 382    | 463    | 079    | 058    | 769    | 623    | 4  |
| 57 | 995    | 179    | 706    | 833    | 410    | 457    | 108    | 051    | 798    | 615    | 3  |
| 58 | .19024 | 174    | 734    | 827    | 438    | 450    | 136    | 044    | 826    | 608    | 2  |
| 59 | 052    | 168    | 763    | 821    | 467    | 444    | 164    | 037    | 854    | 600    | 1  |
| 60 | .19081 | .98163 | .20791 | .97815 | .22495 | .97437 | .24192 | .97030 | .25882 | .96593 | 0  |
|    | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | M. |
|    | 79°    |        | 78°    |        | 77°    |        | 76°    |        | 75°    |        |    |



| M. | 15°    |        | 16°    |        | 17°    |        | 18°    |        | 19°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   |    |
| 0  | .25882 | .96593 | .27564 | .96126 | .29237 | .95630 | .30902 | .95106 | .32557 | .94552 | 60 |
| 1  | 910    | 585    | 592    | 118    | 265    | 622    | 929    | 097    | 584    | 542    | 59 |
| 2  | 938    | 578    | 620    | 110    | 293    | 613    | 957    | 088    | 612    | 533    | 58 |
| 3  | 966    | 570    | 648    | 102    | 321    | 605    | 985    | 079    | 639    | 523    | 57 |
| 4  | 994    | 562    | 676    | 094    | 348    | 596    | .31012 | 070    | 667    | 514    | 56 |
| 5  | .26022 | .96555 | .27704 | .96086 | .29376 | .95588 | .31040 | .95061 | .32694 | .94504 | 55 |
| 6  | 050    | 547    | 731    | 078    | 404    | 579    | 068    | 052    | 722    | 495    | 54 |
| 7  | 079    | 540    | 759    | 070    | 432    | 571    | 095    | 043    | 749    | 485    | 53 |
| 8  | 107    | 532    | 787    | 062    | 460    | 562    | 123    | 033    | 777    | 476    | 52 |
| 9  | 135    | 524    | 815    | 054    | 487    | 554    | 151    | .024   | 804    | 466    | 51 |
| 10 | .26163 | .96517 | .27843 | .96046 | .29515 | .95545 | .31178 | .95015 | .32832 | .94457 | 50 |
| 11 | 191    | 509    | 871    | 037    | 543    | 536    | 206    | 006    | 859    | 447    | 49 |
| 12 | 219    | 502    | 899    | 029    | 571    | 528    | 233    | .94997 | 887    | 438    | 48 |
| 13 | 247    | 494    | 927    | 021    | 599    | 519    | 261    | .988   | 914    | 428    | 47 |
| 14 | 275    | 486    | 955    | 013    | 626    | 511    | 289    | .979   | 942    | 418    | 46 |
| 15 | .26303 | .96479 | .27983 | .96005 | .29654 | .95502 | .31316 | .94970 | .32969 | .94409 | 45 |
| 16 | 331    | 471    | .28011 | .95997 | 682    | 493    | 344    | 901    | 997    | 399    | 44 |
| 17 | 359    | 463    | 039    | 999    | 710    | 485    | 372    | .952   | .33024 | 390    | 43 |
| 18 | 387    | 456    | 067    | 981    | 737    | 476    | 399    | 943    | 051    | 380    | 42 |
| 19 | 415    | 448    | 095    | 972    | 765    | 467    | 427    | 933    | 079    | 370    | 41 |
| 20 | .26443 | .96440 | .28123 | .95964 | .29793 | .95459 | .31454 | .94924 | .33106 | .94361 | 40 |
| 21 | 471    | 433    | 150    | 956    | 821    | 450    | 482    | 915    | 134    | 351    | 39 |
| 22 | 500    | 425    | 178    | 948    | 849    | 441    | 510    | 906    | 161    | 342    | 38 |
| 23 | 528    | 417    | 206    | 940    | 876    | 433    | 537    | 897    | 189    | 332    | 37 |
| 24 | 556    | 410    | 234    | 931    | 904    | 424    | 565    | 888    | 216    | 322    | 36 |
| 25 | .26584 | .96402 | .28262 | .95923 | .29932 | .95415 | .31593 | .94878 | .33244 | .94313 | 35 |
| 26 | 612    | 394    | 290    | 915    | 960    | 407    | 620    | 869    | 271    | 303    | 34 |
| 27 | 640    | 386    | 318    | 907    | 987    | 398    | 648    | 860    | 298    | 293    | 33 |
| 28 | 668    | 379    | 346    | 898    | .30015 | 389    | 675    | 851    | 326    | 284    | 32 |
| 29 | 696    | 371    | 374    | 890    | 043    | 380    | 703    | 842    | 353    | 274    | 31 |
| 30 | .26724 | .96363 | .28402 | .95882 | .30071 | .95372 | .31730 | .94832 | .33381 | .94264 | 30 |
| 31 | 752    | 355    | 429    | 874    | 098    | 363    | 758    | 823    | 408    | 254    | 29 |
| 32 | 780    | 347    | 457    | 865    | 126    | 354    | 786    | 814    | 436    | 245    | 28 |
| 33 | 808    | 340    | 485    | 857    | 154    | 345    | 813    | 805    | 463    | 235    | 27 |
| 34 | 836    | 332    | 513    | 849    | 182    | 337    | 841    | 795    | 490    | 225    | 26 |
| 35 | .26864 | .96324 | .28541 | .95841 | .30209 | .95328 | .31868 | .94786 | .33518 | .94215 | 25 |
| 36 | 892    | 316    | 569    | 832    | 237    | 319    | 866    | 777    | 545    | 206    | 24 |
| 37 | 920    | 308    | 597    | 824    | 265    | 310    | 923    | 768    | 573    | 196    | 23 |
| 38 | 948    | 301    | 625    | 816    | 292    | 301    | 951    | 758    | 600    | 186    | 22 |
| 39 | 976    | 293    | 652    | 807    | 320    | 293    | 979    | 749    | 627    | 176    | 21 |
| 40 | .27004 | .96285 | .28680 | .95799 | .30348 | .95284 | .32006 | .94740 | .33655 | .94167 | 20 |
| 41 | 032    | 277    | 708    | 791    | 376    | 275    | 034    | 730    | 682    | 157    | 19 |
| 42 | 060    | 269    | 736    | 782    | 403    | 266    | 061    | 721    | 710    | 147    | 18 |
| 43 | 088    | 261    | 764    | 774    | 431    | 257    | 089    | 712    | 737    | 137    | 17 |
| 44 | 116    | 253    | 792    | 766    | 459    | 248    | 116    | 702    | 764    | 127    | 16 |
| 45 | .27144 | .96246 | .28820 | .95757 | .30486 | .95240 | .32144 | .94693 | .33792 | .94118 | 15 |
| 46 | 172    | 238    | 847    | 749    | 514    | 231    | 171    | 684    | 819    | 108    | 14 |
| 47 | 200    | 230    | 875    | 740    | 542    | 222    | 199    | 674    | 846    | 098    | 13 |
| 48 | 228    | 222    | 903    | 732    | 570    | 213    | 227    | 665    | 874    | 088    | 12 |
| 49 | 256    | 214    | 931    | 724    | 597    | 204    | 254    | 656    | 901    | 078    | 11 |
| 50 | .27284 | .96206 | .28959 | .95715 | .30625 | .95195 | .32282 | .94646 | .33929 | .94068 | 10 |
| 51 | 312    | 198    | 987    | 707    | 653    | 186    | 309    | 637    | 956    | 058    | 9  |
| 52 | 340    | 190    | .29015 | 698    | 680    | 177    | 337    | 627    | 983    | 049    | 8  |
| 53 | 368    | 182    | 042    | 690    | 708    | 168    | 364    | 618    | .34011 | 039    | 7  |
| 54 | 396    | 174    | 070    | 681    | 736    | 159    | 392    | 609    | 038    | 029    | 6  |
| 55 | .27424 | .96166 | .29098 | .95673 | .30763 | .95150 | .32419 | .94599 | .34065 | .94010 | 5  |
| 56 | 452    | 158    | 126    | 664    | 791    | 142    | 447    | 590    | 093    | 009    | 4  |
| 57 | 480    | 150    | 154    | 656    | 819    | 133    | 474    | 580    | 120    | .93999 | 3  |
| 58 | 508    | 142    | 182    | 647    | 846    | 124    | 502    | 571    | 147    | 989    | 2  |
| 59 | 536    | 134    | 209    | 639    | 874    | 115    | 529    | 561    | 175    | 979    | 1  |
| 60 | .27564 | .96126 | .29237 | .95630 | .30902 | .95106 | .32557 | .94552 | .34202 | .93969 | 0  |
|    | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | M. |
|    | 74°    |        | 73°    |        | 72°    |        | 71°    |        | 70°    |        |    |

| M. | 20°    |        | 21°    |        | 22°    |        | 23°    |        | 24°    |        |    |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   |    |
| 0  | .34202 | .93969 | .35837 | .93358 | .37461 | .92718 | .39073 | .92050 | .40674 | .91355 | 60 |
| 1  | .229   | .959   | .864   | .348   | .488   | .707   | .100   | .039   | .700   | .343   | 59 |
| 2  | .257   | .949   | .891   | .337   | .515   | .697   | .127   | .028   | .727   | .331   | 58 |
| 3  | .284   | .939   | .918   | .327   | .542   | .686   | .153   | .016   | .753   | .319   | 57 |
| 4  | .311   | .929   | .945   | .316   | .569   | .675   | .180   | .005   | .780   | .307   | 56 |
| 5  | .34339 | .91919 | .35973 | .93306 | .37595 | .92664 | .39207 | .91994 | .40806 | .91295 | 55 |
| 6  | .366   | .909   | .36000 | .9295  | .622   | .653   | .234   | .982   | .833   | .283   | 54 |
| 7  | .393   | .899   | .027   | .285   | .649   | .642   | .260   | .971   | .860   | .272   | 53 |
| 8  | .421   | .889   | .054   | .274   | .676   | .631   | .287   | .959   | .886   | .260   | 52 |
| 9  | .448   | .879   | .081   | .264   | .703   | .620   | .314   | .948   | .913   | .248   | 51 |
| 10 | .34475 | .93869 | .36108 | .93253 | .37730 | .92609 | .39341 | .91936 | .40939 | .91236 | 50 |
| 11 | .503   | .859   | .135   | .243   | .757   | .598   | .367   | .925   | .966   | .224   | 49 |
| 12 | .530   | .849   | .162   | .232   | .784   | .587   | .394   | .914   | .992   | .212   | 48 |
| 13 | .557   | .839   | .190   | .222   | .811   | .576   | .421   | .902   | .41019 | .200   | 47 |
| 14 | .584   | .829   | .217   | .211   | .838   | .565   | .448   | .891   | .045   | .188   | 46 |
| 15 | .34612 | .93819 | .36244 | .93201 | .37865 | .92554 | .39474 | .91879 | .41072 | .91176 | 45 |
| 16 | .639   | .809   | .271   | .190   | .892   | .543   | .501   | .868   | .098   | .164   | 44 |
| 17 | .666   | .799   | .298   | .180   | .919   | .532   | .528   | .856   | .125   | .152   | 43 |
| 18 | .694   | .789   | .325   | .169   | .946   | .521   | .555   | .845   | .151   | .140   | 42 |
| 19 | .721   | .779   | .352   | .159   | .973   | .510   | .581   | .833   | .178   | .128   | 41 |
| 20 | .34748 | .93769 | .36379 | .93148 | .37999 | .92499 | .39608 | .91822 | .41204 | .91116 | 40 |
| 21 | .775   | .759   | .406   | .137   | .38026 | .488   | .635   | .810   | .231   | .104   | 39 |
| 22 | .803   | .748   | .434   | .127   | .053   | .477   | .661   | .799   | .257   | .092   | 38 |
| 23 | .830   | .738   | .461   | .116   | .080   | .466   | .688   | .787   | .284   | .080   | 37 |
| 24 | .857   | .728   | .488   | .106   | .107   | .455   | .715   | .775   | .310   | .068   | 36 |
| 25 | .34884 | .93718 | .36515 | .93095 | .38134 | .92444 | .39741 | .91764 | .41337 | .91056 | 35 |
| 26 | .912   | .708   | .542   | .084   | .161   | .432   | .768   | .752   | .363   | .044   | 34 |
| 27 | .939   | .698   | .569   | .074   | .188   | .421   | .795   | .741   | .390   | .032   | 33 |
| 28 | .966   | .688   | .596   | .063   | .215   | .410   | .822   | .729   | .416   | .020   | 32 |
| 29 | .993   | .677   | .623   | .052   | .241   | .399   | .848   | .718   | .443   | .008   | 31 |
| 30 | .35021 | .93667 | .36650 | .93042 | .38268 | .92388 | .39875 | .91706 | .41469 | .90996 | 30 |
| 31 | .048   | .657   | .677   | .031   | .295   | .377   | .902   | .694   | .490   | .984   | 29 |
| 32 | .075   | .647   | .704   | .020   | .322   | .366   | .928   | .683   | .522   | .972   | 28 |
| 33 | .102   | .637   | .731   | .010   | .349   | .355   | .955   | .671   | .549   | .960   | 27 |
| 34 | .130   | .626   | .758   | .92999 | .376   | .343   | .982   | .660   | .575   | .948   | 26 |
| 35 | .35157 | .93616 | .36785 | .92988 | .38493 | .92332 | .40008 | .91648 | .41602 | .90936 | 25 |
| 36 | .134   | .606   | .812   | .978   | .430   | .321   | .035   | .636   | .628   | .924   | 24 |
| 37 | .211   | .596   | .839   | .967   | .456   | .310   | .062   | .625   | .655   | .911   | 23 |
| 38 | .239   | .585   | .867   | .956   | .483   | .299   | .088   | .613   | .681   | .899   | 22 |
| 39 | .266   | .575   | .894   | .945   | .510   | .287   | .115   | .601   | .707   | .887   | 21 |
| 40 | .35293 | .93565 | .36921 | .92935 | .38537 | .92276 | .40141 | .91590 | .41734 | .90875 | 20 |
| 41 | .320   | .555   | .948   | .924   | .564   | .265   | .168   | .578   | .760   | .863   | 19 |
| 42 | .347   | .544   | .975   | .913   | .591   | .254   | .195   | .566   | .787   | .851   | 18 |
| 43 | .375   | .534   | .37002 | .902   | .617   | .243   | .221   | .555   | .813   | .839   | 17 |
| 44 | .402   | .524   | .029   | .892   | .644   | .231   | .248   | .543   | .840   | .826   | 16 |
| 45 | .35429 | .93514 | .37056 | .92881 | .38671 | .92220 | .40275 | .91531 | .41866 | .90814 | 15 |
| 46 | .456   | .503   | .083   | .870   | .698   | .209   | .301   | .519   | .892   | .802   | 14 |
| 47 | .484   | .493   | .110   | .859   | .725   | .198   | .328   | .508   | .919   | .790   | 13 |
| 48 | .511   | .483   | .137   | .849   | .752   | .186   | .355   | .496   | .945   | .778   | 12 |
| 49 | .538   | .472   | .164   | .838   | .778   | .175   | .381   | .484   | .972   | .766   | 11 |
| 50 | .35565 | .93462 | .37191 | .92827 | .38805 | .92164 | .40408 | .91472 | .41998 | .90753 | 10 |
| 51 | .592   | .452   | .218   | .816   | .832   | .152   | .434   | .461   | .42024 | .741   | 9  |
| 52 | .619   | .441   | .245   | .805   | .859   | .141   | .461   | .449   | .051   | .729   | 8  |
| 53 | .647   | .431   | .272   | .794   | .886   | .130   | .483   | .437   | .077   | .717   | 7  |
| 54 | .674   | .420   | .299   | .784   | .912   | .119   | .514   | .425   | .104   | .704   | 6  |
| 55 | .35701 | .93410 | .37226 | .92773 | .38939 | .92107 | .40541 | .91414 | .42130 | .90692 | 5  |
| 56 | .728   | .400   | .353   | .762   | .966   | .090   | .567   | .402   | .156   | .680   | 4  |
| 57 | .755   | .389   | .380   | .751   | .993   | .085   | .594   | .390   | .183   | .668   | 3  |
| 58 | .782   | .379   | .407   | .740   | .39020 | .073   | .621   | .378   | .209   | .655   | 2  |
| 59 | .810   | .368   | .434   | .729   | .046   | .062   | .647   | .366   | .235   | .643   | 1  |
| 60 | .35837 | .93358 | .37461 | .92718 | .39073 | .92050 | .40674 | .91355 | .42262 | .90631 | 0  |
|    | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | M  |
|    | 69°    |        | 68°    |        | 67°    |        | 66°    |        | 65°    |        |    |

| M. | 25°    |        | 26°    |        | 27°    |        | 28°    |        | 29°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   |    |
| 0  | .42262 | .90631 | .43837 | .89879 | .45399 | .89101 | .46947 | .88295 | .48481 | .87462 | 60 |
| 1  | .288   | .618   | .863   | .867   | .425   | .877   | .973   | .281   | .506   | .448   | 59 |
| 2  | .315   | .606   | .889   | .854   | .451   | .874   | .999   | .267   | .532   | .434   | 58 |
| 3  | .341   | .594   | .916   | .841   | .477   | .861   | .47024 | .254   | .557   | .420   | 57 |
| 4  | .367   | .582   | .942   | .828   | .503   | .848   | .050   | .240   | .583   | .406   | 56 |
| 5  | .42394 | .90569 | .43968 | .89816 | .45529 | .89035 | .47776 | .88226 | .48608 | .87391 | 55 |
| 6  | .420   | .557   | .994   | .803   | .554   | .821   | .101   | .213   | .634   | .377   | 54 |
| 7  | .446   | .545   | .44020 | .790   | .580   | .808   | .127   | .199   | .659   | .363   | 53 |
| 8  | .473   | .532   | .046   | .777   | .606   | .88995 | .153   | .185   | .684   | .349   | 52 |
| 9  | .499   | .520   | .072   | .764   | .632   | .981   | .178   | .172   | .710   | .335   | 51 |
| 10 | .42525 | .90507 | .44098 | .89752 | .45658 | .88968 | .47204 | .88158 | .48735 | .87321 | 50 |
| 11 | .552   | .495   | .124   | .739   | .684   | .955   | .229   | .144   | .761   | .306   | 49 |
| 12 | .578   | .483   | .151   | .726   | .710   | .942   | .255   | .130   | .786   | .292   | 48 |
| 13 | .604   | .470   | .177   | .713   | .736   | .928   | .281   | .117   | .811   | .278   | 47 |
| 14 | .631   | .458   | .203   | .700   | .762   | .915   | .306   | .103   | .837   | .264   | 46 |
| 15 | .42657 | .90449 | .44220 | .89687 | .45787 | .88902 | .47332 | .88089 | .48862 | .87250 | 45 |
| 16 | .683   | .433   | .255   | .674   | .813   | .888   | .358   | .075   | .888   | .235   | 44 |
| 17 | .709   | .421   | .281   | .662   | .839   | .875   | .383   | .062   | .913   | .221   | 43 |
| 18 | .736   | .408   | .307   | .649   | .865   | .862   | .409   | .048   | .938   | .207   | 42 |
| 19 | .762   | .396   | .333   | .636   | .891   | .848   | .434   | .034   | .964   | .193   | 41 |
| 20 | .42788 | .90383 | .44359 | .89623 | .45917 | .88835 | .47460 | .88020 | .48989 | .87178 | 40 |
| 21 | .815   | .371   | .385   | .610   | .942   | .822   | .486   | .006   | .49014 | .164   | 39 |
| 22 | .841   | .358   | .411   | .597   | .968   | .808   | .511   | .87993 | .040   | .159   | 38 |
| 23 | .867   | .346   | .437   | .584   | .994   | .795   | .537   | .979   | .065   | .136   | 37 |
| 24 | .894   | .334   | .464   | .571   | .46020 | .782   | .562   | .965   | .090   | .121   | 36 |
| 25 | .42920 | .90321 | .44490 | .89558 | .46046 | .88768 | .47588 | .87951 | .49116 | .87107 | 35 |
| 26 | .946   | .309   | .516   | .545   | .072   | .755   | .614   | .937   | .141   | .693   | 34 |
| 27 | .972   | .296   | .542   | .532   | .097   | .741   | .639   | .923   | .166   | .679   | 33 |
| 28 | .999   | .284   | .568   | .519   | .123   | .728   | .665   | .909   | .192   | .664   | 32 |
| 29 | .43025 | .9025  | .594   | .506   | .149   | .715   | .690   | .896   | .217   | .650   | 31 |
| 30 | .43951 | .90259 | .44620 | .89493 | .46175 | .88701 | .47716 | .87882 | .49242 | .87036 | 30 |
| 31 | .077   | .246   | .646   | .480   | .201   | .688   | .741   | .868   | .268   | .021   | 29 |
| 32 | .104   | .233   | .672   | .467   | .226   | .674   | .767   | .854   | .293   | .007   | 28 |
| 33 | .130   | .221   | .698   | .454   | .252   | .661   | .793   | .840   | .318   | .86993 | 27 |
| 34 | .156   | .208   | .724   | .441   | .278   | .647   | .818   | .826   | .344   | .978   | 26 |
| 35 | .43182 | .90196 | .44750 | .89428 | .46304 | .88634 | .47844 | .87812 | .49369 | .86664 | 25 |
| 36 | .209   | .183   | .776   | .415   | .330   | .620   | .869   | .798   | .394   | .949   | 24 |
| 37 | .235   | .171   | .802   | .402   | .355   | .607   | .895   | .784   | .419   | .935   | 23 |
| 38 | .261   | .158   | .828   | .389   | .381   | .593   | .920   | .770   | .445   | .921   | 22 |
| 39 | .287   | .146   | .854   | .376   | .407   | .580   | .946   | .756   | .470   | .906   | 21 |
| 40 | .43111 | .90133 | .44880 | .89363 | .46433 | .88566 | .47971 | .87743 | .49495 | .86892 | 20 |
| 41 | .340   | .129   | .906   | .350   | .458   | .553   | .997   | .729   | .521   | .878   | 19 |
| 42 | .366   | .108   | .932   | .337   | .484   | .539   | .48022 | .715   | .546   | .863   | 18 |
| 43 | .392   | .095   | .958   | .324   | .510   | .526   | .048   | .701   | .571   | .849   | 17 |
| 44 | .418   | .082   | .984   | .311   | .536   | .512   | .073   | .687   | .596   | .834   | 16 |
| 45 | .43445 | .90070 | .45010 | .89298 | .46561 | .88499 | .48099 | .87673 | .49622 | .86820 | 15 |
| 46 | .471   | .057   | .036   | .285   | .587   | .485   | .124   | .659   | .647   | .805   | 14 |
| 47 | .497   | .045   | .062   | .272   | .613   | .472   | .150   | .645   | .672   | .791   | 13 |
| 48 | .523   | .032   | .088   | .259   | .639   | .458   | .175   | .631   | .697   | .777   | 12 |
| 49 | .549   | .019   | .114   | .245   | .664   | .445   | .201   | .617   | .723   | .762   | 11 |
| 50 | .43575 | .90007 | .45140 | .89232 | .46690 | .88431 | .48226 | .87603 | .49748 | .86748 | 10 |
| 51 | .607   | .89994 | .166   | .219   | .716   | .417   | .252   | .589   | .773   | .733   | 9  |
| 52 | .628   | .981   | .192   | .206   | .742   | .404   | .277   | .575   | .798   | .719   | 8  |
| 53 | .654   | .968   | .218   | .193   | .767   | .390   | .303   | .561   | .824   | .704   | 7  |
| 54 | .680   | .956   | .243   | .180   | .793   | .377   | .328   | .546   | .849   | .690   | 6  |
| 55 | .43706 | .89943 | .45269 | .89167 | .46819 | .88393 | .48354 | .87532 | .49874 | .86675 | 5  |
| 56 | .733   | .930   | .295   | .153   | .844   | .349   | .379   | .518   | .899   | .661   | 4  |
| 57 | .759   | .918   | .321   | .140   | .870   | .336   | .405   | .504   | .924   | .646   | 3  |
| 58 | .785   | .905   | .347   | .127   | .896   | .322   | .430   | .490   | .950   | .632   | 2  |
| 59 | .811   | .892   | .373   | .114   | .921   | .308   | .456   | .476   | .975   | .617   | 1  |
| 60 | .43837 | .89879 | .45399 | .89101 | .46947 | .88295 | .48481 | .87462 | .50000 | .86603 | 0  |
|    | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | M. |
|    | 64°    |        | 63°    |        | 62°    |        | 61°    |        | 60°    |        |    |

| M. | 30°    |        | 31°    |        | 32°    |        | 33°    |        | 34°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   |    |
| 0  | .50000 | .86603 | .51504 | .85717 | .52992 | .84805 | .54464 | .83867 | .55919 | .82904 | 60 |
| 1  | .025   | .588   | .529   | .702   | .53017 | .789   | .488   | .851   | .943   | .887   | 59 |
| 2  | .050   | .573   | .554   | .687   | .041   | .774   | .513   | .835   | .968   | .871   | 58 |
| 3  | .076   | .559   | .579   | .672   | .066   | .759   | .537   | .819   | .992   | .855   | 57 |
| 4  | .101   | .544   | .604   | .657   | .091   | .743   | .561   | .804   | .56016 | .839   | 56 |
| 5  | .50126 | .86530 | .51628 | .85642 | .53115 | .84728 | .54586 | .83788 | .56040 | .82822 | 55 |
| 6  | .151   | .515   | .653   | .627   | .140   | .712   | .610   | .772   | .064   | .806   | 54 |
| 7  | .176   | .501   | .678   | .612   | .164   | .697   | .635   | .756   | .088   | .790   | 53 |
| 8  | .201   | .486   | .703   | .597   | .189   | .681   | .659   | .740   | .112   | .773   | 52 |
| 9  | .227   | .471   | .728   | .582   | .214   | .666   | .683   | .724   | .136   | .757   | 51 |
| 10 | .50252 | .86457 | .51753 | .85567 | .53238 | .84650 | .54708 | .83708 | .56160 | .82741 | 50 |
| 11 | .277   | .442   | .778   | .551   | .263   | .635   | .732   | .692   | .184   | .724   | 49 |
| 12 | .302   | .427   | .803   | .536   | .288   | .619   | .756   | .676   | .208   | .708   | 48 |
| 13 | .327   | .413   | .828   | .521   | .312   | .604   | .781   | .660   | .232   | .692   | 47 |
| 14 | .352   | .398   | .852   | .506   | .337   | .588   | .805   | .645   | .256   | .675   | 46 |
| 15 | .50377 | .86384 | .51877 | .85491 | .53361 | .84573 | .54829 | .83629 | .56280 | .82659 | 45 |
| 16 | .403   | .369   | .902   | .476   | .386   | .557   | .854   | .613   | .305   | .643   | 44 |
| 17 | .428   | .354   | .927   | .461   | .411   | .542   | .878   | .597   | .329   | .626   | 43 |
| 18 | .453   | .340   | .952   | .446   | .435   | .526   | .902   | .581   | .353   | .610   | 42 |
| 19 | .478   | .325   | .977   | .431   | .460   | .511   | .927   | .565   | .377   | .593   | 41 |
| 20 | .50503 | .86310 | .52002 | .85416 | .53484 | .84495 | .54951 | .83549 | .56401 | .82577 | 40 |
| 21 | .528   | .295   | .026   | .401   | .509   | .480   | .975   | .533   | .425   | .561   | 39 |
| 22 | .553   | .281   | .051   | .385   | .534   | .464   | .999   | .517   | .449   | .544   | 38 |
| 23 | .578   | .266   | .076   | .370   | .558   | .448   | .55024 | .501   | .473   | .528   | 37 |
| 24 | .603   | .251   | .101   | .355   | .583   | .433   | .048   | .485   | .497   | .511   | 36 |
| 25 | .50628 | .86237 | .52126 | .85340 | .53607 | .84417 | .55072 | .83469 | .56521 | .82495 | 35 |
| 26 | .654   | .222   | .151   | .325   | .632   | .402   | .997   | .453   | .545   | .478   | 34 |
| 27 | .679   | .207   | .175   | .310   | .656   | .386   | .121   | .437   | .569   | .462   | 33 |
| 28 | .704   | .192   | .200   | .294   | .681   | .370   | .145   | .421   | .593   | .446   | 32 |
| 29 | .729   | .178   | .225   | .279   | .705   | .355   | .169   | .405   | .617   | .429   | 31 |
| 30 | .50754 | .86163 | .52250 | .85264 | .53730 | .84339 | .55194 | .83389 | .56641 | .82413 | 30 |
| 31 | .779   | .148   | .275   | .249   | .754   | .324   | .218   | .373   | .665   | .396   | 29 |
| 32 | .804   | .133   | .299   | .234   | .779   | .308   | .242   | .356   | .689   | .380   | 28 |
| 33 | .829   | .119   | .324   | .218   | .804   | .292   | .266   | .340   | .713   | .363   | 27 |
| 34 | .854   | .104   | .349   | .203   | .828   | .277   | .291   | .324   | .736   | .347   | 26 |
| 35 | .50879 | .86089 | .52374 | .85188 | .53853 | .84261 | .55315 | .83308 | .56760 | .82330 | 25 |
| 36 | .904   | .074   | .399   | .173   | .877   | .245   | .339   | .292   | .784   | .314   | 24 |
| 37 | .929   | .059   | .423   | .157   | .902   | .230   | .363   | .276   | .808   | .297   | 23 |
| 38 | .954   | .045   | .448   | .142   | .926   | .214   | .388   | .260   | .832   | .281   | 22 |
| 39 | .979   | .030   | .473   | .127   | .951   | .198   | .412   | .244   | .856   | .264   | 21 |
| 40 | .51004 | .86015 | .52498 | .85112 | .53975 | .84182 | .55436 | .83228 | .56890 | .82248 | 20 |
| 41 | .029   | .000   | .522   | .096   | .54000 | .167   | .460   | .212   | .904   | .231   | 19 |
| 42 | .054   | .85985 | .547   | .081   | .024   | .151   | .484   | .195   | .928   | .214   | 18 |
| 43 | .079   | .970   | .572   | .066   | .049   | .135   | .509   | .179   | .952   | .198   | 17 |
| 44 | .104   | .956   | .597   | .051   | .073   | .120   | .533   | .163   | .976   | .181   | 16 |
| 45 | .51129 | .85941 | .52621 | .85035 | .54097 | .84104 | .55557 | .83147 | .57000 | .82165 | 15 |
| 46 | .154   | .926   | .646   | .020   | .122   | .088   | .581   | .131   | .024   | .148   | 14 |
| 47 | .179   | .911   | .671   | .005   | .146   | .072   | .605   | .115   | .047   | .132   | 13 |
| 48 | .204   | .896   | .696   | .84989 | .171   | .057   | .630   | .098   | .071   | .115   | 12 |
| 49 | .229   | .881   | .720   | .974   | .195   | .041   | .654   | .082   | .095   | .098   | 11 |
| 50 | .51254 | .85866 | .52745 | .84959 | .54220 | .84025 | .55678 | .83066 | .57119 | .82082 | 10 |
| 51 | .279   | .851   | .770   | .943   | .244   | .009   | .702   | .050   | .143   | .065   | 9  |
| 52 | .304   | .836   | .794   | .928   | .269   | .83994 | .726   | .034   | .167   | .048   | 8  |
| 53 | .329   | .821   | .819   | .913   | .293   | .978   | .750   | .017   | .191   | .032   | 7  |
| 54 | .354   | .806   | .844   | .897   | .317   | .962   | .775   | .001   | .215   | .015   | 6  |
| 55 | .51379 | .85792 | .52869 | .84882 | .54342 | .83946 | .55799 | .82985 | .57238 | .81999 | 5  |
| 56 | .404   | .777   | .893   | .866   | .366   | .930   | .823   | .969   | .262   | .982   | 4  |
| 57 | .429   | .762   | .918   | .851   | .391   | .915   | .847   | .953   | .286   | .965   | 3  |
| 58 | .454   | .747   | .943   | .836   | .415   | .899   | .871   | .936   | .310   | .949   | 2  |
| 59 | .479   | .732   | .967   | .820   | .440   | .883   | .895   | .920   | .334   | .932   | 1  |
| 60 | .51504 | .85717 | .52992 | .84805 | .54464 | .83867 | .55919 | .82904 | .57358 | .81915 | 0  |
|    | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   |    |
|    | 59°    |        | 58°    |        | 57°    |        | 56°    |        | 55°    |        | M. |

| M. | 35°    |        | 36°    |        | 37°    |        | 38°    |        | 39°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   |    |
| 0  | .57358 | .81915 | .58779 | .80902 | .60182 | .79864 | .61566 | .78801 | .62932 | .77715 | 60 |
| 1  | .381   | .809   | 802    | 885    | 205    | 846    | 539    | 783    | 955    | 696    | 59 |
| 2  | 405    | 882    | 826    | 867    | 228    | 829    | 612    | 765    | 977    | 678    | 58 |
| 3  | 429    | 865    | 849    | 850    | 251    | 811    | 635    | 747    | .63000 | 660    | 57 |
| 4  | 453    | .848   | 873    | 833    | 274    | 793    | 658    | 729    | 022    | 641    | 56 |
| 5  | .57477 | .81832 | .58896 | .80816 | .60298 | .79776 | .61681 | .78711 | .63045 | .77623 | 55 |
| 6  | 501    | 815    | 920    | 799    | 321    | 758    | 704    | 694    | 068    | 605    | 54 |
| 7  | 524    | .798   | 943    | 782    | 344    | 741    | 726    | 676    | 090    | 586    | 53 |
| 8  | 548    | 782    | 967    | 765    | 367    | 723    | 749    | 658    | 113    | 568    | 52 |
| 9  | 572    | 765    | 990    | 748    | 390    | 706    | 772    | 640    | 135    | 550    | 51 |
| 10 | .57596 | .81748 | .59014 | .80730 | .60414 | .79688 | .61795 | .78622 | .63158 | .77531 | 50 |
| 11 | 619    | 731    | 037    | 713    | 437    | 671    | 818    | 604    | 180    | 513    | 49 |
| 12 | 643    | 714    | 061    | 696    | 460    | 653    | 841    | 586    | 203    | 494    | 48 |
| 13 | 667    | 698    | 084    | 679    | 483    | 635    | 864    | 568    | 225    | 476    | 47 |
| 14 | 691    | 681    | 108    | 662    | 506    | 618    | 887    | 550    | 248    | 458    | 46 |
| 15 | .57715 | .81664 | .59131 | .80644 | .60529 | .79600 | .61909 | .78532 | .63271 | .77439 | 45 |
| 16 | 738    | 647    | 154    | 627    | 553    | 583    | 932    | 514    | 293    | 421    | 44 |
| 17 | 762    | 631    | 178    | 610    | 576    | 565    | 955    | 496    | 316    | 402    | 43 |
| 18 | 786    | 614    | 201    | 593    | 599    | 547    | 978    | 478    | 338    | 384    | 42 |
| 19 | 810    | 597    | 225    | 576    | 622    | 530    | .62001 | 460    | 361    | 366    | 41 |
| 20 | .57833 | .81580 | .59248 | .80558 | .60645 | .79512 | .62024 | .78442 | .63383 | .77347 | 40 |
| 21 | 857    | 563    | 272    | 541    | 668    | 494    | 046    | 424    | 406    | 329    | 39 |
| 22 | 881    | 546    | 295    | 524    | 691    | 477    | 009    | 405    | 428    | 310    | 38 |
| 23 | 904    | 530    | 318    | 507    | 714    | 459    | 092    | 387    | 451    | 292    | 37 |
| 24 | 928    | 513    | 342    | 489    | 738    | 441    | 115    | 369    | 473    | 273    | 36 |
| 25 | .57952 | .81496 | .59365 | .80472 | .60761 | .79424 | .62138 | .78351 | .63496 | .77255 | 35 |
| 26 | 976    | 479    | 389    | 455    | 784    | 406    | 160    | 333    | 515    | 236    | 34 |
| 27 | 999    | 462    | 412    | 438    | 807    | 388    | 183    | 315    | 540    | 218    | 33 |
| 28 | .58023 | 445    | 436    | 420    | 830    | 371    | 206    | 297    | 563    | 199    | 32 |
| 29 | 047    | 428    | 459    | 403    | 853    | 353    | 229    | 279    | 585    | 181    | 31 |
| 30 | .58070 | .81412 | .59482 | .80386 | .60876 | .79335 | .62251 | .78261 | .63608 | .77162 | 30 |
| 31 | 094    | 395    | 506    | 368    | 899    | 315    | 274    | 243    | 630    | 144    | 29 |
| 32 | 118    | 378    | 529    | 351    | 922    | 300    | 297    | 225    | 653    | 125    | 28 |
| 33 | 141    | 361    | 552    | 334    | 945    | 282    | 320    | 206    | 675    | 107    | 27 |
| 34 | 165    | 344    | 576    | 316    | 968    | 264    | 342    | 188    | 698    | 088    | 26 |
| 35 | .58189 | .81327 | .59599 | .80299 | .60991 | .79247 | .62305 | .78170 | .63720 | .77070 | 25 |
| 36 | 212    | 310    | 622    | 282    | .61015 | 229    | 388    | 152    | 742    | 051    | 24 |
| 37 | 236    | 293    | 646    | 264    | 038    | 211    | 411    | 134    | 765    | 033    | 23 |
| 38 | 260    | 276    | 669    | 247    | 061    | 193    | 433    | 116    | 787    | 014    | 22 |
| 39 | 283    | 259    | 693    | 230    | 084    | 176    | 456    | 098    | 810    | .76996 | 21 |
| 40 | .58307 | .81242 | .59716 | .80212 | .61107 | .79158 | .62479 | .78079 | .63832 | .76977 | 20 |
| 41 | 330    | 225    | 739    | 195    | 130    | 140    | 502    | 061    | 854    | 959    | 19 |
| 42 | 354    | 208    | 763    | 178    | 153    | 122    | 524    | 043    | 877    | 940    | 18 |
| 43 | 378    | 191    | 786    | 160    | 176    | 105    | 547    | 025    | 899    | 921    | 17 |
| 44 | 401    | 174    | 809    | 143    | 199    | 087    | 570    | 007    | 922    | 903    | 16 |
| 45 | .58425 | .81157 | .59832 | .80125 | .61222 | .79069 | .62592 | .77988 | .63944 | .76884 | 15 |
| 46 | 449    | 140    | 856    | 108    | 245    | 051    | 615    | 970    | 966    | 866    | 14 |
| 47 | 472    | 123    | 879    | 091    | 268    | 033    | 638    | 952    | 989    | 847    | 13 |
| 48 | 496    | 106    | 902    | 073    | 291    | 016    | 660    | 934    | .64011 | 828    | 12 |
| 49 | 519    | 089    | 926    | 056    | 314    | .78998 | 683    | 916    | 033    | 810    | 11 |
| 50 | .58543 | .81072 | .59949 | .80038 | .61337 | .78980 | .62706 | .77897 | .64056 | .76791 | 10 |
| 51 | 567    | 055    | 972    | 021    | 360    | 962    | 728    | 879    | 078    | 772    | 9  |
| 52 | 590    | 038    | 995    | 003    | 383    | 944    | 751    | 861    | 100    | 754    | 8  |
| 53 | 614    | 021    | .60019 | .79986 | 406    | 926    | 774    | 843    | 123    | 735    | 7  |
| 54 | 637    | 004    | 042    | 968    | 429    | 908    | 796    | 824    | 145    | 717    | 6  |
| 55 | .58661 | .80987 | .60065 | .79951 | .61451 | .78891 | .62819 | .77806 | .64167 | .76698 | 5  |
| 56 | 684    | 970    | 089    | 934    | 474    | 873    | 842    | 788    | 190    | 679    | 4  |
| 57 | 708    | 953    | 112    | 916    | 497    | 855    | 864    | 769    | 212    | 661    | 3  |
| 58 | 731    | 936    | 135    | 899    | 520    | 837    | 887    | 751    | 234    | 642    | 2  |
| 59 | 755    | 919    | 158    | 881    | 543    | 819    | 909    | 733    | 256    | 623    | 1  |
| 60 | .58779 | .80902 | .60182 | .79864 | .61566 | .78801 | .62932 | .77715 | .64279 | .76604 | 0  |
|    | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   |    |
|    | 54°    |        | 53°    |        | 52°    |        | 51°    |        | 50°    |        |    |

| M. | 40°    |        | 41°    |        | 42°    |        | 43°    |        | 44°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   |    |
| 0  | .64279 | .76604 | .65606 | .75471 | .66913 | .74314 | .68200 | .73135 | .69466 | .71934 | 60 |
| 1  | 301    | 586    | 628    | 452    | 935    | 295    | 221    | 116    | 487    | 914    | 59 |
| 2  | 323    | 567    | 650    | 433    | 956    | 276    | 242    | 096    | 508    | 894    | 58 |
| 3  | 346    | 548    | 672    | 414    | 978    | 256    | 264    | 076    | 529    | 873    | 57 |
| 4  | 368    | 530    | 694    | 395    | 999    | 237    | 285    | 056    | 549    | 853    | 56 |
| 5  | .64390 | .76511 | .65716 | .75375 | .67021 | .74217 | .68306 | .73036 | .69570 | .71833 | 55 |
| 6  | 412    | 492    | 738    | 356    | 043    | 198    | 327    | 016    | 591    | 813    | 54 |
| 7  | 435    | 473    | 759    | 337    | 064    | 178    | 349    | .72996 | 612    | 792    | 53 |
| 8  | 457    | 455    | 781    | 318    | 086    | 159    | 370    | .976   | 633    | 772    | 52 |
| 9  | 479    | 436    | 803    | 299    | 107    | 139    | 391    | 957    | 654    | 752    | 51 |
| 10 | .64501 | .76417 | .65825 | .75280 | .67129 | .74120 | .68412 | .72937 | .69675 | .71732 | 50 |
| 11 | 524    | 398    | 847    | 261    | 151    | 100    | 434    | 917    | 696    | 711    | 49 |
| 12 | 546    | 380    | 869    | 241    | 172    | 080    | 455    | 897    | 717    | 691    | 48 |
| 13 | 568    | 361    | 891    | 222    | 194    | 061    | 476    | 877    | 737    | 671    | 47 |
| 14 | 590    | 342    | 913    | 203    | 215    | 041    | 497    | 857    | 758    | 650    | 46 |
| 15 | .64612 | .76323 | .65935 | .75184 | .67237 | .74022 | .68518 | .72837 | .69779 | .71630 | 45 |
| 16 | 635    | 304    | 956    | 165    | 258    | 002    | 539    | 817    | 800    | 610    | 44 |
| 17 | 657    | 286    | 978    | 146    | 280    | .73983 | 561    | 797    | 821    | 590    | 43 |
| 18 | 679    | 267    | .66000 | 126    | 301    | 963    | 582    | 777    | 842    | 569    | 42 |
| 19 | 701    | 248    | 022    | 107    | 323    | 944    | 603    | 757    | 862    | 549    | 41 |
| 20 | .64723 | .76229 | .66044 | .75088 | .67344 | .73924 | .68624 | .72737 | .69883 | .71529 | 40 |
| 21 | 746    | 210    | 066    | 099    | 366    | 904    | 645    | 717    | 904    | 508    | 39 |
| 22 | 768    | 192    | 088    | 050    | 387    | 885    | 666    | 697    | 925    | 488    | 38 |
| 23 | 790    | 173    | 109    | 030    | 409    | 865    | 688    | 677    | 946    | 468    | 37 |
| 24 | 812    | 154    | 131    | 011    | 430    | 846    | 709    | 657    | 966    | 447    | 36 |
| 25 | .64834 | .76135 | .66155 | .74992 | .67452 | .73826 | .68730 | .72637 | .69987 | .71427 | 35 |
| 26 | 856    | 116    | 175    | 973    | 473    | 806    | 751    | 617    | .70008 | 407    | 34 |
| 27 | 878    | 097    | 197    | 953    | 495    | 787    | 772    | 597    | 029    | 386    | 33 |
| 28 | 901    | 078    | 218    | 934    | 516    | 767    | 793    | 577    | 049    | 366    | 32 |
| 29 | 923    | 059    | 240    | 915    | 538    | 747    | 814    | 557    | 070    | 345    | 31 |
| 30 | .64945 | .76041 | .66262 | .74896 | .67559 | .73728 | .68835 | .72537 | .70091 | .71325 | 30 |
| 31 | 967    | 022    | 284    | 876    | 580    | 708    | 857    | 517    | 112    | 305    | 29 |
| 32 | 989    | 003    | 306    | 857    | 602    | 688    | 878    | 497    | 132    | 284    | 28 |
| 33 | .65011 | .75984 | 327    | 838    | 623    | 669    | 899    | 477    | 153    | 264    | 27 |
| 34 | 033    | 965    | 349    | 818    | 645    | 649    | 920    | 457    | 174    | 243    | 26 |
| 35 | .65055 | .75946 | .66271 | .74799 | .67666 | .73629 | .68941 | .72437 | .70195 | .71223 | 25 |
| 36 | 077    | 927    | 393    | 780    | 688    | 610    | 962    | 417    | 215    | 203    | 24 |
| 37 | 100    | 908    | 414    | 760    | 709    | 590    | 983    | 397    | 236    | 182    | 23 |
| 38 | 122    | 889    | 436    | 741    | 730    | 570    | .69004 | 377    | 257    | 162    | 22 |
| 39 | 144    | 870    | 458    | 722    | 752    | 551    | 025    | 357    | 277    | 141    | 21 |
| 40 | .65166 | .75851 | .66480 | .74703 | .67773 | .73531 | .69046 | .72337 | .70298 | .71121 | 20 |
| 41 | 188    | 832    | 501    | 683    | 795    | 511    | 067    | 317    | 319    | 100    | 19 |
| 42 | 210    | 813    | 523    | 664    | 816    | 491    | 088    | 297    | 339    | 080    | 18 |
| 43 | 232    | 794    | 545    | 644    | 837    | 472    | 109    | 277    | 360    | 059    | 17 |
| 44 | 254    | 775    | 566    | 625    | 859    | 452    | 130    | 257    | 381    | 039    | 16 |
| 45 | .65276 | .75756 | .66588 | .74606 | .67880 | .73432 | .69151 | .72236 | .70401 | .71019 | 15 |
| 46 | 298    | 738    | 610    | 586    | 901    | 413    | 172    | 216    | 422    | .70998 | 14 |
| 47 | 320    | 719    | 632    | 567    | 923    | 393    | 193    | 196    | 443    | 978    | 13 |
| 48 | 342    | 700    | 653    | 548    | 944    | 373    | 214    | 176    | 463    | 957    | 12 |
| 49 | 364    | 680    | 675    | 528    | 965    | 353    | 235    | 156    | 484    | 937    | 11 |
| 50 | .65386 | .75661 | .66697 | .74509 | .67987 | .73333 | .69256 | .72136 | .70505 | .70916 | 10 |
| 51 | 408    | 642    | 718    | 489    | .68008 | 314    | 277    | 116    | 525    | 896    | 9  |
| 52 | 430    | 623    | 740    | 470    | 029    | 294    | 298    | 095    | 546    | 875    | 8  |
| 53 | 452    | 604    | 762    | 451    | 051    | 274    | 319    | 075    | 567    | 855    | 7  |
| 54 | 474    | 585    | 783    | 431    | 072    | 254    | 340    | 055    | 587    | 834    | 6  |
| 55 | .65496 | .75566 | .66805 | .74412 | .68093 | .73234 | .69361 | .72035 | .70608 | .70813 | 5  |
| 56 | 518    | 547    | 827    | 892    | 115    | 215    | 382    | 015    | 628    | 793    | 4  |
| 57 | 540    | 528    | 848    | 373    | 136    | 195    | 403    | .71995 | 649    | 772    | 3  |
| 58 | 562    | 509    | 870    | 353    | 157    | 175    | 424    | 974    | 670    | 752    | 2  |
| 59 | 584    | 490    | 891    | 334    | 179    | 155    | 445    | 954    | 690    | 731    | 1  |
| 60 | .65606 | .75471 | .66913 | .74314 | .68200 | .73135 | .69466 | .71934 | .70711 | .70711 | 0  |
|    | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | Cos.   | Sin.   | M. |
|    | 49°    |        | 48°    |        | 47°    |        | 46°    |        | 45°    |        |    |

第十九表 正切餘切真數表

| M. | 0°     |         | 1°     |         | 2°     |         | 3°     |         | M  |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .00000 | ∞       | .01746 | 57.2900 | .03492 | 28.6363 | .05241 | 19.0811 | 60 |
| 1  | 029    | 3437.75 | 775    | 50.3506 | 521    | .3994   | 270    | 18.9755 | 59 |
| 2  | 058    | 1718.87 | 804    | 55.4415 | 550    | .1664   | 299    | .8711   | 58 |
| 3  | 087    | 1145.92 | 833    | 54.5613 | 579    | 27.9372 | 328    | .7678   | 57 |
| 4  | 116    | 859.436 | 862    | 53.7086 | 609    | .7117   | 357    | .6656   | 56 |
| 5  | .00145 | 687.549 | .01891 | 52.8821 | .03638 | 27.4899 | .05387 | 18.5645 | 55 |
| 6  | 175    | 572.957 | 920    | 52.0807 | 667    | .2715   | 416    | .4645   | 54 |
| 7  | 204    | 491.106 | 949    | 51.3032 | 696    | .0566   | 445    | .3955   | 53 |
| 8  | 233    | 429.718 | 978    | 50.5485 | 725    | 26.8450 | 474    | .2677   | 52 |
| 9  | 262    | 381.971 | .02007 | 49.8157 | 754    | .6307   | 503    | .1708   | 51 |
| 10 | .00291 | 343.774 | .02036 | 49.1039 | .03783 | 26.4316 | .05533 | 18.0750 | 50 |
| 11 | 320    | 312.521 | 066    | 48.4121 | 812    | .2296   | 562    | 17.9802 | 49 |
| 12 | 349    | 286.478 | 095    | 47.7395 | 842    | .0307   | 591    | .8863   | 48 |
| 13 | 378    | 264.441 | 124    | 47.0853 | 871    | 25.8348 | 620    | .7934   | 47 |
| 14 | 407    | 245.552 | 153    | 46.4489 | 900    | .6418   | 649    | .7015   | 46 |
| 15 | .00436 | 229.182 | .02182 | 45.8294 | .03929 | 25.4517 | .05678 | 17.6106 | 45 |
| 16 | 465    | 214.858 | 211    | 45.2261 | 958    | .2644   | 708    | .5205   | 44 |
| 17 | 495    | 202.219 | 240    | 44.6386 | 987    | .0798   | 737    | .4314   | 43 |
| 18 | 524    | 190.984 | 269    | 44.0661 | .04016 | 24.8978 | 766    | .3432   | 42 |
| 19 | 553    | 180.932 | 298    | 43.5081 | 046    | .7185   | 795    | .2558   | 41 |
| 20 | .00582 | 171.885 | .02328 | 42.9641 | .04075 | 24.5418 | .05824 | 17.1693 | 40 |
| 21 | 611    | 163.700 | 357    | 42.4335 | 104    | .3675   | 854    | .0837   | 39 |
| 22 | 640    | 156.259 | 386    | 41.9158 | 133    | .1957   | 883    | 16.9990 | 38 |
| 23 | 669    | 149.465 | 415    | 41.4106 | 162    | .0263   | 912    | .9150   | 37 |
| 24 | 698    | 143.237 | 444    | 40.9174 | 191    | 23.8593 | 941    | .8319   | 36 |
| 25 | .00727 | 137.507 | .02473 | 40.4358 | .04220 | 23.6945 | .05970 | 16.7496 | 35 |
| 26 | 756    | 132.219 | 502    | 39.9055 | 250    | .5321   | 999    | .6681   | 34 |
| 27 | 785    | 127.321 | 531    | 39.5059 | 279    | .3718   | .06029 | .5874   | 33 |
| 28 | 815    | 122.774 | 560    | 39.0568 | 308    | .2137   | 058    | .5075   | 32 |
| 29 | 844    | 118.540 | 589    | 38.6177 | 337    | .0577   | 087    | .4283   | 31 |
| 30 | .00873 | 114.589 | .02619 | 38.1885 | .04366 | 22.9038 | .06116 | 16.3499 | 30 |
| 31 | 902    | 110.892 | 648    | 37.7686 | 395    | .7519   | 145    | .2722   | 29 |
| 32 | 931    | 107.426 | 677    | 37.3579 | 424    | .6020   | 175    | .1952   | 28 |
| 33 | 960    | 104.171 | 706    | 36.9560 | 454    | .4541   | 204    | .1190   | 27 |
| 34 | 989    | 101.107 | 735    | 36.5627 | 483    | .3081   | 233    | .0435   | 26 |
| 35 | .01018 | 98.2179 | .02764 | 36.1776 | .04512 | 22.1640 | .06262 | 15.9687 | 25 |
| 36 | 047    | 95.4895 | 793    | 35.8006 | 541    | .0217   | 291    | .8945   | 24 |
| 37 | 076    | 92.9085 | 822    | 35.4313 | 570    | 21.8813 | 321    | .8211   | 23 |
| 38 | 105    | 90.4633 | 851    | 35.0695 | 599    | .7426   | 350    | .7483   | 22 |
| 39 | 135    | 88.1436 | 881    | 34.7151 | 628    | .6056   | 379    | .6762   | 21 |
| 40 | .01164 | 85.9398 | .02910 | 34.3678 | .04658 | 21.4704 | .06408 | 15.6048 | 20 |
| 41 | 193    | 83.8435 | 939    | 34.0273 | 687    | .3399   | 438    | .5340   | 19 |
| 42 | 222    | 81.8470 | 968    | 33.6935 | 716    | .2049   | 467    | .4638   | 18 |
| 43 | 251    | 79.9434 | 997    | 33.3662 | 745    | .0747   | 496    | .3943   | 17 |
| 44 | 280    | 78.1263 | .03026 | 33.0452 | 774    | 20.9460 | 525    | .3254   | 16 |
| 45 | .01309 | 76.3900 | .03055 | 32.7303 | .04803 | 20.8188 | .06554 | 15.2571 | 15 |
| 46 | 338    | 74.7292 | 084    | 32.4213 | 833    | .6932   | 584    | .1893   | 14 |
| 47 | 367    | 73.1390 | 114    | 32.1181 | 862    | .5691   | 613    | .1222   | 13 |
| 48 | 396    | 71.6151 | 143    | 31.8205 | 891    | .4465   | 642    | .0557   | 12 |
| 49 | 425    | 70.1533 | 172    | 31.5284 | 920    | .3253   | 671    | 14.9898 | 11 |
| 50 | .01455 | 68.7501 | .03201 | 31.2416 | .04949 | 20.2056 | .06700 | 14.9244 | 10 |
| 51 | 484    | 67.4019 | 230    | 30.9599 | 978    | .0872   | 730    | .8596   | 9  |
| 52 | 513    | 66.1055 | 259    | 30.6833 | .05007 | 19.9702 | 759    | .7954   | 8  |
| 53 | 542    | 64.8580 | 288    | 30.4116 | 037    | .8546   | 788    | .7317   | 7  |
| 54 | 571    | 63.6567 | 317    | 30.1446 | 066    | .7403   | 817    | .6685   | 6  |
| 55 | .01600 | 62.4992 | .03346 | 29.8823 | .05095 | 19.6273 | .06847 | 14.6059 | 5  |
| 56 | 629    | 61.3829 | 376    | 29.6245 | 124    | .5156   | 876    | .5438   | 4  |
| 57 | 658    | 60.3058 | 405    | 29.3711 | 153    | .4051   | 905    | .4823   | 3  |
| 58 | 687    | 59.2659 | 434    | 29.1220 | 182    | .2959   | 934    | .4212   | 2  |
| 59 | 716    | 58.2612 | 463    | 28.8771 | 212    | .1879   | 963    | .3607   | 1  |
| 60 | .01746 | 57.2900 | .03492 | 28.6363 | .05241 | 19.0811 | .06993 | 14.3007 | 0  |

Cot. Tan. 89°

Cot. Tan. 88°

Cot. Tan. 87°

Cot. Tan. 86°

M

| M. | 4°     |         | 5°     |         | 6°     |         | 7°     |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .06993 | 14.3007 | .08749 | 11.4301 | .10510 | 9.51436 | .12278 | 8.14435 | 60 |
| 1  | .07022 | .2411   | .778   | .3919   | .540   | .48781  | .308   | .12481  | 59 |
| 2  | .051   | .1821   | .807   | .3540   | .569   | .46141  | .338   | .10536  | 58 |
| 3  | .080   | .1235   | .837   | .3163   | .599   | .43515  | .367   | .08600  | 57 |
| 4  | .110   | .0655   | .866   | .2789   | .628   | .40904  | .397   | .06674  | 56 |
| 5  | .07139 | 14.0079 | .08895 | 11.2417 | .10657 | 9.38307 | .12426 | 8.04756 | 55 |
| 6  | .168   | 13.9507 | .925   | .2048   | .687   | .35744  | .456   | .02848  | 54 |
| 7  | .197   | .8940   | .954   | .1681   | .716   | .33155  | .485   | .00948  | 53 |
| 8  | .227   | .8378   | .983   | .1316   | .746   | .30599  | .515   | 7.99058 | 52 |
| 9  | .256   | .7821   | .09013 | .0954   | .775   | .28058  | .544   | .97176  | 51 |
| 10 | .07285 | 13.7267 | .09042 | 11.0594 | .10805 | 9.25530 | .12574 | 7.95302 | 50 |
| 11 | .314   | .6719   | .071   | .0237   | .834   | .23016  | .603   | .93438  | 49 |
| 12 | .344   | .6174   | .101   | 10.9882 | .863   | .20516  | .633   | .91582  | 48 |
| 13 | .373   | .5634   | .130   | .9529   | .893   | .18028  | .662   | .89734  | 47 |
| 14 | .402   | .5098   | .159   | .9178   | .922   | .15554  | .692   | .87895  | 46 |
| 15 | .07431 | 13.4566 | .09189 | 10.8829 | .10952 | 9.13093 | .12722 | 7.86064 | 45 |
| 16 | .461   | .4039   | .218   | .8483   | .981   | .10646  | .751   | .84242  | 44 |
| 17 | .490   | .3515   | .247   | .8139   | .11011 | .08211  | .781   | .82428  | 43 |
| 18 | .519   | .2966   | .277   | .7797   | .040   | .05789  | .810   | .80622  | 42 |
| 19 | .548   | .2480   | .306   | .7457   | .070   | .03379  | .840   | .78825  | 41 |
| 20 | .07578 | 13.1969 | .09335 | 10.7119 | .11099 | 9.00983 | .12869 | 7.77035 | 40 |
| 21 | .607   | .1461   | .305   | .6783   | .128   | 8.98598 | .899   | .75254  | 39 |
| 22 | .636   | .0958   | .394   | .6450   | .158   | .96227  | .929   | .73480  | 38 |
| 23 | .665   | .0458   | .423   | .6118   | .187   | .93867  | .958   | .71715  | 37 |
| 24 | .695   | 12.9962 | .453   | .5789   | .217   | .91520  | .988   | .69957  | 36 |
| 25 | .07724 | 12.9469 | .09482 | 10.5462 | .11246 | 8.89185 | .13017 | 7.68208 | 35 |
| 26 | .753   | .8981   | .511   | .5136   | .276   | .86862  | .047   | .66466  | 34 |
| 27 | .782   | .8496   | .541   | .4813   | .305   | .84551  | .076   | .64737  | 33 |
| 28 | .812   | .8014   | .570   | .4491   | .335   | .82252  | .106   | .63005  | 32 |
| 29 | .841   | .7536   | .600   | .4172   | .364   | .79964  | .136   | .61287  | 31 |
| 30 | .07870 | 12.7062 | .09629 | 10.3854 | .11394 | 8.77689 | .13165 | 7.59575 | 30 |
| 31 | .899   | .6591   | .658   | .3538   | .423   | .75425  | .195   | .57872  | 29 |
| 32 | .929   | .6124   | .688   | .3224   | .452   | .73172  | .224   | .56176  | 28 |
| 33 | .958   | .5660   | .717   | .2913   | .482   | .70931  | .254   | .54487  | 27 |
| 34 | .987   | .5199   | .746   | .2602   | .511   | .68701  | .284   | .52806  | 26 |
| 35 | .08017 | 12.4742 | .09776 | 10.2294 | .11541 | 8.66482 | .13313 | 7.51132 | 25 |
| 36 | .046   | .4288   | .805   | .1988   | .570   | .64275  | .343   | .49465  | 24 |
| 37 | .075   | .3838   | .834   | .1683   | .600   | .62078  | .372   | .47806  | 23 |
| 38 | .104   | .3390   | .864   | .1381   | .629   | .59893  | .402   | .46154  | 22 |
| 39 | .134   | .2946   | .893   | .1080   | .659   | .57718  | .432   | .44509  | 21 |
| 40 | .08163 | 12.2505 | .09923 | 10.0780 | .11688 | 8.55555 | .13461 | 7.42871 | 20 |
| 41 | .192   | .2067   | .952   | .0483   | .718   | .53402  | .491   | .41240  | 19 |
| 42 | .221   | .1632   | .981   | .0187   | .747   | .51259  | .521   | .39616  | 18 |
| 43 | .251   | .1201   | .10011 | 9.98931 | .777   | .49128  | .550   | .37999  | 17 |
| 44 | .280   | .0772   | .040   | .96007  | .806   | .47007  | .580   | .36389  | 16 |
| 45 | .08309 | 12.0346 | .10069 | 9.93101 | .11836 | 8.44896 | .13609 | 7.34786 | 15 |
| 46 | .339   | 11.9923 | .099   | .90211  | .865   | .42795  | .639   | .33190  | 14 |
| 47 | .368   | .9504   | .128   | .87338  | .895   | .40705  | .669   | .31600  | 13 |
| 48 | .397   | .9087   | .158   | .84482  | .924   | .38625  | .698   | .30018  | 12 |
| 49 | .427   | .8673   | .187   | .81641  | .954   | .36555  | .728   | .28442  | 11 |
| 50 | .08456 | 11.8262 | .10216 | 9.78817 | .11983 | 8.34496 | .13758 | 7.26873 | 10 |
| 51 | .485   | .7853   | .246   | .76009  | .12013 | .32446  | .787   | .25310  | 9  |
| 52 | .514   | .7448   | .275   | .73217  | .042   | .30406  | .817   | .23754  | 8  |
| 53 | .544   | .7045   | .305   | .70441  | .072   | .28376  | .846   | .22204  | 7  |
| 54 | .573   | .6645   | .334   | .67680  | .101   | .26355  | .876   | .20661  | 6  |
| 55 | .08602 | 11.6248 | .10363 | 9.64935 | .12131 | 8.24345 | .13906 | 7.19125 | 5  |
| 56 | .632   | .5853   | .393   | .62205  | .160   | .22344  | .935   | .17594  | 4  |
| 57 | .661   | .5461   | .422   | .59490  | .190   | .20357  | .965   | .16071  | 3  |
| 58 | .690   | .5072   | .452   | .56791  | .219   | .18370  | .995   | .14553  | 2  |
| 59 | .720   | .4685   | .481   | .54106  | .249   | .16398  | .14024 | 13042   | 1  |
| 60 | .08749 | 11.4301 | .10510 | 9.51436 | .12278 | 8.14435 | .14054 | 7.11537 | 0  |
|    | Cot    | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | M. |
|    | 85°    |         | 84°    |         | 83°    |         | 82°    |         |    |



| M. | 8°     |         | 9°     |         | 10°    |         | 11°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .14054 | 7.11537 | .15838 | 6.31375 | .17633 | 5.67128 | .19438 | 5.14455 | 60 |
| 1  | .084   | .10038  | 868    | .30189  | 663    | .66165  | 468    | .13658  | 59 |
| 2  | .113   | .08546  | 898    | .29007  | 693    | .65205  | 498    | .12862  | 58 |
| 3  | .143   | .07059  | 928    | .27829  | 723    | .64248  | 529    | .12069  | 57 |
| 4  | .173   | .05579  | 958    | .26655  | 753    | .63295  | 559    | .11279  | 56 |
| 5  | .14202 | 7.04105 | .15988 | 6.25486 | .17783 | 5.62344 | .19589 | 5.10490 | 55 |
| 6  | .232   | .02637  | .16017 | .24321  | 813    | .61397  | 619    | .09704  | 54 |
| 7  | .262   | .01174  | 047    | .23160  | 843    | .60452  | 649    | .08921  | 53 |
| 8  | .291   | 6.99718 | 077    | .22003  | 873    | .59511  | 680    | .08139  | 52 |
| 9  | .321   | .98268  | 107    | .20851  | 903    | .58573  | 710    | .07360  | 51 |
| 10 | .14351 | 6.96823 | .16137 | 6.19703 | .17933 | 5.57638 | .19740 | 5.06584 | 50 |
| 11 | .381   | .95385  | 167    | .18559  | 963    | .56706  | 770    | .05809  | 49 |
| 12 | .410   | .93952  | 196    | .17419  | 993    | .55777  | 801    | .05037  | 48 |
| 13 | .440   | .92525  | 226    | .16283  | .18023 | .54851  | 831    | .04267  | 47 |
| 14 | .470   | .91104  | 256    | .15151  | 053    | .53927  | 861    | .03499  | 46 |
| 15 | .14499 | 6.89688 | .16286 | 6.14023 | .18083 | 5.53007 | .19891 | 5.02734 | 45 |
| 16 | .529   | .88273  | 316    | .12899  | 113    | .52090  | 921    | .01971  | 44 |
| 17 | .559   | .86874  | 346    | .11779  | 143    | .51176  | 952    | .01210  | 43 |
| 18 | .588   | .85475  | 376    | .10664  | 173    | .50264  | 982    | .00451  | 42 |
| 19 | .618   | .84082  | 405    | .09552  | 203    | .49356  | .20012 | 4.99695 | 41 |
| 20 | .14648 | 6.82694 | .16435 | 6.08444 | .18233 | 5.48451 | .20042 | 4.98940 | 40 |
| 21 | .678   | .81312  | 465    | .07340  | 263    | .47548  | 073    | .98188  | 39 |
| 22 | .707   | .79936  | 495    | .06240  | 293    | .46648  | 103    | .97438  | 38 |
| 23 | .737   | .78564  | 525    | .05143  | 323    | .45751  | 133    | .96690  | 37 |
| 24 | .767   | .77199  | 555    | .04051  | 353    | .44857  | 164    | .95945  | 36 |
| 25 | .14796 | 6.75838 | .16585 | 6.02962 | .18384 | 5.43966 | .20194 | 4.95201 | 35 |
| 26 | .826   | .74483  | 615    | .01878  | 414    | .43077  | 224    | .94460  | 34 |
| 27 | .856   | .73133  | 645    | .00797  | 444    | .42192  | 254    | .93721  | 33 |
| 28 | .886   | .71789  | 674    | 5.99720 | 474    | .41309  | 285    | .92984  | 32 |
| 29 | .915   | .70450  | 704    | .98646  | 504    | .40429  | 315    | .92249  | 31 |
| 30 | .14945 | 6.69116 | .16734 | 5.97576 | .18534 | 5.39552 | .20345 | 4.91516 | 30 |
| 31 | .975   | .67787  | 764    | .96510  | 564    | .38677  | 376    | .90785  | 29 |
| 32 | .15005 | .66463  | 794    | .95448  | 594    | .37805  | 406    | .90056  | 28 |
| 33 | .034   | .65144  | 824    | .94390  | 624    | .36936  | 436    | .89330  | 27 |
| 34 | .064   | .63831  | 854    | .93335  | 654    | .36070  | 466    | .88605  | 26 |
| 35 | .15094 | 6.62523 | .16884 | 5.92283 | .18684 | 5.35206 | .20497 | 4.87882 | 25 |
| 36 | .124   | .61219  | 914    | .91236  | 714    | .34345  | 527    | .87162  | 24 |
| 37 | .153   | .59921  | 944    | .90191  | 745    | .33487  | 557    | .86444  | 23 |
| 38 | .183   | .58627  | 974    | .89151  | 775    | .32631  | 588    | .85727  | 22 |
| 39 | .213   | .57339  | .17004 | .88114  | 805    | .31778  | 618    | .85013  | 21 |
| 40 | .15243 | 6.56055 | .17033 | 5.87080 | .18835 | 5.30928 | .20648 | 4.84300 | 20 |
| 41 | .272   | .54777  | 063    | .86051  | 865    | .30080  | 679    | .83590  | 19 |
| 42 | .302   | .53503  | 093    | .85024  | 895    | .29235  | 709    | .82882  | 18 |
| 43 | .332   | .52234  | 123    | .84001  | 925    | .28393  | 739    | .82175  | 17 |
| 44 | .362   | .50970  | 153    | .82982  | 955    | .27553  | 770    | .81471  | 16 |
| 45 | .15391 | 6.49710 | .17183 | 5.81966 | .18986 | 5.26715 | .20800 | 4.80769 | 15 |
| 46 | .421   | .48456  | 213    | .80953  | .19016 | .25880  | 830    | .80068  | 14 |
| 47 | .451   | .47206  | 243    | .79944  | 046    | .25048  | 861    | .79370  | 13 |
| 48 | .481   | .45961  | 273    | .78938  | 076    | .24218  | 891    | .78673  | 12 |
| 49 | .511   | .44720  | 303    | .77936  | 106    | .23391  | 921    | .77978  | 11 |
| 50 | .5540  | 6.43484 | .17333 | 5.76937 | .19136 | 5.22566 | .20952 | 4.77286 | 10 |
| 51 | .570   | .42253  | 363    | .75941  | 166    | .21744  | 982    | .76595  | 9  |
| 52 | .600   | .41026  | 393    | .74949  | 197    | .20925  | .21013 | 7.5906  | 8  |
| 53 | .630   | .39804  | 423    | .73960  | 227    | .20107  | 043    | .75219  | 7  |
| 54 | .660   | .38587  | 453    | .72974  | 257    | .19293  | 073    | .74534  | 6  |
| 55 | .15689 | 6.37374 | .17483 | 5.71992 | .19287 | 5.18480 | .21104 | 4.73851 | 5  |
| 56 | .719   | .36165  | 513    | .71013  | 317    | .17671  | 134    | .73170  | 4  |
| 57 | .749   | .34961  | 543    | .70037  | 347    | .16863  | 164    | .72490  | 3  |
| 58 | .779   | .33761  | 573    | .69064  | 378    | .16058  | 195    | .71813  | 2  |
| 59 | .809   | .32566  | 603    | .68094  | 408    | .15256  | 225    | .71137  | 1  |
| 60 | .15838 | 6.31375 | .17633 | 5.67128 | .19438 | 5.14455 | .21256 | 4.70463 | 0  |
|    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    |    |
|    | 81°    |         | 80°    |         | 79°    |         | 78°    |         |    |

| M. | 12°    |         | 13°    |         | 14°    |         | 15°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .21256 | 4.70463 | .23087 | 4.33148 | .24933 | 4.01078 | .26795 | 3.73205 | 60 |
| 1  | 286    | .69791  | 117    | .32573  | 964    | .00582  | 826    | .72771  | 59 |
| 2  | 316    | .69121  | 148    | .32001  | 995    | .00086  | 857    | .72338  | 58 |
| 3  | 347    | .68452  | 179    | .31430  | .25026 | 3.99592 | 888    | .71907  | 57 |
| 4  | 377    | .67786  | 209    | .30860  | 056    | .99099  | 920    | .71476  | 56 |
| 5  | .21408 | 4.67121 | .23240 | 4.30291 | .25087 | 3.98607 | .26951 | 3.71046 | 55 |
| 6  | 438    | .66458  | 271    | .29724  | 118    | .98117  | 982    | .70616  | 54 |
| 7  | 469    | .65797  | 301    | .29159  | 149    | .97627  | .27013 | .70188  | 53 |
| 8  | 499    | .65138  | 332    | .28595  | 180    | .97139  | 044    | .69761  | 52 |
| 9  | 529    | .64480  | 363    | .28032  | 211    | .96651  | 076    | .69335  | 51 |
| 10 | .21560 | 4.63825 | .23393 | 4.27471 | .25242 | 3.96165 | .27107 | 3.68090 | 50 |
| 11 | 590    | .63171  | 424    | .26911  | 273    | .95680  | 138    | .68485  | 49 |
| 12 | 621    | .62518  | 455    | .26352  | 304    | .95196  | 169    | .68061  | 48 |
| 13 | 651    | .61868  | 485    | .25795  | 335    | .94713  | 201    | .67638  | 47 |
| 14 | 682    | .61219  | 516    | .25239  | 366    | .94232  | 232    | .67217  | 46 |
| 15 | .21712 | 4.60572 | .23547 | 4.24685 | .25397 | 3.93751 | .27263 | 3.66796 | 45 |
| 16 | 743    | .59927  | 578    | .24132  | 428    | .93271  | 294    | .66376  | 44 |
| 17 | 773    | .59283  | 608    | .23580  | 459    | .92793  | 326    | .65957  | 43 |
| 18 | 804    | .58641  | 639    | .23030  | 490    | .92316  | 357    | .65538  | 42 |
| 19 | 834    | .58001  | 670    | .22481  | 521    | .91839  | 388    | .65121  | 41 |
| 20 | .21864 | 4.57363 | .23700 | 4.21933 | .25552 | 3.91364 | .27419 | 3.64705 | 40 |
| 21 | 895    | .56726  | 731    | .21387  | 583    | .90890  | 451    | .64289  | 39 |
| 22 | 925    | .56091  | 762    | .20842  | 614    | .90417  | 482    | .63874  | 38 |
| 23 | 956    | .55458  | 793    | .20298  | 645    | .89945  | 513    | .63461  | 37 |
| 24 | 986    | .54826  | 823    | .19756  | 676    | .89474  | 545    | .63048  | 36 |
| 25 | .22017 | 4.54106 | .23854 | 4.19215 | .25707 | 3.89004 | .27576 | 3.62636 | 35 |
| 26 | 047    | .53568  | 885    | .18675  | 738    | .88536  | 607    | .62224  | 34 |
| 27 | 078    | .52941  | 916    | .18137  | 769    | .88068  | 638    | .61814  | 33 |
| 28 | 108    | .52316  | 946    | .17600  | 800    | .87601  | 670    | .61405  | 32 |
| 29 | 139    | .51693  | 977    | .17064  | 831    | .87136  | 701    | .60996  | 31 |
| 30 | .22169 | 4.51071 | .24008 | 4.16530 | .25862 | 3.86671 | .27732 | 3.60588 | 30 |
| 31 | 200    | .50451  | 039    | .15997  | 893    | .86208  | 764    | .60181  | 29 |
| 32 | 231    | .49832  | 069    | .15465  | 924    | .85745  | 795    | .59775  | 28 |
| 33 | 261    | .49215  | 100    | .14934  | 955    | .85284  | 826    | .59370  | 27 |
| 34 | 292    | .48600  | 131    | .14405  | 986    | .84824  | 858    | .58966  | 26 |
| 35 | .22322 | 4.47986 | .24162 | 4.13877 | .26017 | 3.84364 | .27889 | 3.58562 | 25 |
| 36 | 353    | .47374  | 193    | .13350  | 048    | .83906  | 921    | .58160  | 24 |
| 37 | 383    | .46764  | 223    | .12825  | 079    | .83449  | 952    | .57758  | 23 |
| 38 | 414    | .46155  | 254    | .12301  | 110    | .82992  | 983    | .57357  | 22 |
| 39 | 444    | .45548  | 285    | .11778  | 141    | .82537  | .28015 | .56957  | 21 |
| 40 | .22475 | 4.44942 | .24316 | 4.11256 | .26172 | 3.82083 | .28046 | 3.56557 | 20 |
| 41 | 505    | .44338  | 347    | .10736  | 203    | .81630  | 077    | .56159  | 19 |
| 42 | 536    | .43735  | 377    | .10216  | 235    | .81177  | 109    | .55761  | 18 |
| 43 | 567    | .43134  | 408    | .09699  | 266    | .80726  | 140    | .55364  | 17 |
| 44 | 597    | .42534  | 439    | .09182  | 297    | .80276  | 172    | .54968  | 16 |
| 45 | .22628 | 4.41936 | .24470 | 4.08666 | .26328 | 3.79827 | .28203 | 3.54573 | 15 |
| 46 | 658    | .41340  | 501    | .08152  | 359    | .79378  | 234    | .54179  | 14 |
| 47 | 689    | .40745  | 532    | .07639  | 390    | .78931  | 266    | .53785  | 13 |
| 48 | 719    | .40152  | 562    | .07127  | 421    | .78485  | 297    | .53393  | 12 |
| 49 | 750    | .39560  | 593    | .06616  | 452    | .78040  | 329    | .53001  | 11 |
| 50 | .22781 | 4.38969 | .24624 | 4.06107 | .26483 | 3.77595 | .28360 | 3.52609 | 10 |
| 51 | 811    | .38381  | 655    | .05599  | 515    | .77152  | 391    | .52219  | 9  |
| 52 | 842    | .37793  | 686    | .05092  | 546    | .76709  | 423    | .51829  | 8  |
| 53 | 872    | .37207  | 717    | .04586  | 577    | .76268  | 454    | .51441  | 7  |
| 54 | 903    | .36623  | 747    | .04081  | 608    | .75828  | 486    | .51053  | 6  |
| 55 | .22934 | 4.36040 | .24778 | 4.03578 | .26639 | 3.75388 | .28517 | 3.50666 | 5  |
| 56 | 964    | .35459  | 809    | .03076  | 670    | .74950  | 549    | .50279  | 4  |
| 57 | 995    | .34879  | 840    | .02574  | 701    | .74512  | 580    | .49894  | 3  |
| 58 | .23026 | 4.34300 | 871    | .02074  | 733    | .74075  | 612    | .49509  | 2  |
| 59 | 056    | .33723  | 902    | .01576  | 764    | .73640  | 643    | .49125  | 1  |
| 60 | .23087 | 4.33148 | .24933 | 4.01078 | .26795 | 3.73205 | .28675 | 3.48741 | 0  |
|    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | M. |
|    |        | 77°     |        | 76°     |        | 75°     |        | 74°     |    |

| M. | 16°    |         | 17°    |         | 18°    |         | 19°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .28675 | 3.48741 | .30573 | 3.27085 | .32492 | 3.07768 | .34433 | 2.90421 | 60 |
| 1  | 706    | .48359  | 605    | .26745  | 524    | .07464  | 465    | .90147  | 59 |
| 2  | 738    | .47977  | 637    | .26406  | 556    | .07160  | 498    | .89873  | 58 |
| 3  | 769    | .47596  | 669    | .26067  | 588    | .06857  | 530    | .89600  | 57 |
| 4  | 801    | .47216  | 700    | .25729  | 621    | .06554  | 563    | .89327  | 56 |
| 5  | .28332 | 3.46837 | .30732 | 3.25392 | .32653 | 3.06252 | .34596 | 2.89055 | 55 |
| 6  | 864    | .46458  | 764    | .25055  | 685    | .05950  | 628    | .88783  | 54 |
| 7  | 895    | .46080  | 796    | .24719  | 717    | .05649  | 661    | .88511  | 53 |
| 8  | 927    | .45703  | 828    | .24383  | 749    | .05349  | 693    | .88240  | 52 |
| 9  | 958    | .45327  | 860    | .24049  | 782    | .05049  | 726    | .87970  | 51 |
| 10 | .28990 | 3.44951 | .30891 | 3.23714 | .32814 | 3.04749 | .34758 | 2.87700 | 50 |
| 11 | .29021 | .44576  | 923    | .23381  | 846    | .04450  | 791    | .87430  | 49 |
| 12 | 053    | .44202  | 955    | .23048  | 878    | .04152  | 824    | .87161  | 48 |
| 13 | 084    | .43829  | 987    | .22715  | 911    | .03854  | 856    | .86892  | 47 |
| 14 | 116    | .43456  | .31019 | .22384  | 943    | .03556  | 889    | .86624  | 46 |
| 15 | .29147 | 3.43084 | .31051 | 3.22053 | .32975 | 3.03260 | .34922 | 2.86356 | 45 |
| 16 | 179    | .42713  | 083    | .21722  | .33007 | .02963  | 954    | .86089  | 44 |
| 17 | 210    | .42343  | 115    | .21392  | 040    | .02667  | 987    | .85822  | 43 |
| 18 | 242    | .41973  | 147    | .21063  | 072    | .02372  | .35020 | .85555  | 42 |
| 19 | 274    | .41604  | 178    | .20734  | 104    | .02077  | 052    | .85289  | 41 |
| 20 | .29305 | 3.41236 | .31210 | 3.20406 | .33136 | 3.01783 | .35085 | 2.85023 | 40 |
| 21 | 337    | .40869  | 242    | .20079  | 169    | .01489  | 118    | .84758  | 39 |
| 22 | 368    | .40502  | 274    | .19752  | 201    | .01196  | 150    | .84494  | 38 |
| 23 | 400    | .40136  | 306    | .19426  | 233    | .00903  | 183    | .84229  | 37 |
| 24 | 432    | .39771  | 338    | .19100  | 266    | .00611  | 216    | .83965  | 36 |
| 25 | .29463 | 3.39406 | .31370 | 3.18775 | .33298 | 3.00319 | .35248 | 2.83702 | 35 |
| 26 | 495    | .39042  | 402    | .18451  | 330    | .00228  | 281    | .83439  | 34 |
| 27 | 526    | .38679  | 434    | .18127  | 363    | 2.99738 | 314    | .83176  | 33 |
| 28 | 558    | .38317  | 466    | .17804  | 395    | .99447  | 346    | .82914  | 32 |
| 29 | 590    | .37955  | 498    | .17481  | 427    | .99158  | 379    | .82653  | 31 |
| 30 | .29621 | 3.37594 | .31530 | 3.17159 | 33460  | 2.98868 | .35412 | 2.82391 | 30 |
| 31 | 653    | .37234  | 562    | .16838  | 492    | .98580  | 445    | .82130  | 29 |
| 32 | 685    | .36875  | 594    | .16517  | 524    | .98292  | 477    | .81870  | 28 |
| 33 | 716    | .36516  | 626    | .16197  | 557    | .98004  | 510    | .81610  | 27 |
| 34 | 748    | .36158  | 658    | .15877  | 589    | .97717  | 543    | .81350  | 26 |
| 35 | .29780 | 3.35800 | .31690 | 3.15558 | .33621 | 2.97430 | .35576 | 2.81091 | 25 |
| 36 | 811    | .35443  | 722    | .15240  | 654    | .97144  | 608    | .80833  | 24 |
| 37 | 843    | .35087  | 754    | .14922  | 686    | .96858  | 641    | .80574  | 23 |
| 38 | 875    | .34732  | 786    | .14605  | 718    | .96573  | 674    | .80316  | 22 |
| 39 | 906    | .34377  | 818    | .14288  | 751    | .96288  | 707    | .80059  | 21 |
| 40 | .29938 | 3.34023 | .31850 | 3.13972 | .33783 | 2.96004 | .35740 | 2.79802 | 20 |
| 41 | 970    | .33670  | 882    | .13656  | 816    | .95721  | 772    | .79545  | 19 |
| 42 | .30001 | .33317  | 914    | .13341  | 848    | .95437  | 805    | .79289  | 18 |
| 43 | 033    | .32965  | 946    | .13027  | 881    | .95155  | 838    | .79033  | 17 |
| 44 | 065    | .32614  | 978    | .12713  | 913    | .94872  | 871    | .78778  | 16 |
| 45 | .30097 | 3.32264 | .32010 | 3.12400 | .33945 | 2.94591 | .35904 | 2.78523 | 15 |
| 46 | 128    | .31914  | 042    | .12087  | 978    | .94309  | 937    | .78269  | 14 |
| 47 | 160    | .31565  | 074    | .11775  | .34010 | .94028  | 969    | .78014  | 13 |
| 48 | 192    | .31216  | 106    | .11464  | 043    | .93748  | .36002 | .77761  | 12 |
| 49 | 224    | .30868  | 139    | .11153  | 075    | .93468  | 035    | .77507  | 11 |
| 50 | .30255 | 3.30521 | .32171 | 3.10842 | .34108 | 2.93189 | .36068 | 2.77254 | 10 |
| 51 | 287    | .30174  | 203    | .10532  | 140    | .92910  | 101    | .77002  | 9  |
| 52 | 319    | .29829  | 235    | .10223  | 173    | .92632  | 134    | .76750  | 8  |
| 53 | 351    | .29483  | 267    | .09914  | 205    | .92354  | 167    | .76498  | 7  |
| 54 | 382    | .29139  | 299    | .09606  | 238    | .92076  | 199    | .76247  | 6  |
| 55 | .30414 | 3.28795 | .32331 | 3.09298 | .34270 | 2.91799 | .36232 | 2.75996 | 5  |
| 56 | 446    | .28452  | 353    | .08991  | 303    | .91523  | 265    | .75746  | 4  |
| 57 | 478    | .28109  | 396    | .08685  | 335    | .91246  | 298    | .75496  | 3  |
| 58 | 509    | .27767  | 428    | .08379  | 368    | .90971  | 331    | .75246  | 2  |
| 59 | 541    | .27426  | 460    | .08073  | 400    | .90696  | 364    | .74997  | 1  |
| 60 | .30573 | 3.27085 | .32492 | 3.07768 | .34433 | 2.90421 | .36397 | 2.74748 | 0  |
|    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | M. |
|    |        | 73°     |        | 72°     |        | 71°     |        | 70°     |    |

| M. | 20°    |         | 21°    |         | 22°    |         | 23°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .36397 | 2.74748 | .38386 | 2.60509 | .40403 | 2.47509 | .42447 | 2.35585 | 60 |
| 1  | 430    | .74499  | 420    | .60283  | 430    | .47302  | 482    | .35395  | 59 |
| 2  | 463    | .74251  | 453    | .60057  | 470    | .47095  | 516    | .35205  | 58 |
| 3  | 496    | .74004  | 487    | .59831  | 504    | .46888  | 551    | .35015  | 57 |
| 4  | 529    | .73756  | 520    | .59606  | 538    | .46682  | 585    | .34825  | 56 |
| 5  | .36562 | 2.73509 | .38553 | 2.59381 | .40572 | 2.46476 | .42619 | 2.34636 | 55 |
| 6  | 595    | .73263  | 587    | .59156  | 606    | .46270  | 654    | .34447  | 54 |
| 7  | 628    | .73017  | 620    | .58932  | 640    | .46065  | 688    | .34258  | 53 |
| 8  | 661    | .72771  | 654    | .58708  | 674    | .45860  | 722    | .34069  | 52 |
| 9  | 694    | .72526  | 687    | .58484  | 707    | .45655  | 757    | .33881  | 51 |
| 10 | .36727 | 2.72281 | .38721 | 2.58261 | .40741 | 2.45451 | .42791 | 2.33693 | 50 |
| 11 | 760    | .72036  | 754    | .58038  | 775    | .45246  | 826    | .33505  | 49 |
| 12 | 793    | .71792  | 787    | .57815  | 809    | .45043  | 860    | .33317  | 48 |
| 13 | 826    | .71548  | 821    | .57593  | 843    | .44839  | 894    | .33130  | 47 |
| 14 | 859    | .71305  | 854    | .57371  | 877    | .44636  | 929    | .32943  | 46 |
| 15 | .36892 | 2.71062 | .38888 | 2.57150 | .40911 | 2.44433 | .42963 | 2.32750 | 45 |
| 16 | 925    | .70819  | 921    | .56928  | 945    | .44230  | 998    | .32570  | 44 |
| 17 | 958    | .70577  | 955    | .56707  | 979    | .44027  | .43032 | .32383  | 43 |
| 18 | 991    | .70335  | 988    | .56487  | .41013 | .43825  | 067    | .32197  | 42 |
| 19 | .37024 | .70094  | .39922 | .56266  | 047    | .43623  | 101    | .32012  | 41 |
| 20 | .37057 | 2.69853 | .39955 | 2.56046 | .41081 | 2.43422 | .43136 | 2.31826 | 40 |
| 21 | 090    | .69612  | 089    | .55827  | 115    | .43220  | 170    | .31641  | 39 |
| 22 | 123    | .69371  | 122    | .55608  | 149    | .43019  | 205    | .31456  | 38 |
| 23 | 157    | .69131  | 156    | .55389  | 183    | .42819  | 239    | .31271  | 37 |
| 24 | 190    | .68892  | 190    | .55170  | 217    | .42618  | 274    | .31086  | 36 |
| 25 | .37223 | 2.68653 | .39223 | 2.54952 | .41251 | 2.42418 | .43308 | 2.30902 | 35 |
| 26 | 256    | .68414  | 257    | .54734  | 285    | .42218  | 343    | .30718  | 34 |
| 27 | 289    | .68175  | 290    | .54516  | 319    | .42019  | 378    | .30534  | 33 |
| 28 | 322    | .67937  | 324    | .54299  | 353    | .41819  | 412    | .30351  | 32 |
| 29 | 355    | .67700  | 357    | .54082  | 387    | .41620  | 447    | .30167  | 31 |
| 30 | .37388 | 2.67462 | .39391 | 2.53865 | .41421 | 2.41421 | .43481 | 2.29984 | 30 |
| 31 | 422    | .67225  | 425    | .53648  | 455    | .41223  | 516    | .29801  | 29 |
| 32 | 455    | .66989  | 458    | .53432  | 490    | .41025  | 550    | .29619  | 28 |
| 33 | 488    | .66752  | 492    | .53217  | 524    | .40827  | 585    | .29437  | 27 |
| 34 | 521    | .66516  | 526    | .53001  | 558    | .40629  | 620    | .29254  | 26 |
| 35 | .37554 | 2.66281 | .39559 | 2.52786 | .41592 | 2.40432 | .43654 | 2.29073 | 25 |
| 36 | 588    | .66046  | 593    | .52571  | 626    | .40235  | 689    | .28891  | 24 |
| 37 | 621    | .65811  | 626    | .52357  | 660    | .40038  | 724    | .28710  | 23 |
| 38 | 654    | .65576  | 660    | .52142  | 694    | .39841  | 758    | .28528  | 22 |
| 39 | 687    | .65342  | 694    | .51929  | 728    | .39645  | 793    | .28348  | 21 |
| 40 | .37720 | 2.65109 | .39727 | 2.51715 | .41763 | 2.39449 | .43828 | 2.28167 | 20 |
| 41 | 754    | .64875  | 761    | .51502  | 797    | .39253  | 862    | .27987  | 19 |
| 42 | 787    | .64642  | 795    | .51289  | 831    | .39058  | 897    | .27806  | 18 |
| 43 | 820    | .64410  | 829    | .51076  | 865    | .38863  | 932    | .27626  | 17 |
| 44 | 853    | .64177  | 862    | .50864  | 899    | .38668  | 966    | .27447  | 16 |
| 45 | .37887 | 2.63945 | .39896 | 2.50652 | .41933 | 2.38473 | .44001 | 2.27267 | 15 |
| 46 | 920    | .63714  | 930    | .50440  | 968    | .38279  | 036    | .27088  | 14 |
| 47 | 953    | .63483  | 963    | .50229  | .42002 | .38084  | 071    | .26909  | 13 |
| 48 | 986    | .63252  | 997    | .50018  | 036    | .37891  | 105    | .26730  | 12 |
| 49 | .38020 | .63021  | .40031 | .49807  | 070    | .37697  | 140    | .26552  | 11 |
| 50 | .38053 | 2.62791 | .40065 | 2.49597 | .42105 | 2.37504 | .44175 | 2.26374 | 10 |
| 51 | 086    | .62561  | 098    | .49386  | 139    | .37311  | 210    | .26196  | 9  |
| 52 | 120    | .62332  | 132    | .49177  | 173    | .37118  | 244    | .26018  | 8  |
| 53 | 153    | .62103  | 166    | .48967  | 207    | .36925  | 279    | .25840  | 7  |
| 54 | 186    | .61874  | 200    | .48758  | 242    | .36733  | 314    | .25663  | 6  |
| 55 | .38220 | 2.61646 | .40234 | 2.48549 | .42276 | 2.36541 | .44349 | 2.25486 | 5  |
| 56 | 253    | .61418  | 267    | .48340  | 310    | .36349  | 384    | .25309  | 4  |
| 57 | 286    | .61190  | 301    | .48132  | 345    | .36158  | 418    | .25132  | 3  |
| 58 | 320    | .60963  | 335    | .47924  | 379    | .35967  | 453    | .24956  | 2  |
| 59 | 353    | .60736  | 369    | .47716  | 413    | .35776  | 488    | .24780  | 1  |
| 60 | .38386 | 2.60509 | .40403 | 2.47509 | .42447 | 2.35585 | .44523 | 2.24604 | 0  |
|    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | M. |
|    |        | 69°     |        | 68°     |        | 67°     |        | 66°     |    |

| M. | 24°    |         | 25°    |         | 26°    |         | 27°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .44523 | 2.24604 | .46631 | 2.14451 | .48773 | 2.05030 | .50953 | 1.96261 | 60 |
| 1  | 558    | .24428  | 666    | .14288  | 809    | .04879  | 989    | .96120  | 59 |
| 2  | 593    | .24252  | 702    | .14125  | 845    | .04728  | .51026 | .95979  | 58 |
| 3  | 627    | .24077  | 737    | .13963  | 881    | .04577  | 063    | .95838  | 57 |
| 4  | 662    | .23902  | 772    | .13801  | 917    | .04426  | 099    | .95698  | 56 |
| 5  | .44697 | 2.23727 | .46808 | 2.13639 | .48953 | 2.04276 | .51136 | 1.95557 | 55 |
| 6  | 732    | .23553  | 843    | .13477  | 989    | .04125  | 173    | .95417  | 54 |
| 7  | 767    | .23378  | 879    | .13316  | .49026 | .03975  | 209    | .95277  | 53 |
| 8  | 802    | .23204  | 914    | .13154  | 062    | .03825  | 246    | .95137  | 52 |
| 9  | 837    | .23030  | 950    | .12993  | 098    | .03675  | 283    | .94997  | 51 |
| 10 | .44872 | 2.22857 | .46985 | 2.12832 | .49134 | 2.03526 | .51319 | 1.94858 | 50 |
| 11 | 907    | .22683  | .47021 | .12671  | 170    | .03376  | 356    | .94718  | 49 |
| 12 | 942    | .22510  | 056    | .12511  | 206    | .03227  | 393    | .94579  | 48 |
| 13 | 977    | .22337  | 092    | .12350  | 242    | .03078  | 430    | .94440  | 47 |
| 14 | .45012 | .22164  | 128    | .12190  | 278    | .02929  | 467    | .94301  | 46 |
| 15 | .45047 | 2.21992 | .47163 | 2.12030 | .49315 | 2.02780 | .51503 | 1.94162 | 45 |
| 16 | 082    | .21819  | 199    | .11871  | 351    | .02631  | 540    | .94023  | 44 |
| 17 | 117    | .21647  | 234    | .11711  | 387    | .02483  | 577    | .93885  | 43 |
| 18 | 152    | .21475  | 270    | .11552  | 423    | .02335  | 614    | .93746  | 42 |
| 19 | 187    | .21304  | 305    | .11392  | 459    | .02187  | 651    | .93608  | 41 |
| 20 | .45222 | 2.21132 | .47341 | 2.11233 | .49495 | 2.02039 | .51688 | 1.93470 | 40 |
| 21 | 257    | .20961  | 377    | .11075  | 532    | .01891  | 724    | .93332  | 39 |
| 22 | 292    | .20790  | 412    | .10916  | 568    | .01743  | 761    | .93195  | 38 |
| 23 | 327    | .20619  | 448    | .10758  | 604    | .01596  | 798    | .93057  | 37 |
| 24 | 362    | .20449  | 483    | .10600  | 640    | .01449  | 835    | .92920  | 36 |
| 25 | .45397 | 2.20278 | .47519 | 2.10442 | .49677 | 2.01302 | .51872 | 1.92782 | 35 |
| 26 | 432    | .20108  | 555    | .10284  | 713    | .01155  | 909    | .92645  | 34 |
| 27 | 467    | .19938  | 590    | .10126  | 749    | .01008  | 946    | .92508  | 33 |
| 28 | 502    | .19769  | 626    | .09969  | 786    | .00862  | 983    | .92371  | 32 |
| 29 | 538    | .19599  | 662    | .09811  | 822    | .00715  | .52020 | .92235  | 31 |
| 30 | .45573 | 2.19430 | .47698 | 2.09654 | .49858 | 2.00569 | .52057 | 1.92098 | 30 |
| 31 | 608    | .19261  | 733    | .09498  | 894    | .00423  | 094    | .91962  | 29 |
| 32 | 643    | .19092  | 769    | .09341  | 931    | .00277  | 131    | .91826  | 28 |
| 33 | 678    | .18923  | 805    | .09184  | 967    | .00131  | 168    | .91690  | 27 |
| 34 | 713    | .18755  | 840    | .09028  | .50004 | 1.99986 | 205    | .91554  | 26 |
| 35 | .45748 | 2.18587 | .47876 | 2.08872 | .50040 | 1.99841 | .52242 | 1.91418 | 25 |
| 36 | 784    | .18419  | 912    | .08716  | 076    | .99695  | 279    | .91282  | 24 |
| 37 | 819    | .18251  | 948    | .08560  | 113    | .99550  | 316    | .91147  | 23 |
| 38 | 854    | .18084  | 984    | .08405  | 149    | .99406  | 353    | .91012  | 22 |
| 39 | 889    | .17916  | .48019 | .08250  | 185    | .99261  | 390    | .90876  | 21 |
| 40 | .45924 | 2.17749 | .48055 | 2.08094 | .50222 | 1.99116 | .52427 | 1.90741 | 20 |
| 41 | 960    | .17582  | 091    | .07939  | 258    | .98972  | 464    | .90607  | 19 |
| 42 | 995    | .17416  | 127    | .07785  | 295    | .98828  | 501    | .90472  | 18 |
| 43 | .46030 | .17249  | 163    | .07630  | 331    | .98684  | 538    | .90337  | 17 |
| 44 | 065    | .17083  | 198    | .07476  | 368    | .98540  | 575    | .90203  | 16 |
| 45 | .46101 | 2.16917 | .48234 | 2.07321 | .50404 | 1.98396 | .52613 | 1.90069 | 15 |
| 46 | 136    | .16751  | 270    | .07167  | 441    | .98253  | 650    | .89935  | 14 |
| 47 | 171    | .16585  | 306    | .07014  | 477    | .98110  | 687    | .89801  | 13 |
| 48 | 206    | .16420  | 342    | .06860  | 514    | .97966  | 724    | .89667  | 12 |
| 49 | 242    | .16255  | 378    | .06706  | 550    | .97823  | 761    | .89533  | 11 |
| 50 | .46277 | 2.16090 | .48414 | 2.06553 | .50587 | 1.97681 | .52798 | 1.89400 | 10 |
| 51 | 312    | .15925  | 450    | .06400  | 623    | .97538  | 836    | .89266  | 9  |
| 52 | 348    | .15760  | 486    | .06247  | 660    | .97395  | 873    | .89133  | 8  |
| 53 | 383    | .15596  | 521    | .06094  | 696    | .97253  | 910    | .89000  | 7  |
| 54 | 418    | .15432  | 557    | .05942  | 733    | .97111  | 947    | .88867  | 6  |
| 55 | .46454 | 2.15268 | .48393 | 2.05790 | .50769 | 1.96969 | .52985 | 1.88734 | 5  |
| 56 | 489    | .15104  | 629    | .05637  | 806    | .96827  | .53022 | .88602  | 4  |
| 57 | 525    | .14940  | 665    | .05485  | 843    | .96685  | 059    | .88469  | 3  |
| 58 | 560    | .14777  | 701    | .05333  | 879    | .96544  | 096    | .88337  | 2  |
| 59 | 595    | .14614  | 737    | .05182  | 916    | .96402  | 134    | .88205  | 1  |
| 60 | .46631 | 2.14451 | .48773 | 2.05030 | .50953 | 1.96261 | .53171 | 1.88073 | 0  |
|    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    |    |
|    |        | 65°     |        | 64°     |        | 63°     |        | 62°     |    |

| M. | 28°    |         | 29°    |         | 30°    |         | 31°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .53171 | 1.88073 | .55431 | 1.80405 | .57735 | 1.73205 | .60086 | 1.66428 | 60 |
| 1  | 208    | .87941  | 469    | .80281  | 774    | .73089  | 126    | .66318  | 59 |
| 2  | 246    | .87509  | 507    | .80158  | 813    | .72973  | 165    | .66209  | 58 |
| 3  | 283    | .87677  | 545    | .80034  | 851    | .72857  | 205    | .66099  | 57 |
| 4  | 320    | .87546  | 583    | .79911  | 890    | .72741  | 245    | .65990  | 56 |
| 5  | .53332 | 1.87415 | .55621 | 1.79788 | .57929 | 1.72625 | .60284 | 1.65881 | 55 |
| 6  | 395    | .87283  | 659    | .79665  | 968    | .72509  | 324    | .65772  | 54 |
| 7  | 432    | .87152  | 697    | .79542  | .58007 | .72393  | 364    | .65663  | 53 |
| 8  | 470    | .87021  | 736    | .79419  | 046    | .72278  | 403    | .65554  | 52 |
| 9  | 507    | .86891  | 774    | .79296  | 085    | .72163  | 443    | .65445  | 51 |
| 10 | .53545 | 1.86760 | .55812 | 1.79174 | .58124 | 1.72047 | .60483 | 1.65337 | 50 |
| 11 | 582    | .86630  | 850    | .79051  | 162    | .71932  | 522    | .65228  | 49 |
| 12 | 620    | .86499  | 888    | .78929  | 201    | .71817  | 562    | .65120  | 48 |
| 13 | 657    | .86369  | 926    | .78807  | 240    | .71702  | 602    | .65011  | 47 |
| 14 | 694    | .86239  | 964    | .78685  | 279    | .71588  | 642    | .64903  | 46 |
| 15 | .53732 | 1.86109 | .56003 | 1.78563 | .58318 | 1.71473 | .60681 | 1.64795 | 45 |
| 16 | 769    | .85979  | 041    | .78441  | 357    | .71358  | 721    | .64687  | 44 |
| 17 | 807    | .85850  | 079    | .78319  | 396    | .71244  | 761    | .64579  | 43 |
| 18 | 844    | .85720  | 117    | .78198  | 435    | .71129  | 801    | .64471  | 42 |
| 19 | 882    | .85591  | 156    | .78077  | 474    | .71015  | 841    | .64363  | 41 |
| 20 | .53920 | 1.85462 | .56194 | 1.77955 | .58513 | 1.70901 | .60881 | 1.64256 | 40 |
| 21 | 957    | .85333  | 232    | .77834  | 552    | .70787  | 921    | .64148  | 39 |
| 22 | 995    | .85204  | 270    | .77713  | 591    | .70673  | 960    | .64041  | 38 |
| 23 | .54032 | .85075  | 309    | .77592  | 631    | .70560  | .61000 | .63934  | 37 |
| 24 | 070    | .84946  | 347    | .77471  | 670    | .70446  | 040    | .63826  | 36 |
| 25 | .54107 | 1.84818 | .56385 | 1.77351 | .58709 | 1.70332 | .61080 | 1.63719 | 35 |
| 26 | 145    | .84689  | 424    | .77230  | 748    | .70219  | 120    | .63612  | 34 |
| 27 | 183    | .84561  | 462    | .77110  | 787    | .70106  | 160    | .63505  | 33 |
| 28 | 220    | .84433  | 501    | .76990  | 826    | .69992  | 200    | .63398  | 32 |
| 29 | 258    | .84305  | 539    | .76869  | 865    | .69879  | 240    | .63292  | 31 |
| 30 | .54296 | 1.84177 | .56577 | 1.76749 | .58905 | 1.69766 | .61280 | 1.63185 | 30 |
| 31 | 333    | .84049  | 616    | .76629  | 944    | .69653  | 320    | .63079  | 29 |
| 32 | 371    | .83922  | 654    | .76510  | 983    | .69541  | 360    | .62972  | 28 |
| 33 | 409    | .83794  | 693    | .76390  | .59022 | .69428  | 400    | .62866  | 27 |
| 34 | 446    | .83667  | 731    | .76271  | 061    | .69316  | 440    | .62760  | 26 |
| 35 | .54484 | 1.83540 | .56769 | 1.76151 | .59101 | 1.69203 | .61480 | 1.62654 | 25 |
| 36 | 522    | .83413  | 808    | .76032  | 140    | .69091  | 520    | .62548  | 24 |
| 37 | 560    | .83286  | 846    | .75913  | 179    | .68979  | 561    | .62442  | 23 |
| 38 | 597    | .83159  | 885    | .75794  | 218    | .68866  | 601    | .62336  | 22 |
| 39 | 635    | .83033  | 923    | .75675  | 258    | .68754  | 641    | .62230  | 21 |
| 40 | .54673 | 1.82906 | .56962 | 1.75556 | .59297 | 1.68643 | .61681 | 1.62125 | 20 |
| 41 | 711    | .82780  | .57000 | .75437  | 336    | .68531  | 721    | .62019  | 19 |
| 42 | 748    | .82654  | 039    | .75319  | 376    | .68419  | 761    | .61914  | 18 |
| 43 | 786    | .82528  | 078    | .75200  | 415    | .68308  | 801    | .61808  | 17 |
| 44 | 824    | .82402  | 116    | .75082  | 454    | .68196  | 842    | .61703  | 16 |
| 45 | .54862 | 1.82276 | .57155 | 1.74964 | .59494 | 1.68085 | .61882 | 1.61598 | 15 |
| 46 | 900    | .82150  | 193    | .74846  | 533    | .67974  | 922    | .61493  | 14 |
| 47 | 938    | .82025  | 232    | .74728  | 573    | .67863  | 962    | .61388  | 13 |
| 48 | 975    | .81899  | 271    | .74610  | 612    | .67752  | .62003 | .61283  | 12 |
| 49 | .55013 | .81774  | 309    | .74492  | 651    | .67641  | 043    | .61179  | 11 |
| 50 | .55051 | 1.81649 | .57348 | 1.74375 | .59691 | 1.67530 | .62083 | 1.61074 | 10 |
| 51 | 089    | .81524  | 386    | .74257  | 730    | .67419  | 124    | .60970  | 9  |
| 52 | 127    | .81399  | 425    | .74140  | 770    | .67309  | 164    | .60865  | 8  |
| 53 | 165    | .81274  | 464    | .74022  | 809    | .67198  | 204    | .60761  | 7  |
| 54 | 203    | .81150  | 503    | .73905  | 849    | .67088  | 245    | .60657  | 6  |
| 55 | .55241 | 1.81025 | .57541 | 1.73788 | .59888 | 1.66978 | .62285 | 1.60553 | 5  |
| 56 | 279    | .80901  | 580    | .73671  | 928    | .66867  | 325    | .60449  | 4  |
| 57 | 317    | .80777  | 619    | .73555  | 967    | .66757  | 366    | .60345  | 3  |
| 58 | 355    | .80653  | 657    | .73438  | .60007 | .66647  | 406    | .60241  | 2  |
| 59 | 393    | .80529  | 696    | .73321  | 046    | .66538  | 446    | .60137  | 1  |
| 60 | .55431 | 1.80405 | .57735 | 1.73205 | .60086 | 1.66428 | .62487 | 1.60033 | 0  |
|    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    |    |
|    | 61°    |         | 60°    |         | 59°    |         | 58°    |         |    |

| M. | 32°    |          | 33°    |          | 34°    |          | 35°    |          | M. |
|----|--------|----------|--------|----------|--------|----------|--------|----------|----|
|    | Tan.   | Cot.     | Tan.   | Cot.     | Tan.   | Cot.     | Tan.   | Cot.     |    |
| 0  | .62487 | I. 60033 | .64941 | I. 53986 | .67451 | I. 48256 | .70021 | I. 42815 | 60 |
| 1  | 527    | .59930   | 982    | .53888   | 493    | .48163   | 064    | .42726   | 59 |
| 2  | 568    | .59826   | .65024 | .53791   | 536    | .48070   | 107    | .42638   | 58 |
| 3  | 608    | .59723   | 065    | .53693   | 578    | .47977   | 151    | .42550   | 57 |
| 4  | 649    | .59620   | 106    | .53595   | 620    | .47885   | 194    | .42462   | 56 |
| 5  | .62689 | I. 59517 | .65148 | I. 53497 | .67663 | I. 47792 | .70238 | I. 42374 | 55 |
| 6  | 730    | .59414   | 189    | .53400   | 705    | .47699   | 281    | .42286   | 54 |
| 7  | 770    | .59311   | 231    | .53302   | 748    | .47607   | 325    | .42198   | 53 |
| 8  | 811    | .59208   | 272    | .53205   | 790    | .47514   | 368    | .42110   | 52 |
| 9  | 852    | .59105   | 314    | .53107   | 832    | .47422   | 412    | .42022   | 51 |
| 10 | .62892 | I. 59002 | .65355 | I. 53010 | .67875 | I. 47330 | .70455 | I. 41934 | 50 |
| 11 | 933    | .58900   | 397    | .52913   | 917    | .47238   | 499    | .41847   | 49 |
| 12 | 973    | .58797   | 438    | .52816   | 960    | .47146   | 542    | .41759   | 48 |
| 13 | .63014 | .58695   | 480    | .52719   | .68002 | .47053   | 586    | .41672   | 47 |
| 14 | 055    | .58593   | 521    | .52622   | 045    | .46962   | 629    | .41584   | 46 |
| 15 | .63095 | I. 58490 | .65563 | I. 52525 | .68088 | I. 46870 | .70673 | I. 41497 | 45 |
| 16 | 136    | .58388   | 604    | .52429   | 130    | .46778   | 717    | .41409   | 44 |
| 17 | 177    | .58286   | 646    | .52332   | 173    | .46686   | 750    | .41322   | 43 |
| 18 | 217    | .58184   | 688    | .52235   | 215    | .46595   | 804    | .41235   | 42 |
| 19 | 258    | .58083   | 729    | .52139   | 258    | .46503   | 848    | .41148   | 41 |
| 20 | .63299 | I. 57981 | .65771 | I. 52043 | .68301 | I. 46411 | .70891 | I. 41061 | 40 |
| 21 | 340    | .57879   | 813    | .51946   | 343    | .46320   | 935    | .40974   | 39 |
| 22 | 380    | .57778   | 854    | .51850   | 386    | .46229   | 979    | .40887   | 38 |
| 23 | 421    | .57676   | 896    | .51754   | 429    | .46137   | .71023 | .40800   | 37 |
| 24 | 462    | .57575   | 938    | .51658   | 471    | .46046   | 066    | .40714   | 36 |
| 25 | .63503 | I. 57474 | .65980 | I. 51562 | .68514 | I. 45955 | .71110 | I. 40627 | 35 |
| 26 | 544    | .57372   | .66021 | .51466   | 557    | .45864   | 154    | .40540   | 34 |
| 27 | 584    | .57271   | 063    | .51370   | 600    | .45773   | 198    | .40454   | 33 |
| 28 | 625    | .57170   | 105    | .51275   | 642    | .45682   | 242    | .40367   | 32 |
| 29 | 666    | .57069   | 147    | .51179   | 685    | .45592   | 285    | .40281   | 31 |
| 30 | .63707 | I. 56969 | .66189 | I. 51084 | .68728 | I. 45501 | .71329 | I. 40195 | 30 |
| 31 | 748    | .56868   | 230    | .50988   | 771    | .45410   | 373    | .40109   | 29 |
| 32 | 789    | .56767   | 272    | .50893   | 814    | .45320   | 417    | .40022   | 28 |
| 33 | 830    | .56667   | 314    | .50797   | 857    | .45229   | 461    | .39936   | 27 |
| 34 | 871    | .56566   | 356    | .50702   | 900    | .45139   | 505    | .39850   | 26 |
| 35 | .63912 | I. 56466 | .66398 | I. 50607 | .68942 | I. 45049 | .71549 | I. 39764 | 25 |
| 36 | 953    | .56366   | 440    | .50512   | 985    | .44958   | 593    | .39679   | 24 |
| 37 | 994    | .56265   | 482    | .50417   | .69028 | .44868   | 637    | .39593   | 23 |
| 38 | .64035 | .56165   | 524    | .50322   | 071    | .44778   | 681    | .39507   | 22 |
| 39 | 076    | .56065   | 566    | .50228   | 114    | .44688   | 725    | .39421   | 21 |
| 40 | .64117 | I. 55966 | .66608 | I. 50133 | .69157 | I. 44598 | .71769 | I. 39336 | 20 |
| 41 | 158    | .55866   | 650    | .50038   | 200    | .44508   | 813    | .39250   | 19 |
| 42 | 199    | .55766   | 692    | .49944   | 243    | .44418   | 857    | .39165   | 18 |
| 43 | 240    | .55666   | 734    | .49849   | 286    | .44329   | 901    | .39079   | 17 |
| 44 | 281    | .55567   | 776    | .49755   | 329    | .44239   | 946    | .38994   | 16 |
| 45 | .64322 | I. 55467 | .66818 | I. 49661 | .69372 | I. 44149 | .71990 | I. 38909 | 15 |
| 46 | 363    | .55368   | 860    | .49566   | 416    | .44060   | .72034 | .38824   | 14 |
| 47 | 404    | .55269   | 902    | .49472   | 459    | .43970   | 078    | .38738   | 13 |
| 48 | 446    | .55170   | 944    | .49378   | 502    | .43881   | 122    | .38653   | 12 |
| 49 | 487    | .55071   | 986    | .49284   | 545    | .43792   | 167    | .38568   | 11 |
| 50 | .64528 | I. 54972 | .67028 | I. 49190 | .69588 | I. 43703 | .72211 | I. 38484 | 10 |
| 51 | 569    | .54873   | 071    | .49097   | 631    | .43614   | 255    | .38399   | 9  |
| 52 | 610    | .54774   | 113    | .49003   | 675    | .43525   | 299    | .38314   | 8  |
| 53 | 652    | .54675   | 155    | .48909   | 718    | .43436   | 344    | .38229   | 7  |
| 54 | 693    | .54576   | 197    | .48816   | 761    | .43347   | 388    | .38145   | 6  |
| 55 | .64734 | I. 54478 | .67239 | I. 48722 | .69804 | I. 43258 | .72432 | I. 38060 | 5  |
| 56 | 775    | .54379   | 282    | .48629   | 847    | .43169   | 477    | .37976   | 4  |
| 57 | 817    | .54281   | 324    | .48536   | 891    | .43080   | 521    | .37891   | 3  |
| 58 | 858    | .54183   | 366    | .48442   | 934    | .42992   | 565    | .37807   | 2  |
| 59 | 899    | .54085   | 409    | .48349   | 977    | .42903   | 610    | .37722   | 1  |
| 60 | .64941 | I. 53986 | .67451 | I. 48256 | .70021 | I. 42815 | .72654 | I. 37638 | 0  |
|    | Cot.   | Tan.     | Cot.   | Tan.     | Cot.   | Tan.     | Cot.   | Tan.     |    |
|    |        | 57°      |        | 56°      |        | 55°      |        | 54°      |    |

| M. | 36°    |         | 37°    |         | 38°    |         | 39°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .72654 | 1.37638 | .75355 | 1.32704 | .78129 | 1.27994 | .80978 | 1.23490 | 60 |
| 1  | .699   | .37554  | 401    | .32624  | 175    | .27917  | .81027 | .23416  | 59 |
| 2  | .743   | .37470  | 447    | .32544  | 222    | .27841  | 075    | .23343  | 58 |
| 3  | .788   | .37386  | 492    | .32464  | 269    | .27764  | 123    | .23270  | 57 |
| 4  | .832   | .37302  | 538    | .32384  | 316    | .27688  | 171    | .23196  | 56 |
| 5  | .72877 | 1.37218 | .75584 | 1.32304 | .78363 | 1.27611 | .81220 | 1.23123 | 55 |
| 6  | .921   | .37134  | 629    | .32224  | 410    | .27535  | 268    | .23050  | 54 |
| 7  | .966   | .37050  | 675    | .32144  | 457    | .27458  | 316    | .22977  | 53 |
| 8  | .73010 | .36967  | 721    | .32064  | 504    | .27382  | 364    | .22904  | 52 |
| 9  | .955   | .36883  | 767    | .31984  | 551    | .27306  | 413    | .22831  | 51 |
| 10 | .73100 | 1.36800 | .75812 | 1.31904 | .78598 | 1.27230 | .81461 | 1.22758 | 50 |
| 11 | 144    | .36716  | 858    | .31825  | 645    | .27153  | 510    | .22685  | 49 |
| 12 | 189    | .36633  | 904    | .31745  | 692    | .27077  | 558    | .22612  | 48 |
| 13 | 234    | .36549  | 950    | .31666  | 739    | .27001  | 606    | .22539  | 47 |
| 14 | 278    | .36466  | 996    | .31586  | 786    | .26925  | 655    | .22467  | 46 |
| 15 | .73323 | 1.36383 | .76042 | 1.31507 | .78834 | 1.26849 | .81703 | 1.22394 | 45 |
| 16 | 368    | .36300  | 1088   | .31427  | 881    | .26774  | 752    | .22321  | 44 |
| 17 | 413    | .36217  | 134    | .31348  | 928    | .26698  | 800    | .22249  | 43 |
| 18 | 457    | .36134  | 180    | .31269  | 975    | .26622  | 849    | .22176  | 42 |
| 19 | 502    | .36051  | 226    | .31190  | .79022 | .26546  | 898    | .22104  | 41 |
| 20 | .73547 | 1.35968 | .76272 | 1.31110 | .79070 | 1.26471 | .81946 | 1.22031 | 40 |
| 21 | 592    | .35885  | 318    | .31031  | 117    | .26395  | 995    | .21959  | 39 |
| 22 | 637    | .35802  | 364    | .30952  | 164    | .26319  | .82044 | .21886  | 38 |
| 23 | 681    | .35719  | 410    | .30873  | 212    | .26244  | 092    | .21814  | 37 |
| 24 | 726    | .35637  | 456    | .30795  | 259    | .26169  | 141    | .21742  | 36 |
| 25 | .73771 | 1.35554 | .76502 | 1.30716 | .79306 | 1.26093 | .82190 | 1.21670 | 35 |
| 26 | 816    | .35472  | 548    | .30637  | 354    | .26018  | 238    | .21598  | 34 |
| 27 | 861    | .35389  | 594    | .30558  | 401    | .25943  | 287    | .21526  | 33 |
| 28 | 906    | .35307  | 640    | .30480  | 449    | .25867  | 336    | .21454  | 32 |
| 29 | 951    | .35224  | 686    | .30401  | 496    | .25792  | 385    | .21382  | 31 |
| 30 | .73996 | 1.35142 | .76733 | 1.30323 | .79544 | 1.25717 | .82434 | 1.21310 | 30 |
| 31 | .74041 | .35060  | 779    | .30244  | 591    | .25642  | 483    | .21238  | 29 |
| 32 | 886    | .34978  | 825    | .30166  | 639    | .25567  | 531    | .21166  | 28 |
| 33 | 131    | .34896  | 871    | .30087  | 686    | .25492  | 580    | .21094  | 27 |
| 34 | 176    | .34814  | 918    | .30009  | 734    | .25417  | 629    | .21023  | 26 |
| 35 | .74221 | 1.34732 | .76964 | 1.29931 | .79781 | 1.25343 | .82678 | 1.20951 | 25 |
| 36 | 267    | .34650  | .77010 | .29853  | 829    | .25268  | 727    | .20879  | 24 |
| 37 | 312    | .34568  | 057    | .29775  | 877    | .25193  | 776    | .20808  | 23 |
| 38 | 357    | .34487  | 103    | .29696  | 924    | .25118  | 825    | .20736  | 22 |
| 39 | 402    | .34405  | 149    | .29618  | 972    | .25044  | 874    | .20665  | 21 |
| 40 | .74447 | 1.34323 | .77196 | 1.29541 | .80020 | 1.24969 | .82923 | 1.20593 | 20 |
| 41 | 492    | .34242  | 242    | .29463  | 067    | .24895  | 972    | .20522  | 19 |
| 42 | 538    | .34160  | 289    | .29385  | 115    | .24820  | .83022 | .20451  | 18 |
| 43 | 583    | .34079  | 335    | .29307  | 163    | .24746  | 071    | .20379  | 17 |
| 44 | 628    | .33998  | 382    | .29229  | 211    | .24672  | 120    | .20308  | 16 |
| 45 | .74674 | 1.33916 | .77428 | 1.29152 | .80258 | 1.24597 | .83169 | 1.20237 | 15 |
| 46 | 719    | .33835  | 475    | .29074  | 306    | .24523  | 218    | .20166  | 14 |
| 47 | 764    | .33754  | 521    | .28997  | 354    | .24449  | 268    | .20095  | 13 |
| 48 | 810    | .33673  | 568    | .28919  | 402    | .24375  | 317    | .20024  | 12 |
| 49 | 855    | .33592  | 615    | .28842  | 450    | .24301  | 366    | .19953  | 11 |
| 50 | 74900  | 1.33511 | .77661 | 1.28764 | .80498 | 1.24227 | .83415 | 1.19882 | 10 |
| 51 | 946    | .33430  | 708    | .28687  | 546    | .24153  | 465    | .19811  | 9  |
| 52 | 991    | .33349  | 754    | .28610  | 594    | .24079  | 514    | .19740  | 8  |
| 53 | .75037 | .33268  | 801    | .28533  | 642    | .24005  | 564    | .19669  | 7  |
| 54 | 082    | .33187  | 848    | .28456  | 690    | .23931  | 613    | .19599  | 6  |
| 55 | .75128 | 1.33107 | .77895 | 1.28379 | .80738 | 1.23858 | .83662 | 1.19528 | 5  |
| 56 | 173    | .33026  | 941    | .28302  | 786    | .23784  | 712    | .19457  | 4  |
| 57 | 219    | .32946  | 988    | .28225  | 834    | .23710  | 761    | .19387  | 3  |
| 58 | 264    | .32865  | .78035 | .28148  | 882    | .23637  | 811    | .19316  | 2  |
| 59 | 310    | .32785  | 082    | .28071  | 930    | .23563  | 860    | .19246  | 1  |
| 60 | .75355 | 1.32704 | .78129 | 1.27994 | .80978 | 1.23490 | .83910 | 1.19175 | 0  |
|    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | Cot.   | Tan.    | M. |
|    | 53°    |         | 52°    |         | 51°    |         | 50°    |         |    |



| M. | 40°    |         | 41°    |         | 42°    |         | 43°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    | Tan.   | Cot.    |    |
| 0  | .83910 | 1.19175 | .86929 | 1.15037 | .90040 | 1.11061 | .93252 | 1.07237 | 60 |
| 1  | .960   | .19105  | .980   | .14969  | .093   | .10996  | .306   | .07174  | 59 |
| 2  | .84009 | .19035  | .87031 | .14902  | .145   | .10931  | .360   | .07112  | 58 |
| 3  | .059   | .18964  | .082   | .14834  | .199   | .10867  | .415   | .07049  | 57 |
| 4  | .108   | .18894  | .133   | .14767  | .251   | .10802  | .469   | .06987  | 56 |
| 5  | .84158 | 1.18824 | .87184 | 1.14699 | .90304 | 1.10737 | .93524 | 1.06925 | 55 |
| 6  | .208   | .18754  | .236   | .14632  | .357   | .10672  | .578   | .06862  | 54 |
| 7  | .258   | .18684  | .287   | .14565  | .410   | .10607  | .633   | .06800  | 53 |
| 8  | .307   | .18614  | .338   | .14498  | .463   | .10543  | .688   | .06738  | 52 |
| 9  | .357   | .18544  | .389   | .14430  | .516   | .10478  | .742   | .06676  | 51 |
| 10 | .84407 | 1.18474 | .87441 | 1.14363 | .90569 | 1.10414 | .93797 | 1.06613 | 50 |
| 11 | .457   | .18404  | .492   | .14296  | .521   | .10349  | .852   | .06551  | 49 |
| 12 | .507   | .18334  | .543   | .14229  | .674   | .10285  | .906   | .06489  | 48 |
| 13 | .556   | .18264  | .595   | .14162  | .727   | .10220  | .961   | .06427  | 47 |
| 14 | .606   | .18194  | .646   | .14095  | .781   | .10156  | .94016 | .06365  | 46 |
| 15 | .84656 | 1.18125 | .87698 | 1.14028 | .90834 | 1.10091 | .94071 | 1.06303 | 45 |
| 16 | .706   | .18055  | .749   | .13961  | .887   | .10027  | .125   | .06241  | 44 |
| 17 | .756   | .17986  | .801   | .13894  | .940   | .09963  | .180   | .06179  | 43 |
| 18 | .806   | .17916  | .852   | .13828  | .993   | .09899  | .235   | .06117  | 42 |
| 19 | .856   | .17846  | .904   | .13761  | .91046 | .09834  | .290   | .06056  | 41 |
| 20 | .84906 | 1.17777 | .87955 | 1.13694 | .91099 | 1.09770 | .94345 | 1.05994 | 40 |
| 21 | .956   | .17708  | .88007 | .13627  | .153   | .09706  | .400   | .05932  | 39 |
| 22 | .85006 | .17638  | .059   | .13561  | .206   | .09642  | .455   | .05870  | 38 |
| 23 | .057   | .17569  | .110   | .13494  | .259   | .09578  | .510   | .05809  | 37 |
| 24 | .107   | .17500  | .162   | .13428  | .313   | .09514  | .565   | .05747  | 36 |
| 25 | .85157 | 1.17430 | .88214 | 1.13361 | .91366 | 1.09450 | .94620 | 1.05685 | 35 |
| 26 | .207   | .17361  | .265   | .13295  | .419   | .09386  | .676   | .05624  | 34 |
| 27 | .257   | .17292  | .317   | .13228  | .473   | .09322  | .731   | .05562  | 33 |
| 28 | .308   | .17223  | .369   | .13162  | .526   | .09258  | .786   | .05501  | 32 |
| 29 | .358   | .17154  | .421   | .13096  | .580   | .09195  | .841   | .05439  | 31 |
| 30 | .85408 | 1.17085 | .88473 | 1.13029 | .91633 | 1.09131 | .94896 | 1.05378 | 30 |
| 31 | .458   | .17016  | .524   | .12963  | .687   | .09067  | .952   | .05317  | 29 |
| 32 | .509   | .16947  | .576   | .12897  | .740   | .09003  | .95007 | .05255  | 28 |
| 33 | .559   | .16878  | .628   | .12831  | .794   | .08940  | .062   | .05194  | 27 |
| 34 | .609   | .16809  | .680   | .12765  | .847   | .08876  | .118   | .05133  | 26 |
| 35 | .85660 | 1.16741 | .88732 | 1.12699 | .91901 | 1.08813 | .95173 | 1.05072 | 25 |
| 36 | .710   | .16672  | .784   | .12633  | .955   | .08749  | .229   | .05010  | 24 |
| 37 | .761   | .16603  | .836   | .12567  | .92008 | .08686  | .284   | .04949  | 23 |
| 38 | .811   | .16533  | .888   | .12501  | .062   | .08622  | .340   | .04888  | 22 |
| 39 | .862   | .16466  | .940   | .12435  | .116   | .08559  | .395   | .04827  | 21 |
| 40 | .85912 | 1.16398 | .88992 | 1.12369 | .92170 | 1.08496 | .95451 | 1.04766 | 20 |
| 41 | .963   | .16329  | .89045 | .12303  | .224   | .08432  | .506   | .04705  | 19 |
| 42 | .86014 | .16261  | .097   | .12238  | .277   | .08369  | .562   | .04644  | 18 |
| 43 | .064   | .16192  | .149   | .12172  | .331   | .08306  | .618   | .04583  | 17 |
| 44 | .115   | .16124  | .201   | .12106  | .385   | .08243  | .673   | .04522  | 16 |
| 45 | .86166 | 1.16056 | .89263 | 1.12041 | .92439 | 1.08179 | .95729 | 1.04461 | 15 |
| 46 | .216   | .15987  | .306   | .11975  | .493   | .08116  | .785   | .04401  | 14 |
| 47 | .267   | .15919  | .358   | .11909  | .547   | .08053  | .841   | .04340  | 13 |
| 48 | .318   | .15851  | .410   | .11844  | .601   | .07990  | .897   | .04279  | 12 |
| 49 | .368   | .15783  | .463   | .11778  | .655   | .07927  | .952   | .04218  | 11 |
| 50 | .86419 | 1.15715 | .89515 | 1.11713 | .92709 | 1.07864 | .96008 | 1.04158 | 10 |
| 51 | .470   | .15647  | .567   | .11648  | .763   | .07801  | .064   | .04097  | 9  |
| 52 | .521   | .15579  | .620   | .11582  | .817   | .07738  | .120   | .04036  | 8  |
| 53 | .572   | .15511  | .672   | .11517  | .872   | .07676  | .176   | .03976  | 7  |
| 54 | .623   | .15443  | .725   | .11452  | .926   | .07613  | .232   | .03915  | 6  |
| 55 | .86674 | 1.15375 | .89777 | 1.11387 | .92980 | 1.07550 | .96288 | 1.03855 | 5  |
| 56 | .725   | .15308  | .830   | .11321  | .93034 | .07487  | .344   | .03794  | 4  |
| 57 | .776   | .15240  | .883   | .11256  | .088   | .07425  | .400   | .03734  | 3  |
| 58 | .827   | .15172  | .935   | .11191  | .143   | .07362  | .457   | .03674  | 2  |
| 59 | .878   | .15104  | .988   | .11126  | .197   | .07299  | .513   | .03613  | 1  |
| 60 | .86929 | 1.15037 | .90040 | 1.11061 | .93252 | 1.07237 | .96569 | 1.03553 | 0  |

49°

48°

47°

46°

M.

| 44° |        |         | 44° |        |         | 44° |         |         |    |
|-----|--------|---------|-----|--------|---------|-----|---------|---------|----|
| M.  | Tan.   | Cot.    | M.  | Tan.   | Cot.    | M.  | Tan.    | Cot.    |    |
| 0   | .96569 | 1.03553 | 60  | .97700 | 1.02355 | 40  | .98843  | 1.01170 | 20 |
| 1   | 625    | .03493  | 59  | 756    | .02295  | 39  | 901     | .01112  | 19 |
| 2   | 681    | .03433  | 58  | 813    | .02236  | 38  | 958     | .01053  | 18 |
| 3   | 738    | .03372  | 57  | 870    | .02176  | 37  | .99016  | .00994  | 17 |
| 4   | 794    | .03312  | 56  | 927    | .02117  | 36  | 073     | .00935  | 16 |
| 5   | .96850 | 1.03252 | 55  | .97984 | 1.02057 | 35  | .99131  | 1.00876 | 15 |
| 6   | 907    | .03192  | 54  | .98041 | .01998  | 34  | 189     | .00818  | 14 |
| 7   | 963    | .03132  | 53  | 098    | .01939  | 33  | 247     | .00759  | 13 |
| 8   | .97020 | .03072  | 52  | 155    | .01879  | 32  | 304     | .00701  | 12 |
| 9   | 076    | .03012  | 51  | 213    | .01820  | 31  | 352     | .00642  | 11 |
| 10  | .97133 | 1.02952 | 50  | .98270 | 1.01761 | 30  | .99420  | 1.00583 | 10 |
| 11  | 189    | .02892  | 49  | 327    | .01702  | 29  | 478     | .00525  | 9  |
| 12  | 246    | .02832  | 48  | 384    | .01642  | 28  | 536     | .00467  | 8  |
| 13  | 302    | .02772  | 47  | 441    | .01583  | 27  | 594     | .00408  | 7  |
| 14  | 359    | .02713  | 46  | 499    | .01524  | 26  | 652     | .00350  | 6  |
| 15  | .97416 | 1.02653 | 45  | .98556 | 1.01465 | 25  | .99710  | 1.00291 | 5  |
| 16  | 472    | .02593  | 44  | 613    | .01406  | 24  | 768     | .00233  | 4  |
| 17  | 529    | .02533  | 43  | 671    | .01347  | 23  | 826     | .00175  | 3  |
| 18  | 586    | .02474  | 42  | 728    | .01288  | 22  | 884     | .00116  | 2  |
| 19  | 643    | .02414  | 41  | 786    | .01229  | 21  | 942     | .00058  | 1  |
| 20  | .97700 | 1.02355 | 40  | .98843 | 1.01170 | 20  | 1.00000 | 1.00000 | 0  |
|     | Cot.   | Tan.    | M.  | Cot.   | Tan.    | M.  | Cot.    | Tan.    | M. |
|     | 45°    |         |     | 45°    |         |     | 45°     |         |    |

第二十表 正矢外割眞數表

| M. | 0°     |        | 1°     |        | 2°     |        | 3°     |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .00000 | .00000 | .00015 | .00015 | .00061 | .00061 | .00137 | .00137 | 0  |
| 1  | 000    | 000    | 016    | 016    | 062    | 062    | 139    | 139    | 1  |
| 2  | 000    | 000    | 016    | 016    | 063    | 063    | 140    | 140    | 2  |
| 3  | 000    | 000    | 017    | 017    | 064    | 064    | 142    | 142    | 3  |
| 4  | 000    | 000    | 017    | 017    | 065    | 065    | 143    | 143    | 4  |
| 5  | .00000 | .00000 | .00018 | .00018 | .00066 | .00066 | .00145 | .00145 | 5  |
| 6  | 000    | 000    | 018    | 018    | 067    | 067    | 146    | 147    | 6  |
| 7  | 000    | 000    | 019    | 019    | 068    | 068    | 148    | 148    | 7  |
| 8  | 000    | 000    | 020    | 020    | 069    | 069    | 149    | 150    | 8  |
| 9  | 000    | 000    | 020    | 020    | 070    | 070    | 151    | 151    | 9  |
| 10 | .00000 | .00000 | .00021 | .00021 | .00071 | .00072 | .00153 | .00153 | 10 |
| 11 | 001    | 001    | 021    | 021    | 073    | 073    | 154    | 155    | 11 |
| 12 | 001    | 001    | 022    | 022    | 074    | 074    | 156    | 156    | 12 |
| 13 | 001    | 001    | 023    | 023    | 075    | 075    | 158    | 158    | 13 |
| 14 | 001    | 001    | 023    | 023    | 076    | 076    | 159    | 159    | 14 |
| 15 | .00001 | .00001 | .00024 | .00024 | .00077 | .00077 | .00161 | .00161 | 15 |
| 16 | 001    | 001    | 024    | 024    | 078    | 078    | 162    | 163    | 16 |
| 17 | 001    | 001    | 025    | 025    | 079    | 079    | 164    | 164    | 17 |
| 18 | 001    | 001    | 026    | 026    | 081    | 081    | 166    | 166    | 18 |
| 19 | 002    | 002    | 026    | 026    | 082    | 082    | 167    | 168    | 19 |
| 20 | .00002 | .00002 | .00027 | .00027 | .00083 | .00083 | .00169 | .00169 | 20 |
| 21 | 002    | 002    | 028    | 028    | 084    | 084    | 171    | 171    | 21 |
| 22 | 002    | 002    | 028    | 028    | 085    | 085    | 173    | 173    | 22 |
| 23 | 002    | 002    | 029    | 029    | 087    | 087    | 174    | 175    | 23 |
| 24 | 002    | 002    | 030    | 030    | 088    | 088    | 176    | 176    | 24 |
| 25 | .00003 | .00003 | .00031 | .00031 | .00089 | .00089 | .00178 | .00178 | 25 |
| 26 | 003    | 003    | 031    | 031    | 090    | 090    | 179    | 180    | 26 |
| 27 | 003    | 003    | 032    | 032    | 091    | 091    | 181    | 182    | 27 |
| 28 | 003    | 003    | 033    | 033    | 093    | 093    | 183    | 183    | 28 |
| 29 | 004    | 004    | 034    | 034    | 094    | 094    | 185    | 185    | 29 |
| 30 | .00004 | .00004 | .00034 | .00034 | .00095 | .00095 | .00187 | .00187 | 30 |
| 31 | 004    | 004    | 035    | 035    | 096    | 097    | 188    | 189    | 31 |
| 32 | 004    | 004    | 036    | 036    | 098    | 098    | 190    | 190    | 32 |
| 33 | 005    | 005    | 037    | 037    | 099    | 099    | 192    | 192    | 33 |
| 34 | 005    | 005    | 037    | 037    | 100    | 100    | 194    | 194    | 34 |
| 35 | .00005 | .00005 | .00038 | .00038 | .00102 | .00102 | .00196 | .00196 | 35 |
| 36 | 005    | 005    | 039    | 039    | 103    | 103    | 197    | 198    | 36 |
| 37 | 006    | 006    | 040    | 040    | 104    | 104    | 199    | 200    | 37 |
| 38 | 006    | 006    | 041    | 041    | 106    | 106    | 201    | 201    | 38 |
| 39 | 006    | 006    | 041    | 041    | 107    | 107    | 203    | 203    | 39 |
| 40 | .00007 | .00007 | .00042 | .00042 | .00108 | .00108 | .00205 | .00205 | 40 |
| 41 | 007    | 007    | 043    | 043    | 110    | 110    | 207    | 207    | 41 |
| 42 | 007    | 007    | 044    | 044    | 111    | 111    | 208    | 209    | 42 |
| 43 | 008    | 008    | 045    | 045    | 112    | 113    | 210    | 211    | 43 |
| 44 | 008    | 008    | 046    | 046    | 114    | 114    | 212    | 213    | 44 |
| 45 | .00009 | .00009 | .00047 | .00047 | .00115 | .00115 | .00214 | .00215 | 45 |
| 46 | 009    | 009    | 048    | 048    | 117    | 117    | 216    | 216    | 46 |
| 47 | 009    | 009    | 048    | 048    | 118    | 118    | 218    | 218    | 47 |
| 48 | 010    | 010    | 049    | 049    | 119    | 120    | 220    | 220    | 48 |
| 49 | 010    | 010    | 050    | 050    | 121    | 121    | 222    | 222    | 49 |
| 50 | .00011 | .00011 | .00051 | .00051 | .00122 | .00122 | .00224 | .00224 | 50 |
| 51 | 011    | 011    | 052    | 052    | 124    | 124    | 226    | 226    | 51 |
| 52 | 011    | 011    | 053    | 053    | 125    | 125    | 228    | 228    | 52 |
| 53 | 012    | 012    | 054    | 054    | 127    | 127    | 230    | 230    | 53 |
| 54 | 012    | 012    | 055    | 055    | 128    | 128    | 232    | 232    | 54 |
| 55 | .00013 | .00013 | .00056 | .00056 | .00130 | .00130 | .00234 | .00234 | 55 |
| 56 | 013    | 013    | 057    | 057    | 131    | 131    | 236    | 236    | 56 |
| 57 | 014    | 014    | 058    | 058    | 133    | 133    | 238    | 238    | 57 |
| 58 | 014    | 014    | 059    | 059    | 134    | 134    | 240    | 240    | 58 |
| 59 | 015    | 015    | 060    | 060    | 136    | 136    | 242    | 242    | 59 |
| 60 | .00015 | .00015 | .00061 | .00061 | .00137 | .00137 | .00244 | .00244 | 60 |

| M. | 4°     |        | 5°     |        | 6°     |        | 7°     |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .00244 | .00244 | .00381 | .00382 | .00548 | .00551 | .00745 | .00751 | 0  |
| 1  | 246    | 246    | 383    | 385    | 551    | 554    | 749    | 755    | 1  |
| 2  | 248    | 248    | 386    | 387    | 554    | 557    | 752    | 758    | 2  |
| 3  | 250    | 250    | 388    | 390    | 557    | 560    | 756    | 762    | 3  |
| 4  | 252    | 252    | 391    | 392    | 560    | 563    | 760    | 765    | 4  |
| 5  | .00254 | .00254 | .00393 | .00395 | .00563 | .00566 | .00763 | .00769 | 5  |
| 6  | 256    | 257    | 396    | 397    | 566    | 569    | 767    | 773    | 6  |
| 7  | 258    | 259    | 398    | 400    | 569    | 573    | 770    | 776    | 7  |
| 8  | 260    | 261    | 401    | 403    | 572    | 576    | 774    | 780    | 8  |
| 9  | 262    | 263    | 404    | 405    | 576    | 579    | 778    | 784    | 9  |
| 10 | .00264 | .00265 | .00406 | .00408 | .00579 | .00582 | .00781 | .00787 | 10 |
| 11 | 266    | 267    | 409    | 411    | 582    | 585    | 785    | 791    | 11 |
| 12 | 269    | 269    | 412    | 414    | 585    | 588    | 789    | 795    | 12 |
| 13 | 271    | 271    | 414    | 416    | 588    | 592    | 792    | 799    | 13 |
| 14 | 273    | 274    | 417    | 419    | 591    | 595    | 796    | 802    | 14 |
| 15 | .00275 | .00276 | .00421 | .00421 | .00594 | .00598 | .00800 | .00806 | 15 |
| 16 | 277    | 278    | 422    | 424    | 598    | 601    | 803    | 810    | 16 |
| 17 | 279    | 280    | 425    | 427    | 601    | 604    | 807    | 813    | 17 |
| 18 | 281    | 282    | 428    | 429    | 604    | 608    | 811    | 817    | 18 |
| 19 | 284    | 284    | 430    | 432    | 607    | 611    | 814    | 821    | 19 |
| 20 | .00286 | .00287 | .00433 | .00435 | .00610 | .00614 | .00818 | .00825 | 20 |
| 21 | 288    | 289    | 436    | 438    | 614    | 617    | 822    | 828    | 21 |
| 22 | 290    | 291    | 438    | 440    | 617    | 621    | 825    | 832    | 22 |
| 23 | 292    | 293    | 441    | 443    | 620    | 624    | 829    | 836    | 23 |
| 24 | 295    | 296    | 444    | 446    | 623    | 627    | 833    | 840    | 24 |
| 25 | .00297 | .00298 | .00449 | .00449 | .00626 | .00630 | .00837 | .00844 | 25 |
| 26 | 299    | 300    | 449    | 451    | 630    | 634    | 840    | 848    | 26 |
| 27 | 301    | 302    | 452    | 454    | 633    | 637    | 844    | 851    | 27 |
| 28 | 304    | 305    | 455    | 457    | 636    | 640    | 848    | 855    | 28 |
| 29 | 306    | 307    | 458    | 460    | 640    | 644    | 852    | 859    | 29 |
| 30 | .00308 | .00309 | .00460 | .00463 | .00643 | .00647 | .00856 | .00863 | 30 |
| 31 | 311    | 312    | 463    | 465    | 646    | 650    | 859    | 867    | 31 |
| 32 | 313    | 314    | 466    | 468    | 649    | 654    | 863    | 871    | 32 |
| 33 | 315    | 316    | 469    | 471    | 653    | 657    | 867    | 875    | 33 |
| 34 | 317    | 318    | 472    | 474    | 656    | 660    | 871    | 878    | 34 |
| 35 | .00320 | .00321 | .00474 | .00477 | .00659 | .00664 | .00875 | .00882 | 35 |
| 36 | 322    | 323    | 477    | 480    | 663    | 667    | 878    | 886    | 36 |
| 37 | 324    | 326    | 480    | 482    | 666    | 671    | 882    | 890    | 37 |
| 38 | 327    | 328    | 483    | 485    | 669    | 674    | 886    | 894    | 38 |
| 39 | 329    | 330    | 486    | 488    | 673    | 677    | 890    | 898    | 39 |
| 40 | .00332 | .00333 | .00489 | .00491 | .00676 | .00681 | .00894 | .00902 | 40 |
| 41 | 334    | 335    | 492    | 494    | 680    | 684    | 898    | 906    | 41 |
| 42 | 336    | 337    | 494    | 497    | 683    | 688    | 902    | 910    | 42 |
| 43 | 339    | 340    | 497    | 500    | 686    | 691    | 906    | 914    | 43 |
| 44 | 341    | 342    | 500    | 503    | 690    | 695    | 909    | 918    | 44 |
| 45 | .00343 | .00345 | .00503 | .00506 | .00693 | .00698 | .00913 | .00922 | 45 |
| 46 | 346    | 347    | 506    | 509    | 697    | 701    | 917    | 926    | 46 |
| 47 | 348    | 349    | 509    | 512    | 700    | 705    | 921    | 930    | 47 |
| 48 | 351    | 352    | 512    | 515    | 703    | 708    | 925    | 934    | 48 |
| 49 | 353    | 354    | 515    | 518    | 707    | 712    | 929    | 938    | 49 |
| 50 | .00356 | .00357 | .00518 | .00521 | .00710 | .00715 | .00933 | .00942 | 50 |
| 51 | 358    | 359    | 521    | 524    | 714    | 719    | 937    | 946    | 51 |
| 52 | 361    | 362    | 524    | 527    | 717    | 722    | 941    | 950    | 52 |
| 53 | 363    | 364    | 527    | 530    | 721    | 726    | 945    | 954    | 53 |
| 54 | 365    | 367    | 530    | 533    | 724    | 730    | 949    | 958    | 54 |
| 55 | .00368 | .00369 | .00533 | .00536 | .00728 | .00733 | .00953 | .00962 | 55 |
| 56 | 370    | 372    | 536    | 539    | 731    | 737    | 957    | 966    | 56 |
| 57 | 373    | 374    | 539    | 542    | 735    | 740    | 961    | 970    | 57 |
| 58 | 375    | 377    | 542    | 545    | 738    | 744    | 965    | 975    | 58 |
| 59 | 378    | 379    | 545    | 548    | 742    | 747    | 969    | 979    | 59 |
| 60 | .00381 | .00382 | .00548 | .00551 | .00745 | .00751 | .00973 | .00983 | 60 |

| M. | 8°     |        | 9°     |        | 10°    |        | 11°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .00973 | .00983 | .01231 | .01247 | .01519 | .01543 | .01837 | .01872 | 0  |
| 1  | 977    | 987    | 236    | 251    | 524    | 548    | 843    | 877    | 1  |
| 2  | 981    | 991    | 240    | 256    | 529    | 553    | 848    | 883    | 2  |
| 3  | 985    | 995    | 245    | 261    | 534    | 558    | 854    | 889    | 3  |
| 4  | 989    | 999    | 249    | 265    | 539    | 564    | 860    | 895    | 4  |
| 5  | .00994 | .01004 | .01254 | .01270 | .01545 | .01569 | .01865 | .01901 | 5  |
| 6  | 998    | 008    | 259    | 275    | 550    | 574    | 871    | 906    | 6  |
| 7  | .01002 | 012    | 263    | 279    | 555    | 579    | 876    | 912    | 7  |
| 8  | 006    | 016    | 268    | 284    | 560    | 585    | 882    | 918    | 8  |
| 9  | 010    | 020    | 272    | 289    | 565    | 590    | 888    | 924    | 9  |
| 10 | .01014 | .01024 | .01277 | .01294 | .01570 | .01595 | .01893 | .01930 | 10 |
| 11 | 018    | 029    | 282    | 298    | 575    | 601    | 899    | 936    | 11 |
| 12 | 022    | 033    | 286    | 303    | 580    | 606    | 904    | 941    | 12 |
| 13 | 027    | 037    | 291    | 308    | 586    | 611    | 910    | 947    | 13 |
| 14 | 031    | 041    | 296    | 313    | 591    | 616    | 916    | 953    | 14 |
| 15 | .01035 | .01046 | .01300 | .01317 | .01596 | .01622 | .01921 | .01959 | 15 |
| 16 | 039    | 050    | 305    | 322    | 601    | 627    | 927    | 965    | 16 |
| 17 | 043    | 054    | 310    | 327    | 606    | 633    | 933    | 971    | 17 |
| 18 | 047    | 059    | 314    | 332    | 611    | 638    | 939    | 977    | 18 |
| 19 | 052    | 063    | 319    | 337    | 617    | 643    | 944    | 983    | 19 |
| 20 | .01056 | .01067 | .01324 | .01342 | .01622 | .01649 | .01950 | .01989 | 20 |
| 21 | 060    | 071    | 329    | 346    | 627    | 654    | 956    | 995    | 21 |
| 22 | 064    | 076    | 333    | 351    | 632    | 659    | 961    | .02001 | 22 |
| 23 | 069    | 080    | 338    | 356    | 638    | 665    | 967    | 007    | 23 |
| 24 | 073    | 084    | 343    | 361    | 643    | 670    | 973    | 013    | 24 |
| 25 | .01077 | .01089 | .01348 | .01366 | .01648 | .01676 | .01979 | .02019 | 25 |
| 26 | 081    | 093    | 352    | 371    | 653    | 681    | 984    | 025    | 26 |
| 27 | 086    | 097    | 357    | 376    | 659    | 687    | 990    | 031    | 27 |
| 28 | 090    | 102    | 362    | 381    | 664    | 692    | 996    | 037    | 28 |
| 29 | 094    | 106    | 367    | 386    | 669    | 698    | .02002 | 043    | 29 |
| 30 | .01098 | .01111 | .01371 | .01391 | .01675 | .01703 | .02008 | .02049 | 30 |
| 31 | 103    | 115    | 376    | 395    | 680    | 709    | 013    | 055    | 31 |
| 32 | 107    | 119    | 381    | 400    | 685    | 714    | 019    | 061    | 32 |
| 33 | 111    | 124    | 386    | 405    | 690    | 720    | 025    | 067    | 33 |
| 34 | 116    | 128    | 391    | 410    | 696    | 725    | 031    | 073    | 34 |
| 35 | .01120 | .01133 | .01396 | .01415 | .01701 | .01731 | .02037 | .02079 | 35 |
| 36 | 124    | 137    | 400    | 420    | 706    | 736    | 042    | 085    | 36 |
| 37 | 129    | 142    | 405    | 425    | 712    | 742    | 048    | 091    | 37 |
| 38 | 133    | 146    | 410    | 430    | 717    | 747    | 054    | 097    | 38 |
| 39 | 137    | 151    | 415    | 435    | 723    | 753    | 060    | 103    | 39 |
| 40 | .01142 | .01155 | .01420 | .01440 | .01728 | .01758 | .02066 | .02110 | 40 |
| 41 | 146    | 160    | 425    | 445    | 733    | 764    | 072    | 116    | 41 |
| 42 | 151    | 164    | 430    | 450    | 739    | 769    | 078    | 122    | 42 |
| 43 | 155    | 169    | 435    | 455    | 744    | 775    | 084    | 128    | 43 |
| 44 | 159    | 173    | 439    | 460    | 750    | 781    | 090    | 134    | 44 |
| 45 | .01164 | .01178 | .01444 | .01466 | .01755 | .01786 | .02095 | .02140 | 45 |
| 46 | 168    | 182    | 449    | 471    | 760    | 792    | 101    | 146    | 46 |
| 47 | 173    | 187    | 454    | 476    | 766    | 798    | 107    | 153    | 47 |
| 48 | 177    | 191    | 459    | 481    | 771    | 803    | 113    | 159    | 48 |
| 49 | 182    | 196    | 464    | 486    | 777    | 809    | 119    | 165    | 49 |
| 50 | .01186 | .01200 | .01469 | .01491 | .01782 | .01815 | .02125 | .02171 | 50 |
| 51 | 191    | 205    | 474    | 496    | 788    | 820    | 131    | 178    | 51 |
| 52 | 195    | 209    | 479    | 501    | 793    | 826    | 137    | 184    | 52 |
| 53 | 200    | 214    | 484    | 506    | 799    | 832    | 143    | 190    | 53 |
| 54 | 204    | 219    | 489    | 512    | 804    | 837    | 149    | 196    | 54 |
| 55 | .01209 | .01223 | .01494 | .01517 | .01810 | .01843 | .02155 | .02203 | 55 |
| 56 | 213    | 228    | 499    | 522    | 815    | 849    | 161    | 209    | 56 |
| 57 | 218    | 233    | 504    | 527    | 821    | 854    | 167    | 215    | 57 |
| 58 | 222    | 237    | 509    | 532    | 826    | 860    | 173    | 221    | 58 |
| 59 | 227    | 242    | 514    | 537    | 832    | 866    | 179    | 228    | 59 |
| 60 | .01231 | .01247 | .01519 | .01543 | .01837 | .01872 | .02185 | .02234 | 60 |

| M. | 12°    |        | 13°    |        | 14°    |        | 15°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .02185 | .02234 | .02563 | .02630 | .02970 | .03061 | .03407 | .03528 | 0  |
| 1  | 191    | 240    | 570    | 637    | 977    | 069    | 415    | 536    | 1  |
| 2  | 197    | 247    | 576    | 644    | 985    | 076    | 422    | 544    | 2  |
| 3  | 203    | 253    | 583    | 651    | 992    | 084    | 430    | 552    | 3  |
| 4  | 209    | 259    | 589    | 658    | 999    | 091    | 438    | 560    | 4  |
| 5  | .02216 | .02266 | .02596 | .02665 | .03006 | .03099 | .03445 | .03568 | 5  |
| 6  | 222    | 272    | 602    | 672    | 013    | 106    | 453    | 576    | 6  |
| 7  | 228    | 279    | 609    | 679    | 020    | 114    | 460    | 584    | 7  |
| 8  | 234    | 285    | 616    | 686    | 027    | 121    | 468    | 592    | 8  |
| 9  | 240    | 291    | 622    | 693    | 034    | 129    | 476    | 601    | 9  |
| 10 | .02246 | .02296 | .02629 | .02700 | .03041 | .03137 | .03483 | .03609 | 10 |
| 11 | 252    | 304    | 635    | 707    | 048    | 144    | 491    | 617    | 11 |
| 12 | 258    | 311    | 642    | 714    | 055    | 152    | 498    | 625    | 12 |
| 13 | 265    | 317    | 649    | 721    | 063    | 159    | 506    | 633    | 13 |
| 14 | 271    | 323    | 655    | 728    | 070    | 167    | 514    | 642    | 14 |
| 15 | .02277 | .02330 | .02662 | .02735 | .03077 | .03175 | .03521 | .03650 | 15 |
| 16 | 283    | 336    | 669    | 742    | 084    | 182    | 529    | 658    | 16 |
| 17 | 289    | 343    | 675    | 749    | 091    | 190    | 537    | 666    | 17 |
| 18 | 295    | 349    | 682    | 756    | 098    | 197    | 544    | 674    | 18 |
| 19 | 302    | 356    | 689    | 763    | 106    | 205    | 552    | 683    | 19 |
| 20 | .02308 | .02361 | .02696 | .02770 | .03113 | .03213 | .03560 | .03691 | 20 |
| 21 | 314    | 369    | 702    | 777    | 120    | 220    | 567    | 699    | 21 |
| 22 | 320    | 375    | 709    | 784    | 127    | 228    | 575    | 708    | 22 |
| 23 | 327    | 382    | 716    | 791    | 134    | 236    | 583    | 716    | 23 |
| 24 | 333    | 388    | 722    | 799    | 142    | 244    | 590    | 724    | 24 |
| 25 | .02339 | .02392 | .02729 | .02806 | .03149 | .03251 | .03598 | .03732 | 25 |
| 26 | 345    | 405    | 736    | 813    | 156    | 259    | 606    | 741    | 26 |
| 27 | 352    | 408    | 743    | 820    | 163    | 267    | 614    | 749    | 27 |
| 28 | 358    | 415    | 749    | 827    | 171    | 275    | 621    | 758    | 28 |
| 29 | 364    | 421    | 756    | 834    | 178    | 282    | 629    | 766    | 29 |
| 30 | .02370 | .02428 | .02763 | .02842 | .03185 | .03290 | .03637 | .03774 | 30 |
| 31 | 377    | 435    | 770    | 849    | 193    | 298    | 645    | 783    | 31 |
| 32 | 383    | 441    | 777    | 856    | 200    | 306    | 653    | 791    | 32 |
| 33 | 389    | 448    | 783    | 863    | 207    | 313    | 660    | 799    | 33 |
| 34 | 396    | 454    | 790    | 870    | 214    | 321    | 668    | 808    | 34 |
| 35 | .02402 | .02461 | .02797 | .02878 | .03222 | .03329 | .03676 | .03816 | 35 |
| 36 | 408    | 468    | 804    | 885    | 229    | 337    | 684    | 825    | 36 |
| 37 | 415    | 474    | 811    | 892    | 236    | 345    | 692    | 833    | 37 |
| 38 | 421    | 481    | 818    | 899    | 244    | 353    | 699    | 842    | 38 |
| 39 | 427    | 488    | 824    | 907    | 251    | 360    | 707    | 850    | 39 |
| 40 | .02434 | .02494 | .02831 | .02914 | .03258 | .03368 | .03715 | .03858 | 40 |
| 41 | 440    | 501    | 838    | 921    | 266    | 376    | 723    | 867    | 41 |
| 42 | 447    | 508    | 845    | 928    | 273    | 384    | 731    | 875    | 42 |
| 43 | 453    | 515    | 852    | 936    | 281    | 392    | 739    | 884    | 43 |
| 44 | 459    | 521    | 859    | 943    | 288    | 400    | 747    | 892    | 44 |
| 45 | .02466 | .02528 | .02866 | .02950 | .03295 | .03408 | .03754 | .03901 | 45 |
| 46 | 472    | 535    | 873    | 958    | 303    | 416    | 762    | 909    | 46 |
| 47 | 479    | 542    | 880    | 965    | 310    | 424    | 770    | 918    | 47 |
| 48 | 485    | 548    | 887    | 972    | 318    | 432    | 778    | 927    | 48 |
| 49 | 492    | 555    | 894    | 980    | 325    | 439    | 786    | 935    | 49 |
| 50 | .02498 | .02562 | .02900 | .02987 | .03333 | .03447 | .03794 | .03944 | 50 |
| 51 | 504    | 569    | 907    | 994    | 340    | 455    | 802    | 952    | 51 |
| 52 | 511    | 576    | 914    | 1002   | 347    | 463    | 810    | 961    | 52 |
| 53 | 517    | 582    | 921    | 1009   | 355    | 471    | 818    | 969    | 53 |
| 54 | 524    | 589    | 928    | 1017   | 362    | 479    | 826    | 978    | 54 |
| 55 | .02530 | .02596 | .02935 | .03024 | .03370 | .03487 | .03834 | .03987 | 55 |
| 56 | 537    | 603    | 942    | 1032   | 377    | 495    | 842    | 995    | 56 |
| 57 | 543    | 610    | 949    | 1039   | 385    | 503    | 850    | 1004   | 57 |
| 58 | 550    | 617    | 956    | 1046   | 392    | 511    | 858    | 1013   | 58 |
| 59 | 556    | 624    | 963    | 1054   | 400    | 520    | 866    | 1021   | 59 |
| 60 | .02563 | .02630 | .02970 | .03061 | .03407 | .03528 | .03874 | .04030 | 60 |

| M. | 16°    |        | 17°    |        | 18°    |        | 19°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .03874 | .04030 | .04370 | .04569 | .04894 | .05146 | .05448 | .05762 | 0  |
| 1  | 882    | 039    | 378    | 578    | 903    | 156    | 458    | 773    | 1  |
| 2  | 890    | 047    | 387    | 588    | 912    | 166    | 467    | 783    | 2  |
| 3  | 893    | 056    | 395    | 597    | 921    | 176    | 477    | 794    | 3  |
| 4  | 906    | 065    | 404    | 606    | 930    | 186    | 486    | 805    | 4  |
| 5  | .03914 | .04073 | .04412 | .04616 | .04939 | .05196 | .05496 | .05815 | 5  |
| 6  | 922    | 082    | 421    | 625    | 948    | 206    | 505    | 826    | 6  |
| 7  | 930    | 091    | 429    | 635    | 957    | 216    | 515    | 836    | 7  |
| 8  | 938    | 100    | 438    | 644    | 967    | 226    | 524    | 847    | 8  |
| 9  | 946    | 108    | 446    | 653    | 976    | 236    | 534    | 858    | 9  |
| 10 | .03954 | .04117 | .04455 | .04663 | .04985 | .05246 | .05543 | .05869 | 10 |
| 11 | 963    | 126    | 464    | 672    | 994    | 256    | 553    | 879    | 11 |
| 12 | 971    | 135    | 472    | 682    | .05003 | 266    | 562    | 890    | 12 |
| 13 | 979    | 144    | 481    | 691    | 012    | 276    | 572    | 901    | 13 |
| 14 | 987    | 152    | 489    | 700    | 021    | 286    | 582    | 911    | 14 |
| 15 | .03995 | .04161 | .04498 | .04710 | .05030 | .05297 | .05591 | .05922 | 15 |
| 16 | .04003 | 170    | 507    | 719    | 039    | 297    | 601    | 933    | 16 |
| 17 | 011    | 179    | 515    | 729    | 048    | 317    | 610    | 944    | 17 |
| 18 | 019    | 188    | 524    | 738    | 057    | 327    | 620    | 955    | 18 |
| 19 | 028    | 197    | 533    | 748    | 067    | 337    | 630    | 965    | 19 |
| 20 | .04036 | .04206 | .04541 | .04757 | .05076 | .05347 | .05639 | .05976 | 20 |
| 21 | 044    | 214    | 550    | 767    | 085    | 357    | 649    | 987    | 21 |
| 22 | 052    | 223    | 559    | 776    | 094    | 367    | 658    | 998    | 22 |
| 23 | 060    | 232    | 567    | 786    | 103    | 378    | 668    | .06009 | 23 |
| 24 | 069    | 241    | 576    | 795    | 112    | 388    | 678    | 020    | 24 |
| 25 | .04077 | .04250 | .04585 | .04805 | .05122 | .05398 | .05687 | .06030 | 25 |
| 26 | 085    | 259    | 593    | 815    | 131    | 408    | 697    | 041    | 26 |
| 27 | 093    | 268    | 602    | 824    | 140    | 418    | 707    | 052    | 27 |
| 28 | 102    | 277    | 611    | 834    | 149    | 429    | 716    | 063    | 28 |
| 29 | 110    | 286    | 620    | 843    | 158    | 439    | 726    | 074    | 29 |
| 30 | .04118 | .04295 | .04628 | .04853 | .05168 | .05449 | .05736 | .06085 | 30 |
| 31 | 126    | 304    | 637    | 863    | 177    | 460    | 746    | 096    | 31 |
| 32 | 135    | 313    | 646    | 872    | 186    | 470    | 755    | 107    | 32 |
| 33 | 143    | 322    | 655    | 882    | 195    | 480    | 765    | 118    | 33 |
| 34 | 151    | 331    | 663    | 891    | 205    | 490    | 775    | 129    | 34 |
| 35 | .04159 | .04340 | .04672 | .04901 | .05214 | .05501 | .05785 | .06140 | 35 |
| 36 | 168    | 349    | 681    | 911    | 223    | 511    | 794    | 151    | 36 |
| 37 | 176    | 358    | 690    | 920    | 232    | 521    | 804    | 162    | 37 |
| 38 | 184    | 367    | 699    | 930    | 242    | 532    | 814    | 173    | 38 |
| 39 | 193    | 376    | 707    | 940    | 251    | 542    | 824    | 184    | 39 |
| 40 | .04201 | .04385 | .04716 | .04950 | .05260 | .05552 | .05833 | .06195 | 40 |
| 41 | 209    | 394    | 725    | 959    | 270    | 563    | 843    | 206    | 41 |
| 42 | 218    | 403    | 734    | 969    | 279    | 573    | 853    | 217    | 42 |
| 43 | 226    | 413    | 743    | 979    | 288    | 584    | 863    | 228    | 43 |
| 44 | 234    | 422    | 752    | 989    | 298    | 594    | 873    | 239    | 44 |
| 45 | .04243 | .04431 | .04760 | .04998 | .05307 | .05604 | .05882 | .06250 | 45 |
| 46 | 251    | 440    | 769    | .05008 | 316    | 615    | 892    | 261    | 46 |
| 47 | 260    | 449    | 778    | 018    | 326    | 625    | 902    | 272    | 47 |
| 48 | 268    | 458    | 787    | 028    | 335    | 636    | .912   | 283    | 48 |
| 49 | 276    | 468    | 796    | 038    | 344    | 646    | 922    | 295    | 49 |
| 50 | .04285 | .04477 | .04805 | .05047 | .05354 | .05657 | .05932 | .06306 | 50 |
| 51 | 293    | 486    | 814    | 057    | 363    | 667    | 942    | 317    | 51 |
| 52 | 302    | 495    | 823    | 067    | 373    | 678    | 951    | 328    | 52 |
| 53 | 310    | 504    | 832    | 077    | 382    | 688    | 961    | 339    | 53 |
| 54 | 319    | 514    | 841    | 087    | 391    | 699    | 971    | 350    | 54 |
| 55 | .04327 | .04520 | .04850 | .05097 | .05401 | .05709 | .05981 | .06362 | 55 |
| 56 | 336    | 532    | 858    | 107    | 410    | 720    | 991    | 373    | 56 |
| 57 | 344    | 541    | 867    | 116    | 420    | 730    | .06001 | 394    | 57 |
| 58 | 353    | 551    | 876    | 126    | 429    | 741    | 011    | 295    | 58 |
| 59 | 361    | 560    | 885    | 136    | 439    | 751    | 021    | 407    | 59 |
| 60 | .04370 | .04569 | .04894 | .05146 | .05448 | .05762 | .06031 | .06418 | 60 |

| M. | 20°    |        | 21°    |        | 22°    |        | 23°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .06031 | .06418 | .06642 | .07114 | .07282 | .07853 | .07950 | .08636 | 0  |
| 1  | 041    | 429    | 652    | 126    | 293    | 866    | 961    | 649    | 1  |
| 2  | 051    | 440    | 663    | 138    | 303    | 879    | 972    | 663    | 2  |
| 3  | 061    | 452    | 673    | 150    | 314    | 892    | 984    | 676    | 3  |
| 4  | 071    | 463    | 684    | 162    | 325    | 904    | 995    | 690    | 4  |
| 5  | .06081 | .06474 | .06694 | .07174 | .07336 | .07917 | .08006 | .08703 | 5  |
| 6  | 091    | 486    | 705    | 186    | 347    | 930    | 018    | 717    | 6  |
| 7  | 101    | 497    | 715    | 199    | 358    | 943    | 029    | 730    | 7  |
| 8  | 111    | 508    | 726    | 211    | 369    | 955    | 041    | 744    | 8  |
| 9  | 121    | 520    | 736    | 223    | 380    | 968    | 052    | 757    | 9  |
| 10 | .06131 | .06531 | .06747 | .07235 | .07391 | .07981 | .08064 | .08771 | 10 |
| 11 | 141    | 542    | 757    | 247    | 402    | 994    | 075    | 784    | 11 |
| 12 | 151    | 554    | 768    | 259    | 413    | .08006 | 086    | 798    | 12 |
| 13 | 161    | 565    | 778    | 271    | 424    | 019    | 098    | 811    | 13 |
| 14 | 171    | 577    | 789    | 283    | 435    | 032    | 109    | 825    | 14 |
| 15 | .06181 | .06588 | .06799 | .07295 | .07446 | .08045 | .08121 | .08839 | 15 |
| 16 | 191    | 600    | 810    | 307    | 457    | 058    | 132    | 852    | 16 |
| 17 | 201    | 611    | 820    | 320    | 468    | 071    | 144    | 866    | 17 |
| 18 | 211    | 622    | 831    | 332    | 479    | 084    | 155    | 880    | 18 |
| 19 | 221    | 634    | 841    | 344    | 490    | 097    | 167    | 893    | 19 |
| 20 | .06231 | .06645 | .06852 | .07356 | .07501 | .08109 | .08178 | .08907 | 20 |
| 21 | 241    | 657    | 863    | 368    | 512    | 122    | 190    | 920    | 21 |
| 22 | 252    | 668    | 873    | 380    | 523    | 135    | 201    | 934    | 22 |
| 23 | 262    | 680    | 884    | 393    | 534    | 148    | 213    | 948    | 23 |
| 24 | 272    | 691    | 894    | 405    | 545    | 161    | 225    | 962    | 24 |
| 25 | .06282 | .06703 | .06905 | .07417 | .07556 | .08174 | .08236 | .08975 | 25 |
| 26 | 292    | 715    | 916    | 429    | 568    | 187    | 248    | 989    | 26 |
| 27 | 302    | 726    | 926    | 442    | 579    | 200    | 259    | .09003 | 27 |
| 28 | 312    | 738    | 937    | 454    | 590    | 213    | 271    | 017    | 28 |
| 29 | 323    | 749    | 948    | 466    | 601    | 226    | 282    | 030    | 29 |
| 30 | .06333 | .06761 | .06958 | .07479 | .07612 | .08239 | .08294 | .09044 | 30 |
| 31 | 343    | 774    | 969    | 491    | 623    | 252    | 306    | 058    | 31 |
| 32 | 353    | 784    | 980    | 503    | 634    | 265    | 317    | 072    | 32 |
| 33 | 363    | 796    | 990    | 516    | 645    | 278    | 329    | 086    | 33 |
| 34 | 374    | 807    | .07001 | 528    | 657    | 291    | 340    | 099    | 34 |
| 35 | .06384 | .06819 | .07012 | .07540 | .07668 | .08305 | .08352 | .09113 | 35 |
| 36 | 394    | 831    | 022    | 553    | 679    | 318    | 364    | 127    | 36 |
| 37 | 404    | 842    | 033    | 565    | 690    | 331    | 375    | 141    | 37 |
| 38 | 415    | 854    | 044    | 578    | 701    | 344    | 387    | 155    | 38 |
| 39 | 425    | 866    | 055    | 590    | 713    | 357    | 399    | 169    | 39 |
| 40 | .06435 | .06878 | .07065 | .07602 | .07724 | .08370 | .08410 | .09183 | 40 |
| 41 | 445    | 889    | 076    | 615    | 735    | 383    | 422    | 197    | 41 |
| 42 | 456    | 901    | 087    | 627    | 746    | 397    | 434    | 211    | 42 |
| 43 | 466    | 913    | 098    | 640    | 757    | 410    | 445    | 224    | 43 |
| 44 | 476    | 925    | 108    | 652    | 769    | 423    | 457    | 238    | 44 |
| 45 | .06486 | .06936 | .07119 | .07665 | .07780 | .08436 | .08486 | .09252 | 45 |
| 46 | 497    | 948    | 130    | 677    | 791    | 449    | 481    | 266    | 46 |
| 47 | 507    | 960    | 141    | 690    | 802    | 463    | 492    | 280    | 47 |
| 48 | 517    | 972    | 151    | 702    | 814    | 476    | 504    | 294    | 48 |
| 49 | 528    | 984    | 162    | 715    | 825    | 489    | 516    | 308    | 49 |
| 50 | .06538 | .06995 | .07173 | .07727 | .07836 | .08503 | .08528 | .09323 | 50 |
| 51 | 548    | .07007 | 184    | 740    | 848    | 516    | 539    | 337    | 51 |
| 52 | 559    | 019    | 195    | 752    | 859    | 529    | 551    | 351    | 52 |
| 53 | 569    | 031    | 206    | 765    | 870    | 542    | 563    | 365    | 53 |
| 54 | 580    | 043    | 216    | 778    | 881    | 556    | 575    | 379    | 54 |
| 55 | .06590 | .07055 | .07227 | .07790 | .07893 | .08569 | .08586 | .09393 | 55 |
| 56 | 600    | 067    | 238    | 803    | 904    | 582    | 598    | 407    | 56 |
| 57 | 611    | 079    | 249    | 816    | 915    | 596    | 610    | 421    | 57 |
| 58 | 621    | 091    | 260    | 828    | 927    | 609    | 622    | 435    | 58 |
| 59 | 632    | 103    | 271    | 841    | 938    | 623    | 634    | 449    | 59 |
| 60 | .06642 | .07114 | .07282 | .07853 | .07950 | .08636 | .08645 | .09464 | 60 |



| M. | 24°    |        | 25°    |        | 26°    |        | 27°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .08645 | .09464 | .09369 | .10338 | .10121 | .11260 | .10899 | .12233 | 0  |
| 1  | 657    | 478    | 382    | 353    | 133    | 276    | 913    | 249    | 1  |
| 2  | 669    | 492    | 394    | 368    | 146    | 292    | 926    | 266    | 2  |
| 3  | 681    | 506    | 406    | 383    | 159    | 308    | 939    | 283    | 3  |
| 4  | 693    | 520    | 418    | 398    | 172    | 323    | 952    | 299    | 4  |
| 5  | .08705 | .09535 | .09431 | .10413 | .10184 | .11339 | .10965 | .12316 | 5  |
| 6  | 717    | 549    | 443    | 428    | 197    | 355    | 979    | 333    | 6  |
| 7  | 728    | 563    | 455    | 443    | 210    | 371    | 992    | 349    | 7  |
| 8  | 740    | 577    | 468    | 458    | 223    | 387    | .11005 | 366    | 8  |
| 9  | 752    | 592    | 480    | 473    | 236    | 403    | 019    | 383    | 9  |
| 10 | .08764 | .09606 | .09493 | .10488 | .10248 | .11419 | .11032 | .12400 | 10 |
| 11 | 776    | 620    | 505    | 503    | 261    | 435    | 045    | 416    | 11 |
| 12 | 788    | 635    | 517    | 518    | 274    | 451    | 058    | 433    | 12 |
| 13 | 800    | 649    | 530    | 533    | 287    | 467    | 072    | 450    | 13 |
| 14 | 812    | 663    | 542    | 549    | 300    | 483    | 085    | 467    | 14 |
| 15 | .08824 | .09678 | .09554 | .10564 | .10313 | .11499 | .11098 | .12484 | 15 |
| 16 | 836    | 692    | 567    | 579    | 326    | 515    | 112    | 501    | 16 |
| 17 | 848    | 707    | 579    | 594    | 338    | 531    | 125    | 518    | 17 |
| 18 | 860    | 721    | 592    | 609    | 351    | 547    | 138    | 534    | 18 |
| 19 | 872    | 735    | 604    | 625    | 364    | 563    | 152    | 551    | 19 |
| 20 | .08884 | .09750 | .09617 | .10640 | .10377 | .11579 | .11165 | .12568 | 20 |
| 21 | 896    | 764    | 629    | 655    | 390    | 595    | 178    | 585    | 21 |
| 22 | 908    | 779    | 642    | 670    | 403    | 611    | 192    | 602    | 22 |
| 23 | 920    | 793    | 654    | 686    | 416    | 627    | 205    | 619    | 23 |
| 24 | 932    | 808    | 666    | 701    | 429    | 643    | 218    | 636    | 24 |
| 25 | .08944 | .09822 | .09679 | .10716 | .10442 | .11659 | .11232 | .12653 | 25 |
| 26 | 956    | 837    | 691    | 731    | 455    | 675    | 245    | 670    | 26 |
| 27 | 968    | 851    | 704    | 747    | 468    | 691    | 259    | 687    | 27 |
| 28 | 980    | 866    | 716    | 762    | 481    | 708    | 272    | 704    | 28 |
| 29 | 992    | 880    | 729    | 777    | 494    | 724    | 285    | 721    | 29 |
| 30 | .09004 | .09895 | .09741 | .10793 | .10507 | .11740 | .11299 | .12738 | 30 |
| 31 | 016    | 909    | 754    | 808    | 520    | 756    | 312    | 755    | 31 |
| 32 | 028    | 924    | 767    | 824    | 533    | 772    | 326    | 772    | 32 |
| 33 | 040    | 939    | 779    | 839    | 546    | 789    | 339    | 789    | 33 |
| 34 | 052    | 953    | 792    | 854    | 559    | 805    | 353    | 807    | 34 |
| 35 | .09064 | .09968 | .09804 | .10870 | .10572 | .11821 | .11366 | .12824 | 35 |
| 36 | 076    | 982    | 817    | 885    | 585    | 838    | 380    | 841    | 36 |
| 37 | 089    | 997    | 829    | 901    | 598    | 854    | 393    | 858    | 37 |
| 38 | 101    | .10012 | 842    | 916    | 611    | 870    | 407    | 875    | 38 |
| 39 | 113    | 026    | 854    | 932    | 624    | 886    | 420    | 892    | 39 |
| 40 | .09125 | .10041 | .09867 | .10947 | .10637 | .11903 | .11434 | .12910 | 40 |
| 41 | 137    | 056    | 880    | 963    | 650    | 919    | 447    | 927    | 41 |
| 42 | 149    | 071    | 892    | 978    | 663    | 936    | 461    | 944    | 42 |
| 43 | 161    | 085    | 905    | 994    | 676    | 952    | 474    | 961    | 43 |
| 44 | 174    | 100    | 918    | .11009 | 689    | 968    | 488    | 979    | 44 |
| 45 | .09186 | .10115 | .09930 | .11025 | .10702 | .11985 | .11501 | .12996 | 45 |
| 46 | 198    | 130    | 943    | 041    | 715    | .12001 | 515    | .13013 | 46 |
| 47 | 210    | 144    | 955    | 056    | 728    | 018    | 528    | 031    | 47 |
| 48 | 222    | 159    | 968    | 072    | 741    | 034    | 542    | 048    | 48 |
| 49 | 234    | 174    | 981    | 087    | 755    | 051    | 555    | 065    | 49 |
| 50 | .09247 | .10189 | .09993 | .11103 | .10768 | .12067 | .11569 | .13083 | 50 |
| 51 | 259    | 204    | .10006 | 119    | 781    | 083    | 583    | 100    | 51 |
| 52 | 271    | 218    | 019    | 134    | 794    | 100    | 596    | 117    | 52 |
| 53 | 283    | 233    | 032    | 150    | 807    | 117    | 610    | 135    | 53 |
| 54 | 296    | 248    | 044    | 166    | 820    | 133    | 623    | 152    | 54 |
| 55 | .09308 | .10263 | .10057 | .11181 | .10833 | .12150 | .11637 | .13170 | 55 |
| 56 | 320    | 278    | 070    | 197    | 847    | 166    | 651    | 187    | 56 |
| 57 | 332    | 293    | 082    | 213    | 860    | 183    | 664    | 205    | 57 |
| 58 | 345    | 308    | 095    | 229    | 873    | 199    | 678    | 222    | 58 |
| 59 | 357    | 323    | 108    | 244    | 886    | 216    | 692    | 239    | 59 |
| 60 | .09369 | .10338 | .10121 | .11260 | .10899 | .12233 | .11705 | .13257 | 60 |

| M. | 28°    |        | 29°    |        | 30°    |        | 31°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .11705 | .13257 | .12538 | .14335 | .13397 | .15470 | .14283 | .16663 | 0  |
| 1  | 719    | 275    | 552    | 354    | 412    | 489    | 298    | 684    | 1  |
| 2  | 733    | 292    | 566    | 372    | 427    | 509    | 313    | 704    | 2  |
| 3  | 746    | 310    | 580    | 391    | 441    | 528    | 328    | 725    | 3  |
| 4  | 760    | 327    | 594    | 409    | 456    | 548    | 343    | 745    | 4  |
| 5  | .11774 | .13345 | .12609 | .14428 | .13470 | .15567 | .14358 | .16766 | 5  |
| 6  | 787    | 362    | 623    | 446    | 485    | 587    | 373    | 786    | 6  |
| 7  | 801    | 380    | 637    | 465    | 499    | 606    | 388    | 806    | 7  |
| 8  | 815    | 398    | 651    | 483    | 514    | 626    | 403    | 827    | 8  |
| 9  | 828    | 415    | 665    | 502    | 529    | 645    | 418    | 848    | 9  |
| 10 | .11842 | .13433 | .12679 | .14521 | .13543 | .15665 | .14433 | .16868 | 10 |
| 11 | 856    | 451    | 694    | 539    | 558    | 684    | 449    | 889    | 11 |
| 12 | 870    | 468    | 708    | 558    | 573    | 704    | 464    | 909    | 12 |
| 13 | 883    | 486    | 722    | 576    | 587    | 724    | 479    | 930    | 13 |
| 14 | 897    | 504    | 736    | 595    | 602    | 743    | 494    | 950    | 14 |
| 15 | .11911 | .13521 | .12750 | .14614 | .13616 | .15763 | .14599 | .16971 | 15 |
| 16 | 925    | 539    | 765    | 632    | 631    | 782    | 524    | 992    | 16 |
| 17 | 938    | 557    | 779    | 651    | 646    | 802    | 539    | .17012 | 17 |
| 18 | 952    | 575    | 793    | 670    | 660    | 822    | 554    | 033    | 18 |
| 19 | 966    | 593    | 807    | 689    | 675    | 841    | 569    | 054    | 19 |
| 20 | .11980 | .13610 | .12822 | .14707 | .13690 | .15861 | .14584 | .17075 | 20 |
| 21 | 994    | 628    | 836    | 726    | 705    | 881    | 599    | 095    | 21 |
| 22 | .12007 | 646    | 850    | 745    | 719    | 901    | 615    | 116    | 22 |
| 23 | 021    | 664    | 864    | 764    | 734    | 920    | 630    | 137    | 23 |
| 24 | 035    | 682    | 879    | 782    | 749    | 940    | 645    | 158    | 24 |
| 25 | .12049 | .13700 | .12893 | .14801 | .13763 | .15960 | .14660 | .17178 | 25 |
| 26 | 063    | 718    | 907    | 820    | 778    | 980    | 675    | 199    | 26 |
| 27 | 077    | 735    | 921    | 839    | 793    | .16000 | 690    | 220    | 27 |
| 28 | 091    | 753    | 936    | 858    | 808    | 019    | 706    | 241    | 28 |
| 29 | 104    | 771    | 950    | 877    | 822    | 039    | 721    | 262    | 29 |
| 30 | .12118 | .13789 | .12964 | .14896 | .13837 | .16059 | .14736 | .17283 | 30 |
| 31 | 132    | 807    | 979    | 914    | 852    | 079    | 751    | 304    | 31 |
| 32 | 146    | 825    | 993    | 933    | 867    | 099    | 766    | 325    | 32 |
| 33 | 160    | 843    | .13007 | 952    | 881    | 119    | 782    | 346    | 33 |
| 34 | 174    | 861    | 022    | 971    | 896    | 139    | 797    | 367    | 34 |
| 35 | .12188 | .13879 | .13036 | .14990 | .13911 | .16159 | .14812 | .17388 | 35 |
| 36 | 202    | 897    | 051    | .15009 | 926    | 179    | 827    | 409    | 36 |
| 37 | 216    | 915    | 065    | 028    | 941    | 199    | 843    | 430    | 37 |
| 38 | 230    | 934    | 079    | 047    | 955    | 219    | 858    | 451    | 38 |
| 39 | 244    | 952    | 094    | 066    | 970    | 239    | 873    | 472    | 39 |
| 40 | .12257 | .13970 | .13108 | .15085 | .13985 | .16259 | .14888 | .17493 | 40 |
| 41 | 271    | 988    | 122    | 105    | .14000 | 279    | 904    | 514    | 41 |
| 42 | 285    | .14006 | 137    | 124    | 015    | 299    | 919    | 535    | 42 |
| 43 | 299    | 024    | 151    | 143    | 030    | 319    | 934    | 556    | 43 |
| 44 | 313    | 042    | 166    | 162    | 044    | 339    | 949    | 577    | 44 |
| 45 | .12327 | .14061 | .13180 | .15181 | .14059 | .16359 | .14965 | .17598 | 45 |
| 46 | 341    | 079    | 195    | 200    | 074    | 380    | 980    | 620    | 46 |
| 47 | 355    | 097    | 209    | 219    | 089    | 400    | 995    | 641    | 47 |
| 48 | 369    | 115    | 223    | 239    | 104    | 420    | .15011 | 662    | 48 |
| 49 | 383    | 134    | 238    | 258    | 119    | 440    | 026    | 683    | 49 |
| 50 | .12397 | .14152 | .13252 | .15277 | .14134 | .16460 | .15041 | .17704 | 50 |
| 51 | 411    | 170    | 267    | 296    | 149    | 481    | 057    | 726    | 51 |
| 52 | 425    | 188    | 281    | 315    | 164    | 501    | 072    | 747    | 52 |
| 53 | 439    | 207    | 296    | 335    | 179    | 521    | 087    | 768    | 53 |
| 54 | 454    | 225    | 310    | 354    | 194    | 541    | 103    | 790    | 54 |
| 55 | .12468 | .14243 | .13325 | .15373 | .14208 | .16562 | .15118 | .17811 | 55 |
| 56 | 482    | 262    | 339    | 393    | 223    | 582    | 134    | 832    | 56 |
| 57 | 496    | 280    | 354    | 412    | 238    | 602    | 149    | 854    | 57 |
| 58 | 510    | 299    | 368    | 431    | 253    | 623    | 164    | 875    | 58 |
| 59 | 524    | 317    | 383    | 451    | 268    | 643    | 180    | 896    | 59 |
| 60 | .12538 | .14335 | .13397 | .15470 | .14283 | .16663 | .15195 | .17918 | 60 |

| M. | 32°    |        | 33°    |        | 34°    |        | 35°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .15195 | .17918 | .16133 | .19236 | .17096 | .20622 | .18085 | .22077 | 0  |
| 1  | 211    | 939    | 149    | 259    | 113    | 645    | 101    | 102    | 1  |
| 2  | 226    | 961    | 165    | 281    | 129    | 669    | 118    | 127    | 2  |
| 3  | 241    | 982    | 181    | 304    | 145    | 693    | 135    | 152    | 3  |
| 4  | 257    | .18004 | 196    | 327    | 161    | 717    | 152    | 177    | 4  |
| 5  | .15272 | .18025 | .16212 | .19349 | .17178 | .20740 | .18168 | .22202 | 5  |
| 6  | 288    | 047    | 228    | 372    | 194    | 764    | 185    | 227    | 6  |
| 7  | 303    | 068    | 244    | 394    | 210    | 788    | 202    | 252    | 7  |
| 8  | 319    | 090    | 260    | 417    | 227    | 812    | 218    | 277    | 8  |
| 9  | 334    | 111    | 276    | 440    | 243    | 836    | 235    | 302    | 9  |
| 10 | .15350 | .18133 | .16292 | .19463 | .17259 | .20859 | .18252 | .22327 | 10 |
| 11 | 365    | 155    | 308    | 485    | 276    | 883    | 269    | 352    | 11 |
| 12 | 381    | 176    | 324    | 508    | 292    | 907    | 286    | 377    | 12 |
| 13 | 396    | 198    | 340    | 531    | 308    | 931    | 302    | 402    | 13 |
| 14 | 412    | 220    | 355    | 553    | 325    | 955    | 319    | 428    | 14 |
| 15 | .15427 | .18241 | .16371 | .19576 | .17341 | .20979 | .18336 | .22453 | 15 |
| 16 | 443    | 263    | 387    | 599    | 357    | .21003 | 353    | 478    | 16 |
| 17 | 458    | 285    | 403    | 622    | 374    | 027    | 369    | 503    | 17 |
| 18 | 474    | 307    | 419    | 645    | 390    | 051    | 386    | 528    | 18 |
| 19 | 489    | 328    | 435    | 668    | 407    | 075    | 403    | 554    | 19 |
| 20 | .15505 | .18350 | .16451 | .19691 | .17423 | .21099 | .18420 | .22579 | 20 |
| 21 | 520    | 372    | 467    | 713    | 439    | 123    | 437    | 604    | 21 |
| 22 | 536    | 394    | 483    | 736    | 456    | 147    | 454    | 629    | 22 |
| 23 | 552    | 416    | 499    | 759    | 472    | 171    | 470    | 655    | 23 |
| 24 | 567    | 437    | 515    | 782    | 489    | 195    | 487    | 680    | 24 |
| 25 | .15583 | .18459 | .16531 | .19805 | .17505 | .21220 | .18504 | .22706 | 25 |
| 26 | 598    | 481    | 547    | 828    | 522    | 244    | 521    | 731    | 26 |
| 27 | 614    | 503    | 563    | 851    | 538    | 268    | 538    | 756    | 27 |
| 28 | 630    | 525    | 579    | 874    | 554    | 292    | 555    | 782    | 28 |
| 29 | 645    | 547    | 595    | 897    | 571    | 316    | 572    | 807    | 29 |
| 30 | .15661 | .18569 | .16611 | .19920 | .17587 | .21341 | .18588 | .22833 | 30 |
| 31 | 676    | 591    | 627    | 944    | 604    | 365    | 605    | 858    | 31 |
| 32 | 692    | 613    | 644    | 967    | 620    | 389    | 622    | 884    | 32 |
| 33 | 708    | 635    | 660    | 990    | 637    | 414    | 639    | 909    | 33 |
| 34 | 723    | 657    | 676    | .20013 | 653    | 438    | 656    | 935    | 34 |
| 35 | .15739 | .18679 | .16692 | .20036 | .17670 | .21462 | .18673 | .22960 | 35 |
| 36 | 755    | 701    | 708    | .20036 | 686    | 487    | 690    | 986    | 36 |
| 37 | 770    | 723    | 724    | 083    | 703    | 511    | 707    | .23012 | 37 |
| 38 | 786    | 745    | 740    | 106    | 719    | 535    | 724    | 037    | 38 |
| 39 | 802    | 767    | 756    | 129    | 736    | 560    | 741    | 063    | 39 |
| 40 | .15818 | .18790 | .16772 | .20152 | .17752 | .21584 | .18758 | .23089 | 40 |
| 41 | 833    | 812    | 788    | 176    | 769    | 609    | 775    | 114    | 41 |
| 42 | 849    | 834    | 805    | 199    | 786    | 633    | 792    | 140    | 42 |
| 43 | 865    | 856    | 821    | 222    | 802    | 658    | 809    | 166    | 43 |
| 44 | 880    | 878    | 837    | 246    | 819    | 682    | 826    | 192    | 44 |
| 45 | .15896 | .18901 | .16853 | .20269 | .17835 | .21707 | .18843 | .23217 | 45 |
| 46 | 912    | 923    | 869    | 292    | 852    | 731    | 860    | 243    | 46 |
| 47 | 928    | 945    | 885    | 316    | 868    | 756    | 877    | 269    | 47 |
| 48 | 943    | 967    | 902    | 339    | 885    | 781    | 894    | 295    | 48 |
| 49 | 959    | 990    | 918    | 363    | 902    | 805    | 911    | 321    | 49 |
| 50 | .15975 | .19012 | .16934 | .20386 | .17918 | .21830 | .18928 | .23347 | 50 |
| 51 | 991    | 034    | 950    | 410    | 935    | 855    | 945    | 373    | 51 |
| 52 | .16006 | 057    | 966    | 433    | 952    | 879    | 962    | 398    | 52 |
| 53 | 022    | 079    | 983    | 457    | 968    | 904    | 979    | 424    | 53 |
| 54 | 038    | 102    | 999    | 480    | 985    | 929    | 996    | 450    | 54 |
| 55 | .16054 | .19124 | .17015 | .20504 | .18001 | .21953 | .19013 | .23476 | 55 |
| 56 | 070    | 146    | 034    | 527    | 018    | 978    | 030    | 502    | 56 |
| 57 | 085    | 169    | 047    | 551    | 035    | .22003 | 047    | 529    | 57 |
| 58 | 101    | 194    | 064    | 575    | 051    | 028    | 064    | 555    | 58 |
| 59 | 117    | 214    | 080    | 598    | 068    | 058    | 081    | 581    | 59 |
| 60 | .16133 | .19236 | .17096 | .20622 | .18085 | .22077 | .19098 | .23607 | 60 |

| M. | 36°    |        | 37°    |        | 38°    |        | 39°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .19098 | .23607 | .20136 | .25214 | .21199 | .26902 | .22285 | .28676 | 0  |
| 1  | 115    | 633    | 154    | 241    | 217    | 931    | 304    | 706    | 1  |
| 2  | 133    | 659    | 171    | 269    | 235    | 960    | 322    | 737    | 2  |
| 3  | 150    | 685    | 189    | 296    | 253    | 988    | 340    | 767    | 3  |
| 4  | 167    | 711    | 207    | 324    | 271    | .27017 | 359    | 797    | 4  |
| 5  | .19184 | .23738 | .20224 | .25351 | .21289 | .27046 | .22377 | .28828 | 5  |
| 6  | 201    | 764    | 242    | 379    | 306    | 075    | 395    | 858    | 6  |
| 7  | 218    | 790    | 259    | 406    | 324    | 104    | 414    | 889    | 7  |
| 8  | 235    | 816    | 277    | 434    | 342    | 133    | 432    | 919    | 8  |
| 9  | 252    | 843    | 294    | 462    | 360    | 162    | 450    | 950    | 9  |
| 10 | .19270 | .23869 | .20312 | .25489 | .21378 | .27191 | .22469 | .28980 | 10 |
| 11 | 287    | 895    | 329    | 517    | 396    | 221    | 487    | .29011 | 11 |
| 12 | 304    | 922    | 347    | 545    | 414    | 250    | 506    | 042    | 12 |
| 13 | 321    | 948    | 365    | 572    | 432    | 279    | 524    | 072    | 13 |
| 14 | 338    | 975    | 382    | 600    | 450    | 308    | 542    | 103    | 14 |
| 15 | .19356 | .24001 | .20400 | .25628 | .21468 | .27337 | .22561 | .29133 | 15 |
| 16 | 373    | 028    | 417    | 656    | 486    | 366    | 579    | 164    | 16 |
| 17 | 390    | 054    | 435    | 683    | 504    | 396    | 598    | 195    | 17 |
| 18 | 407    | 081    | 453    | 711    | 522    | 425    | 616    | 226    | 18 |
| 19 | 424    | 107    | 470    | 739    | 540    | 454    | 634    | 256    | 19 |
| 20 | .19442 | .24134 | .20488 | .25767 | .21558 | .27483 | .22653 | .29287 | 20 |
| 21 | 459    | 160    | 506    | 795    | 576    | 513    | 671    | 318    | 21 |
| 22 | 476    | 187    | 523    | 823    | 595    | 542    | 690    | 349    | 22 |
| 23 | 493    | 213    | 541    | 851    | 613    | 572    | 708    | 380    | 23 |
| 24 | 511    | 240    | 559    | 879    | 631    | 601    | 727    | 411    | 24 |
| 25 | .19528 | .24267 | .20576 | .25907 | .21649 | .27630 | .22745 | .29443 | 25 |
| 26 | 545    | 293    | 594    | 935    | 667    | 660    | 764    | 473    | 26 |
| 27 | 562    | 320    | 612    | 963    | 685    | 689    | 782    | 504    | 27 |
| 28 | 580    | 347    | 629    | 991    | 703    | 719    | 801    | 535    | 28 |
| 29 | 597    | 373    | 647    | .26019 | 721    | 748    | 819    | 566    | 29 |
| 30 | .19614 | .24400 | .20665 | .26047 | .21739 | .27778 | .22838 | .29597 | 30 |
| 31 | 632    | 427    | 682    | 075    | 757    | 807    | 856    | 628    | 31 |
| 32 | 649    | 454    | 700    | 104    | 775    | 837    | 875    | 659    | 32 |
| 33 | 666    | 481    | 718    | 132    | 794    | 867    | 893    | 690    | 33 |
| 34 | 684    | 508    | 736    | 160    | 812    | 896    | 912    | 721    | 34 |
| 35 | .19701 | .24534 | .20753 | .26188 | .21830 | .27926 | .22930 | .29752 | 35 |
| 36 | 718    | 561    | 771    | 216    | 848    | 956    | 949    | 784    | 36 |
| 37 | 736    | 588    | 789    | 245    | 866    | 985    | 967    | 815    | 37 |
| 38 | 753    | 615    | 807    | 273    | 884    | .28015 | 986    | 846    | 38 |
| 39 | 770    | 642    | 824    | 301    | 902    | 045    | .23004 | 877    | 39 |
| 40 | .19788 | .24669 | .20842 | .26330 | .21921 | .28075 | .23023 | .29909 | 40 |
| 41 | 805    | 696    | 860    | 358    | 939    | 105    | 041    | 940    | 41 |
| 42 | 822    | 723    | 878    | 387    | 957    | 134    | 060    | 971    | 42 |
| 43 | 840    | 750    | 895    | 415    | 975    | 164    | 079    | .30003 | 43 |
| 44 | 857    | 777    | 913    | 443    | 993    | 194    | 097    | 034    | 44 |
| 45 | .19875 | .24804 | .20931 | .26472 | .22012 | .28224 | .23116 | .30066 | 45 |
| 46 | 892    | 832    | 949    | 500    | 030    | 254    | 134    | 097    | 46 |
| 47 | 909    | 859    | 967    | 529    | 048    | 284    | 153    | 129    | 47 |
| 48 | 927    | 886    | 984    | 557    | 066    | 314    | 172    | 160    | 48 |
| 49 | 944    | 913    | .21002 | 586    | 084    | 344    | 190    | 192    | 49 |
| 50 | .19962 | .24940 | .21020 | .26615 | .22103 | .28374 | .23209 | .30223 | 50 |
| 51 | 979    | 967    | 038    | 643    | 121    | 404    | 228    | 255    | 51 |
| 52 | 997    | 995    | 056    | 672    | 139    | 434    | 246    | 287    | 52 |
| 53 | .20014 | .25022 | 074    | 701    | 157    | 464    | 265    | 318    | 53 |
| 54 | 032    | 049    | 092    | 729    | 176    | 495    | 283    | 350    | 54 |
| 55 | .20049 | .25077 | .21109 | .26758 | .22194 | .28525 | .23302 | .30382 | 55 |
| 56 | 066    | 104    | 127    | 787    | 212    | 555    | 321    | 413    | 56 |
| 57 | 084    | 131    | 145    | 815    | 231    | 585    | 339    | 445    | 57 |
| 58 | 101    | 159    | 163    | 844    | 249    | 615    | 358    | 477    | 58 |
| 59 | 119    | 186    | 181    | 873    | .267   | 646    | 377    | 509    | 59 |
| 60 | .20136 | .25214 | .21199 | .26902 | .22285 | .28676 | .23396 | .30541 | 60 |

| M. | 40°    |        | 41°    |        | 42°    |        | 43°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .23396 | .30541 | .24529 | .32501 | .25686 | .34563 | .26865 | .36733 | 0  |
| 1  | 414    | 573    | 548    | 535    | 705    | 599    | 884    | 770    | 1  |
| 2  | 433    | 605    | 567    | 568    | 724    | 634    | 904    | 807    | 2  |
| 3  | 452    | 636    | 586    | 602    | 744    | 669    | 924    | 844    | 3  |
| 4  | 470    | 668    | 605    | 636    | 763    | 704    | 944    | 881    | 4  |
| 5  | .23489 | .30700 | .24625 | .32669 | .25783 | .34740 | .26964 | .36919 | 5  |
| 6  | 508    | 732    | 644    | 703    | 802    | 775    | 984    | 956    | 6  |
| 7  | 527    | 764    | 663    | 737    | 822    | 811    | .27004 | 993    | 7  |
| 8  | 545    | 796    | 682    | 770    | 841    | 846    | 024    | .37030 | 8  |
| 9  | 564    | 829    | 701    | 804    | 861    | 882    | 043    | 068    | 9  |
| 10 | .23583 | .30861 | .24720 | .32838 | .25880 | .34917 | .27063 | .37105 | 10 |
| 11 | 602    | 893    | 739    | 872    | 900    | 953    | 083    | 143    | 11 |
| 12 | 620    | 925    | 759    | 905    | 920    | 988    | 103    | 180    | 12 |
| 13 | 639    | 957    | 778    | 939    | 939    | .35024 | 123    | 218    | 13 |
| 14 | 658    | 989    | 797    | 973    | 959    | 060    | 143    | 255    | 14 |
| 15 | .23677 | .31022 | .24816 | .33007 | .25978 | .35095 | .27163 | .37293 | 15 |
| 16 | 696    | 054    | 835    | 041    | 998    | 131    | 183    | 330    | 16 |
| 17 | 714    | 086    | 854    | 075    | .26017 | 167    | 203    | 368    | 17 |
| 18 | 733    | 119    | 874    | 109    | 037    | 203    | 223    | 406    | 18 |
| 19 | 752    | 151    | 893    | 143    | 056    | 238    | 243    | 443    | 19 |
| 20 | .23771 | .31183 | .24912 | .33177 | .26076 | .35274 | .27263 | .37481 | 20 |
| 21 | 790    | 216    | 931    | 211    | 096    | 310    | 283    | 519    | 21 |
| 22 | 808    | 248    | 950    | 245    | 115    | 346    | 303    | 556    | 22 |
| 23 | 827    | 281    | 970    | 279    | 135    | 382    | 323    | 594    | 23 |
| 24 | 846    | 313    | 989    | 314    | 154    | 418    | 343    | 632    | 24 |
| 25 | .23865 | .31340 | .25008 | .33348 | .26174 | .35454 | .27363 | .37670 | 25 |
| 26 | 884    | 378    | 027    | 382    | 194    | 490    | 383    | 708    | 26 |
| 27 | 903    | 411    | 047    | 416    | 213    | 526    | 403    | 746    | 27 |
| 28 | 922    | 443    | 066    | 451    | 233    | 562    | 423    | 784    | 28 |
| 29 | 941    | 476    | 085    | 485    | 253    | 598    | 443    | 822    | 29 |
| 30 | .23959 | .31509 | .25104 | .33519 | .26272 | .35634 | .27463 | .37860 | 30 |
| 31 | 976    | 541    | 124    | 554    | 292    | 670    | 483    | 898    | 31 |
| 32 | 997    | 574    | 143    | 588    | 312    | 707    | 503    | 936    | 32 |
| 33 | .24016 | 607    | 162    | 622    | 331    | 743    | 523    | 974    | 33 |
| 34 | 035    | 640    | 182    | 657    | 351    | 779    | 543    | .38012 | 34 |
| 35 | .24054 | .31672 | .25201 | .33691 | .26371 | .35815 | .27563 | .38051 | 35 |
| 36 | 073    | 705    | 220    | 726    | 390    | 852    | 583    | 089    | 36 |
| 37 | 092    | 738    | 240    | 760    | 410    | 888    | 603    | 127    | 37 |
| 38 | 111    | 771    | 259    | 795    | 430    | 924    | 623    | 165    | 38 |
| 39 | 130    | 804    | 278    | 830    | 449    | 961    | 643    | 204    | 39 |
| 40 | .24149 | .31837 | .25297 | .33864 | .26469 | .35997 | .27663 | .38242 | 40 |
| 41 | 168    | 870    | 317    | 899    | 489    | .36034 | 683    | 280    | 41 |
| 42 | 187    | 903    | 336    | 934    | 509    | 070    | 703    | 319    | 42 |
| 43 | 206    | 936    | 356    | 968    | 528    | 107    | 723    | 357    | 43 |
| 44 | 225    | 969    | 375    | .34003 | 548    | 143    | 743    | 396    | 44 |
| 45 | .24244 | .32002 | .25394 | .34093 | .26568 | .36180 | .27764 | .38434 | 45 |
| 46 | 262    | 035    | 414    | 073    | 587    | 217    | 784    | 473    | 46 |
| 47 | 281    | 068    | 433    | 108    | 607    | 253    | 804    | 512    | 47 |
| 48 | 300    | 101    | 452    | 142    | 627    | 290    | 824    | 550    | 48 |
| 49 | 320    | 134    | 472    | 177    | 647    | 327    | 844    | 589    | 49 |
| 50 | .24339 | .32168 | .25491 | .34212 | .26667 | .36363 | .27864 | .38628 | 50 |
| 51 | 358    | 201    | 511    | 247    | 686    | 400    | 884    | 666    | 51 |
| 52 | 377    | 234    | 530    | 282    | 706    | 437    | 905    | 705    | 52 |
| 53 | 396    | 267    | 549    | 317    | 726    | 474    | 925    | 744    | 53 |
| 54 | 415    | 301    | 569    | 352    | 746    | 511    | 945    | 783    | 54 |
| 55 | .24434 | .32334 | .25588 | .34387 | .26766 | .36548 | .27965 | .38822 | 55 |
| 56 | 453    | 368    | 608    | 423    | 785    | 585    | 985    | 860    | 56 |
| 57 | 472    | 401    | 627    | 458    | 805    | 622    | .28005 | 899    | 57 |
| 58 | 491    | 434    | 647    | 493    | 825    | 659    | 026    | 938    | 58 |
| 59 | 510    | 468    | 666    | 528    | 845    | 696    | 046    | 977    | 59 |
| 60 | .24529 | .32501 | .25686 | .34563 | .26865 | .36733 | .28066 | .39016 | 60 |

| M. | 44°    |        | 45°    |        | 46°    |        | 47°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .28066 | .39016 | .29289 | .41421 | .30534 | .43956 | .31800 | .46628 | 0  |
| 1  | 086    | 055    | 310    | 463    | 555    | 999    | 821    | 674    | 1  |
| 2  | 106    | 095    | 330    | 504    | 576    | .44042 | 843    | 719    | 2  |
| 3  | 127    | 134    | 351    | 545    | 597    | 086    | 864    | 765    | 3  |
| 4  | 147    | 173    | 372    | 586    | 618    | 129    | 885    | 811    | 4  |
| 5  | .28167 | .39212 | .29392 | .41627 | .30639 | .44173 | .31907 | .46857 | 5  |
| 6  | 187    | 251    | 413    | 669    | 660    | 217    | 928    | 903    | 6  |
| 7  | 208    | 291    | 433    | 710    | 681    | 260    | 949    | 949    | 7  |
| 8  | 228    | 330    | 454    | 752    | 702    | 304    | 971    | 995    | 8  |
| 9  | 248    | 369    | 475    | 793    | 723    | 347    | 992    | .47041 | 9  |
| 10 | .28268 | .39409 | .29495 | .41835 | .30744 | .44391 | .32013 | .47087 | 10 |
| 11 | 289    | 448    | 516    | 876    | 765    | 435    | 035    | 134    | 11 |
| 12 | 309    | 487    | 537    | 918    | 786    | 479    | 056    | 180    | 12 |
| 13 | 329    | 527    | 557    | 959    | 807    | 523    | 077    | 226    | 13 |
| 14 | 350    | 566    | 578    | .42001 | 828    | 567    | 099    | 272    | 14 |
| 15 | .28370 | .39606 | .29599 | .42042 | .30849 | .44610 | .32120 | .47319 | 15 |
| 16 | 390    | 646    | 619    | 084    | 870    | 654    | 141    | 365    | 16 |
| 17 | 410    | 685    | 640    | 126    | 891    | 698    | 163    | 411    | 17 |
| 18 | 431    | 725    | 661    | 168    | 912    | 742    | 184    | 458    | 18 |
| 19 | 451    | 764    | 681    | 209    | 933    | 787    | 205    | 504    | 19 |
| 20 | .28471 | .39804 | .29702 | .42251 | .30954 | .44831 | .32227 | .47551 | 20 |
| 21 | 492    | 844    | 723    | 293    | 975    | 875    | 248    | 598    | 21 |
| 22 | 512    | 884    | 743    | 335    | 996    | 919    | 270    | 644    | 22 |
| 23 | 532    | 924    | 764    | 377    | .31017 | 963    | 291    | 691    | 23 |
| 24 | 553    | 963    | 785    | 419    | 038    | .45007 | 312    | 738    | 24 |
| 25 | .28573 | .40003 | .29805 | .42461 | .31059 | .45052 | .32334 | .47784 | 25 |
| 26 | 593    | 043    | 826    | 503    | 080    | 096    | 355    | 831    | 26 |
| 27 | 614    | 083    | 847    | 545    | 101    | 141    | 377    | 878    | 27 |
| 28 | 634    | 123    | 868    | 587    | 122    | 185    | 398    | 925    | 28 |
| 29 | 655    | 163    | 888    | 630    | 143    | 229    | 420    | 972    | 29 |
| 30 | .28675 | .40203 | .29909 | .42672 | .31165 | .45274 | .32441 | .48019 | 30 |
| 31 | 695    | 243    | 930    | 714    | 186    | 319    | 462    | 066    | 31 |
| 32 | 716    | 283    | 951    | 756    | 207    | 363    | 484    | 113    | 32 |
| 33 | 736    | 324    | 971    | 799    | 228    | 408    | 505    | 160    | 33 |
| 34 | 757    | 364    | 992    | 841    | 249    | 452    | 527    | 207    | 34 |
| 35 | .28777 | .40404 | .30013 | .42883 | .31270 | .45497 | .32548 | .48254 | 35 |
| 36 | 797    | 444    | 034    | 926    | 291    | 542    | 570    | 301    | 36 |
| 37 | 818    | 485    | 054    | 968    | 312    | 587    | 591    | 349    | 37 |
| 38 | 838    | 525    | 075    | .43011 | 334    | 631    | 613    | 396    | 38 |
| 39 | 859    | 565    | 096    | 053    | 355    | 676    | 634    | 443    | 39 |
| 40 | .28879 | .40606 | .30117 | .43096 | .31376 | .45721 | .32656 | .48491 | 40 |
| 41 | 900    | 646    | 138    | 139    | 397    | 766    | 677    | 538    | 41 |
| 42 | 920    | 687    | 158    | 181    | 418    | 811    | 699    | 586    | 42 |
| 43 | 941    | 727    | 179    | 224    | 439    | 856    | 720    | 633    | 43 |
| 44 | 961    | 768    | 200    | 267    | 461    | 901    | 742    | 681    | 44 |
| 45 | .28981 | .40808 | .30221 | .43309 | .31482 | .45946 | .32763 | .48728 | 45 |
| 46 | .29002 | 849    | 242    | 352    | 503    | 992    | 785    | 776    | 46 |
| 47 | 022    | 890    | 263    | 395    | 524    | .46037 | 806    | 824    | 47 |
| 48 | 043    | 930    | 283    | 438    | 545    | 082    | 828    | 871    | 48 |
| 49 | 063    | 971    | 304    | 481    | 566    | 127    | 849    | 919    | 49 |
| 50 | .29084 | .41012 | .30325 | .43524 | .31588 | .46173 | .32871 | .48967 | 50 |
| 51 | 104    | 053    | 346    | 567    | 609    | 218    | 893    | .49015 | 51 |
| 52 | 125    | 093    | 367    | 610    | 630    | 263    | 914    | 063    | 52 |
| 53 | 145    | 134    | 388    | 653    | 651    | 309    | 936    | 111    | 53 |
| 54 | 166    | 175    | 409    | 696    | 673    | 354    | 957    | 159    | 54 |
| 55 | .29187 | .41216 | .30430 | .43739 | .31694 | .46400 | .32979 | .49207 | 55 |
| 56 | 207    | 257    | 451    | 783    | 715    | 445    | .33001 | 255    | 56 |
| 57 | 228    | 298    | 471    | 826    | 736    | 491    | 022    | 303    | 57 |
| 58 | 248    | 339    | 492    | 869    | 758    | 537    | 044    | 351    | 58 |
| 59 | 269    | 380    | 513    | 912    | 779    | 582    | 065    | 399    | 59 |
| 60 | .29289 | .41421 | .30534 | .43956 | .31800 | .46628 | .33087 | .49448 | 60 |

| M. | 48°    |        | 49°    |        | 50°    |        | 51°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .33087 | .49448 | .34394 | .52425 | .35721 | .55572 | .37068 | .58902 | 0  |
| 1  | 109    | 496    | 416    | 476    | 744    | 626    | 991    | 959    | 1  |
| 2  | 130    | 544    | 438    | 527    | 766    | 680    | 113    | .59016 | 2  |
| 3  | 152    | 593    | 460    | 579    | 788    | 734    | 136    | 073    | 3  |
| 4  | 173    | 641    | 482    | 630    | 810    | 789    | 158    | 130    | 4  |
| 5  | .33195 | .49690 | .34504 | .52681 | .35833 | .55843 | .37181 | .59188 | 5  |
| 6  | 217    | 738    | 526    | 732    | 855    | 897    | 204    | 245    | 6  |
| 7  | 238    | 787    | 548    | 784    | 877    | 951    | 226    | 302    | 7  |
| 8  | 260    | 835    | 570    | 835    | 900    | .56005 | 249    | 360    | 8  |
| 9  | 282    | 884    | 592    | 886    | 922    | 060    | 272    | 418    | 9  |
| 10 | .33303 | .49933 | .34614 | .52938 | .35944 | .56114 | .37294 | .59475 | 10 |
| 11 | 325    | 981    | 636    | 989    | 967    | 169    | 317    | 533    | 11 |
| 12 | 347    | .50030 | 658    | .53041 | 989    | 223    | 340    | 590    | 12 |
| 13 | 368    | 079    | 680    | 092    | .36011 | 278    | 362    | 648    | 13 |
| 14 | 390    | 128    | 702    | 144    | 034    | 332    | 385    | 706    | 14 |
| 15 | .33412 | .50177 | .34724 | .53196 | .36056 | .56387 | .37408 | .59764 | 15 |
| 16 | 434    | 226    | 746    | 247    | 078    | 442    | 430    | 822    | 16 |
| 17 | 455    | 275    | 768    | 299    | 101    | 497    | 453    | 880    | 17 |
| 18 | 477    | 324    | 790    | 351    | 123    | 551    | 476    | 938    | 18 |
| 19 | 499    | 373    | 812    | 403    | 146    | 606    | 498    | 996    | 19 |
| 20 | .33520 | .50422 | .34834 | .53455 | .36168 | .56661 | .37521 | .60054 | 20 |
| 21 | 542    | 471    | 856    | 507    | 190    | 716    | 544    | 112    | 21 |
| 22 | 564    | 521    | 878    | 559    | 213    | 771    | 567    | 171    | 22 |
| 23 | 586    | 570    | 900    | 611    | 235    | 826    | 589    | 229    | 23 |
| 24 | 607    | 619    | 923    | 663    | 258    | 881    | 612    | 287    | 24 |
| 25 | .33629 | .50669 | .34945 | .53715 | .36280 | .56937 | .37635 | .60346 | 25 |
| 26 | 651    | 718    | 967    | 768    | 302    | 992    | 658    | 404    | 26 |
| 27 | 673    | 767    | 989    | 820    | 325    | .57047 | 680    | 463    | 27 |
| 28 | 694    | 817    | .35011 | 872    | 347    | 103    | 703    | 521    | 28 |
| 29 | 716    | 866    | 033    | 924    | 370    | 158    | 726    | 580    | 29 |
| 30 | .33738 | .50916 | .35055 | .53977 | .36392 | 57213  | .37749 | .60639 | 30 |
| 31 | 760    | 966    | 077    | .54029 | 415    | 269    | 771    | 698    | 31 |
| 32 | 782    | .51015 | 099    | 082    | 437    | 324    | 794    | 756    | 32 |
| 33 | 803    | 065    | 122    | 134    | 460    | 380    | 817    | 815    | 33 |
| 34 | 825    | 115    | 144    | 187    | 482    | 436    | 840    | 874    | 34 |
| 35 | .33847 | .51165 | .35166 | .54240 | .36504 | .57491 | .37862 | .60933 | 35 |
| 36 | 869    | 215    | 188    | 292    | 527    | 547    | 885    | 992    | 36 |
| 37 | 891    | 265    | 210    | 345    | 549    | 603    | 908    | .61051 | 37 |
| 38 | 912    | 314    | 232    | 398    | 572    | 659    | 931    | 111    | 38 |
| 39 | 934    | 364    | 254    | 451    | 594    | 715    | 954    | 170    | 39 |
| 40 | .33956 | .51415 | .35277 | .54504 | .36617 | .57771 | .37976 | .61229 | 40 |
| 41 | 978    | 465    | 299    | 557    | 639    | 827    | 999    | 288    | 41 |
| 42 | .34000 | 515    | 321    | 610    | 662    | 883    | .38022 | 348    | 42 |
| 43 | 022    | 565    | 343    | 663    | 684    | 939    | 045    | 407    | 43 |
| 44 | 044    | 615    | 365    | 716    | 707    | 995    | 068    | 467    | 44 |
| 45 | .34065 | .51665 | .35388 | .54769 | .36729 | .58051 | .38091 | .61526 | 45 |
| 46 | 087    | 716    | 410    | 822    | 752    | 108    | 113    | 586    | 46 |
| 47 | 109    | 766    | 432    | 876    | 775    | 164    | 136    | 646    | 47 |
| 48 | 131    | 817    | 454    | 929    | 797    | 221    | 159    | 705    | 48 |
| 49 | 153    | 867    | 476    | 982    | 820    | 277    | 182    | 765    | 49 |
| 50 | .34175 | .51918 | .35499 | .55036 | .36842 | .58333 | .38205 | .61825 | 50 |
| 51 | 197    | 968    | 521    | 089    | 865    | 390    | 228    | 885    | 51 |
| 52 | 219    | .52019 | 543    | 143    | 887    | 447    | 251    | 945    | 52 |
| 53 | 241    | 069    | 565    | 196    | 910    | 503    | 274    | .62005 | 53 |
| 54 | 262    | 120    | 588    | 250    | 932    | 560    | 296    | 065    | 54 |
| 55 | .34284 | .52171 | .35610 | .55303 | .36955 | .58617 | .38319 | .62125 | 55 |
| 56 | 306    | 222    | 632    | 357    | 978    | 674    | 342    | 185    | 56 |
| 57 | 328    | 273    | 654    | 411    | .37000 | 731    | 365    | 246    | 57 |
| 58 | 350    | 323    | 677    | 465    | 023    | 788    | 388    | 306    | 58 |
| 59 | 372    | 374    | 699    | 518    | 045    | 845    | 411    | 366    | 59 |
| 60 | .34394 | .52425 | .35721 | .55572 | .37068 | .58902 | .38434 | .62427 | 60 |

| M. | 52°    |        | 53°    |        | 54°    |        | 55°    |        | M. |
|----|--------|--------|--------|--------|--------|--------|--------|--------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. |    |
| 0  | .38434 | .62427 | .39818 | .66164 | .41221 | .70130 | .42642 | .74345 | 0  |
| 1  | 457    | 487    | 842    | 228    | 245    | 198    | 666    | 417    | 1  |
| 2  | 480    | 548    | 865    | 292    | 269    | 267    | 690    | 490    | 2  |
| 3  | 503    | 609    | 888    | 357    | 292    | 335    | 714    | 562    | 3  |
| 4  | 526    | 669    | 911    | 421    | 316    | 403    | 738    | 635    | 4  |
| 5  | .38549 | .62730 | .39935 | .66486 | .41339 | .70472 | .42762 | .74708 | 5  |
| 6  | 571    | 791    | 958    | 550    | 363    | 540    | 785    | 781    | 6  |
| 7  | 594    | 852    | 981    | 615    | 386    | 609    | 809    | 854    | 7  |
| 8  | 617    | 913    | .40005 | 679    | 410    | 677    | 833    | 927    | 8  |
| 9  | 640    | 974    | 028    | 744    | 433    | 746    | 857    | .75000 | 9  |
| 10 | .38663 | .63035 | .40051 | .66809 | .41457 | .70815 | .42881 | .75073 | 10 |
| 11 | 686    | 096    | 074    | 873    | 481    | 884    | 905    | 146    | 11 |
| 12 | 709    | 157    | 098    | 938    | 504    | 953    | 929    | 219    | 12 |
| 13 | 732    | 218    | 121    | .67003 | 528    | .71022 | 953    | 293    | 13 |
| 14 | 755    | 279    | 144    | 068    | 551    | 091    | 976    | 366    | 14 |
| 15 | .38778 | .63341 | .40168 | .67133 | .41575 | .71160 | .43000 | .75440 | 15 |
| 16 | 801    | 402    | 191    | 198    | 599    | 229    | 024    | 513    | 16 |
| 17 | 824    | 464    | 214    | 264    | 622    | 298    | 048    | 587    | 17 |
| 18 | 847    | 525    | 237    | 329    | 646    | 368    | 072    | 661    | 18 |
| 19 | 870    | 587    | 261    | 394    | 670    | 437    | 096    | 734    | 19 |
| 20 | .38893 | .63648 | .40284 | .67460 | .41693 | .71506 | .43120 | .75808 | 20 |
| 21 | 916    | 710    | 307    | 525    | 717    | 576    | 144    | 882    | 21 |
| 22 | 939    | 772    | 331    | 591    | 740    | 646    | 168    | 956    | 22 |
| 23 | 962    | 834    | 354    | 656    | 764    | 715    | 192    | .76031 | 23 |
| 24 | 985    | 895    | 378    | 722    | 788    | 785    | 216    | 105    | 24 |
| 25 | .39009 | .63957 | .40401 | .67788 | .41811 | .71855 | .43240 | .76179 | 25 |
| 26 | 032    | .64019 | 424    | 853    | 835    | 925    | 264    | 253    | 26 |
| 27 | 055    | 081    | 448    | 919    | 859    | 995    | 287    | 328    | 27 |
| 28 | 078    | 144    | 471    | 985    | 882    | .72065 | 311    | .402   | 28 |
| 29 | 101    | 206    | 494    | .68051 | 906    | 135    | 335    | 477    | 29 |
| 30 | .39124 | .64268 | .40518 | .68117 | .41930 | .72205 | .43359 | .76552 | 30 |
| 31 | 147    | 330    | 541    | 183    | 953    | 275    | 383    | 626    | 31 |
| 32 | 170    | 393    | 564    | 250    | 977    | 340    | 407    | 701    | 32 |
| 33 | 193    | 455    | 588    | 316    | .42001 | 416    | 431    | 776    | 33 |
| 34 | 216    | 518    | 611    | 382    | 024    | 487    | 455    | 851    | 34 |
| 35 | .39239 | .64580 | .40635 | .68449 | .42048 | .72557 | .43479 | .76926 | 35 |
| 36 | 262    | 643    | 658    | 515    | 072    | 628    | 503    | .77001 | 36 |
| 37 | 286    | 705    | 682    | 582    | 096    | 668    | 527    | 077    | 37 |
| 38 | 309    | 768    | 705    | 648    | 119    | 769    | 551    | 152    | 38 |
| 39 | 332    | 831    | 728    | 715    | 143    | 840    | 575    | 227    | 39 |
| 40 | .39355 | .64894 | .40752 | .68782 | .42167 | .72911 | .43599 | .77303 | 40 |
| 41 | 378    | 957    | 775    | 848    | 190    | 982    | 623    | 378    | 41 |
| 42 | 401    | .65020 | 799    | 915    | 214    | .73053 | 647    | 454    | 42 |
| 43 | 424    | 083    | 822    | 982    | 238    | 124    | 671    | 530    | 43 |
| 44 | 447    | 146    | 846    | .69049 | 262    | 195    | 695    | 606    | 44 |
| 45 | .39471 | .65209 | .40869 | .69116 | .42265 | .73267 | .43720 | .77681 | 45 |
| 46 | 494    | 272    | 892    | 183    | 309    | 338    | 744    | 757    | 46 |
| 47 | 517    | 335    | 916    | 250    | 333    | 409    | 768    | 833    | 47 |
| 48 | 540    | 399    | 939    | 318    | 357    | 481    | 792    | 910    | 48 |
| 49 | 563    | 462    | 963    | 385    | 381    | 552    | 816    | 986    | 49 |
| 50 | .39586 | .65526 | .40986 | .69452 | .42404 | .73624 | .43840 | .78062 | 50 |
| 51 | 610    | 589    | .41010 | 520    | 428    | 666    | 864    | 138    | 51 |
| 52 | 633    | 653    | 033    | 587    | 452    | 768    | 888    | 215    | 52 |
| 53 | 656    | 717    | 057    | 655    | 476    | 840    | 912    | 291    | 53 |
| 54 | 679    | 780    | 080    | 723    | 499    | 911    | 936    | 368    | 54 |
| 55 | .39702 | .65844 | .41104 | .69790 | .42523 | .73983 | .43960 | .78445 | 55 |
| 56 | 726    | 908    | 127    | 858    | 547    | .74056 | 984    | 521    | 56 |
| 57 | 749    | 972    | 151    | 926    | 571    | 128    | .44008 | 598    | 57 |
| 58 | 772    | .66036 | 174    | 994    | 595    | 200    | 032    | 675    | 58 |
| 59 | 795    | 100    | 198    | .70062 | 619    | 272    | 057    | 752    | 59 |
| 60 | .39818 | .66164 | .41221 | .70130 | .42642 | .74345 | .44081 | .78829 | 60 |



| M. | 56°    |        | 57°    |        | 58°    |        | 59°    |         | M. |
|----|--------|--------|--------|--------|--------|--------|--------|---------|----|
|    | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec. | Vers.  | Exsec.  |    |
| 0  | .44081 | .78829 | .45536 | .83608 | .47008 | .88708 | .48496 | .94160  | 0  |
| 1  | 105    | 906    | 560    | 690    | 033    | 796    | 521    | 254     | 1  |
| 2  | 129    | 984    | 585    | 773    | 057    | 884    | 546    | 349     | 2  |
| 3  | 153    | .79061 | 609    | 855    | 082    | 972    | 571    | 443     | 3  |
| 4  | 177    | 138    | 634    | 938    | 107    | .89060 | 596    | 537     | 4  |
| 5  | .44201 | .79216 | .45658 | .84020 | .47131 | .89148 | .48621 | .94632  | 5  |
| 6  | 225    | 293    | 683    | 103    | 156    | 237    | 646    | 726     | 6  |
| 7  | 250    | 371    | 707    | 186    | 181    | 325    | 671    | 821     | 7  |
| 8  | 274    | 449    | 731    | 269    | 206    | 414    | 696    | 916     | 8  |
| 9  | 298    | 527    | 756    | 352    | 230    | 503    | 721    | .95011  | 9  |
| 10 | .44322 | .79604 | .45780 | .84435 | .47255 | .89591 | .48746 | .95106  | 10 |
| 11 | 346    | 682    | 805    | 518    | 280    | 680    | 771    | 201     | 11 |
| 12 | 370    | 761    | 829    | 601    | 304    | 769    | 796    | 296     | 12 |
| 13 | 395    | 839    | 854    | 685    | 329    | 858    | 821    | 392     | 13 |
| 14 | 419    | 917    | 878    | 768    | 354    | 948    | 846    | 487     | 14 |
| 15 | 44443  | .79995 | .45993 | .84852 | .47379 | .90037 | .48871 | .95583  | 15 |
| 16 | 467    | .80074 | 927    | 935    | 403    | 126    | 896    | 678     | 16 |
| 17 | 491    | 152    | 951    | .85019 | 428    | 216    | 921    | 774     | 17 |
| 18 | 516    | 231    | 976    | 103    | 453    | 305    | 946    | 870     | 18 |
| 19 | 540    | 309    | .46000 | 187    | 478    | 395    | 971    | 966     | 19 |
| 20 | .44564 | .80388 | .46205 | .85271 | .47502 | .90485 | .48996 | .96062  | 20 |
| 21 | 588    | 467    | 049    | 355    | 527    | 575    | .49021 | 158     | 21 |
| 22 | 612    | 546    | 074    | 439    | 552    | 665    | 046    | 255     | 22 |
| 23 | 637    | 625    | 098    | 523    | 577    | 755    | 071    | 351     | 23 |
| 24 | 661    | 704    | 123    | 608    | 601    | 845    | 096    | 448     | 24 |
| 25 | .44685 | .80783 | .46147 | .85692 | .47626 | .90935 | .49121 | .96544  | 25 |
| 26 | 709    | 862    | 172    | 777    | 651    | .91026 | 146    | 641     | 26 |
| 27 | 734    | 942    | 196    | 861    | 676    | 116    | 171    | 738     | 27 |
| 28 | 758    | .81021 | 221    | 946    | 701    | 207    | 196    | 835     | 28 |
| 29 | 782    | 101    | 246    | .86031 | 725    | 297    | 221    | 932     | 29 |
| 30 | .44806 | .81180 | .46270 | .86116 | .47750 | .91388 | .49246 | .97029  | 30 |
| 31 | 831    | 260    | 295    | 201    | 775    | 479    | 271    | 127     | 31 |
| 32 | 855    | 340    | 319    | 286    | 800    | 570    | 296    | 224     | 32 |
| 33 | 879    | 419    | 344    | 371    | 825    | 661    | 321    | 322     | 33 |
| 34 | 903    | 499    | 368    | 457    | 849    | 752    | 346    | 420     | 34 |
| 35 | .44928 | .81579 | .46393 | .86542 | .47874 | .91844 | .49372 | .97517  | 35 |
| 36 | 952    | 659    | 417    | 627    | 899    | 935    | 397    | 615     | 36 |
| 37 | 976    | 740    | 442    | 713    | 924    | .92027 | 422    | 713     | 37 |
| 38 | .45001 | 820    | 466    | 799    | 949    | 118    | 447    | 811     | 38 |
| 39 | 025    | 900    | 491    | 885    | 974    | 210    | 472    | 910     | 39 |
| 40 | .45049 | .81981 | .46516 | .86970 | .47998 | .92302 | .49497 | .98008  | 40 |
| 41 | 073    | .82061 | 540    | .87056 | .48023 | 394    | 522    | 107     | 41 |
| 42 | 098    | 142    | 565    | 142    | 048    | 486    | 547    | 205     | 42 |
| 43 | 122    | 222    | 589    | 229    | 073    | 578    | 572    | 304     | 43 |
| 44 | 146    | 303    | 614    | 315    | 098    | 670    | 597    | 403     | 44 |
| 45 | .45171 | .82384 | .46639 | .87401 | .48123 | .92762 | .49623 | .98502  | 45 |
| 46 | 195    | 465    | 663    | 488    | 148    | 855    | 648    | 601     | 46 |
| 47 | 219    | 546    | 688    | 574    | 172    | 947    | 673    | 700     | 47 |
| 48 | 244    | 627    | 712    | 661    | 197    | .93040 | 698    | 799     | 48 |
| 49 | 268    | 709    | 737    | 748    | 222    | 133    | 723    | 899     | 49 |
| 50 | .45292 | .82790 | .46762 | .87834 | .48247 | .93226 | .49748 | .98998  | 50 |
| 51 | 317    | 871    | 786    | 921    | 272    | 319    | 773    | .99098  | 51 |
| 52 | 341    | 953    | 811    | .88008 | 297    | 412    | 799    | 198     | 52 |
| 53 | 365    | .83034 | 835    | 095    | 322    | 505    | 824    | 298     | 53 |
| 54 | 390    | 116    | 860    | 183    | 347    | 598    | 849    | 398     | 54 |
| 55 | .45414 | .83198 | .46885 | .88270 | .48372 | .93692 | .49874 | .99498  | 55 |
| 56 | 439    | 280    | 909    | 357    | 396    | 785    | 899    | 598     | 56 |
| 57 | 463    | 362    | 954    | 445    | 421    | 879    | 924    | 698     | 57 |
| 58 | 487    | 444    | 959    | 532    | 446    | 973    | 950    | 799     | 58 |
| 59 | 512    | 526    | 983    | 620    | 471    | .94066 | 975    | 899     | 59 |
| 60 | .45536 | .83608 | .47008 | .88708 | .48496 | .94160 | .50000 | 1.00000 | 60 |

| M. | 60°    |          | 61°    |          | 62°    |          | 63°    |          | M. |
|----|--------|----------|--------|----------|--------|----------|--------|----------|----|
|    | Vers.  | Exsec.   | Vers.  | Exsec.   | Vers.  | Exsec.   | Vers.  | Exsec.   |    |
| 0  | .50000 | I. 00000 | .51519 | I. 06267 | .53053 | I. 13005 | .54601 | I. 20269 | 0  |
| 1  | .025   | .00101   | .544   | .06375   | .079   | .13122   | .627   | .20395   | 1  |
| 2  | .050   | .00202   | .570   | .06483   | .104   | .13239   | .653   | .20521   | 2  |
| 3  | .076   | .00303   | .595   | .06592   | .130   | .13356   | .679   | .20647   | 3  |
| 4  | .101   | .00404   | .621   | .06701   | .156   | .13473   | .705   | .20773   | 4  |
| 5  | .50126 | I. 00505 | .51646 | I. 06809 | .53181 | I. 13590 | .54731 | I. 20900 | 5  |
| 6  | .151   | .00607   | .672   | .06918   | .207   | .13707   | .757   | .21026   | 6  |
| 7  | .176   | .00708   | .697   | .07027   | .233   | .13825   | .782   | .21153   | 7  |
| 8  | .202   | .00810   | .723   | .07137   | .258   | .13942   | .808   | .21280   | 8  |
| 9  | .227   | .00912   | .748   | .07246   | .284   | .14060   | .834   | .21407   | 9  |
| 10 | .50252 | I. 01014 | .51774 | I. 07356 | .53310 | I. 14178 | .54860 | I. 21535 | 10 |
| 11 | .277   | .01116   | .799   | .07465   | .336   | .14296   | .886   | .21662   | 11 |
| 12 | .303   | .01218   | .825   | .07575   | .361   | .14414   | .912   | .21790   | 12 |
| 13 | .328   | .01320   | .850   | .07685   | .387   | .14533   | .938   | .21918   | 13 |
| 14 | .353   | .01422   | .876   | .07795   | .413   | .14651   | .964   | .22045   | 14 |
| 15 | .50378 | I. 01525 | .51901 | I. 07905 | .53439 | I. 14776 | .54990 | I. 22174 | 15 |
| 16 | .404   | .01628   | .927   | .08015   | .464   | .14889   | .55016 | .22302   | 16 |
| 17 | .429   | .01730   | .952   | .08126   | .490   | .15008   | .042   | .22430   | 17 |
| 18 | .454   | .01833   | .978   | .08236   | .516   | .15127   | .068   | .22559   | 18 |
| 19 | .479   | .01936   | .52003 | .08347   | .542   | .15246   | .094   | .22688   | 19 |
| 20 | .50505 | I. 02039 | .52029 | I. 08458 | .53567 | I. 15366 | .55120 | I. 22817 | 20 |
| 21 | .530   | .02143   | .054   | .08569   | .593   | .15485   | .146   | .22946   | 21 |
| 22 | .555   | .02246   | .080   | .08680   | .619   | .15605   | .172   | .23075   | 22 |
| 23 | .581   | .02349   | .105   | .08791   | .645   | .15725   | .198   | .23205   | 23 |
| 24 | .606   | .02453   | .131   | .08903   | .670   | .15845   | .224   | .23334   | 24 |
| 25 | .50631 | I. 02557 | .52156 | I. 09014 | .53696 | I. 15965 | .55250 | I. 23464 | 25 |
| 26 | .656   | .02661   | .182   | .09126   | .722   | .16085   | .276   | .23594   | 26 |
| 27 | .682   | .02765   | .207   | .09238   | .748   | .16206   | .302   | .23724   | 27 |
| 28 | .707   | .02869   | .233   | .09350   | .774   | .16326   | .328   | .23855   | 28 |
| 29 | .732   | .02973   | .259   | .09462   | .799   | .16447   | .354   | .23985   | 29 |
| 30 | .50758 | I. 03077 | .52284 | I. 09574 | .53825 | I. 16568 | .55380 | I. 24116 | 30 |
| 31 | .783   | .03182   | .310   | .09686   | .851   | .16689   | .406   | .24247   | 31 |
| 32 | .808   | .03286   | .335   | .09799   | .877   | .16810   | .432   | .24378   | 32 |
| 33 | .834   | .03391   | .361   | .09911   | .903   | .16932   | .458   | .24509   | 33 |
| 34 | .859   | .03496   | .386   | .10024   | .928   | .17053   | .484   | .24640   | 34 |
| 35 | .50884 | I. 03601 | .52412 | I. 10137 | .53954 | I. 17175 | .55510 | I. 24772 | 35 |
| 36 | .910   | .03706   | .438   | .10250   | .980   | .17297   | .536   | .24903   | 36 |
| 37 | .935   | .03811   | .463   | .10363   | .54006 | .17419   | .563   | .25035   | 37 |
| 38 | .960   | .03916   | .489   | .10477   | .032   | .17541   | .589   | .25167   | 38 |
| 39 | .986   | .04022   | .514   | .10590   | .058   | .17663   | .615   | .25300   | 39 |
| 40 | .51011 | I. 04128 | .52540 | I. 10704 | .54083 | I. 17786 | .55641 | I. 25432 | 40 |
| 41 | .036   | .04233   | .566   | .10817   | .109   | .17909   | .667   | .25565   | 41 |
| 42 | .062   | .04339   | .591   | .10931   | .135   | .18031   | .693   | .25697   | 42 |
| 43 | .087   | .04445   | .617   | .11045   | .161   | .18154   | .719   | .25830   | 43 |
| 44 | .112   | .04551   | .642   | .11159   | .187   | .18277   | .745   | .25963   | 44 |
| 45 | .51138 | I. 04657 | .52668 | I. 11274 | .54213 | I. 18401 | .55771 | I. 26097 | 45 |
| 46 | .163   | .04764   | .694   | .11388   | .238   | .18524   | .797   | .26230   | 46 |
| 47 | .189   | .04870   | .719   | .11503   | .264   | .18648   | .823   | .26364   | 47 |
| 48 | .214   | .04977   | .745   | .11617   | .290   | .18772   | .849   | .26498   | 48 |
| 49 | .239   | .05084   | .771   | .11732   | .316   | .18895   | .876   | .26632   | 49 |
| 50 | .51265 | I. 05191 | .52796 | I. 11847 | .54342 | I. 19019 | .55902 | I. 26766 | 50 |
| 51 | .290   | .05298   | .822   | .11963   | .368   | .19144   | .928   | .26900   | 51 |
| 52 | .316   | .05405   | .847   | .12078   | .394   | .19268   | .954   | .27035   | 52 |
| 53 | .341   | .05512   | .873   | .12193   | .420   | .19393   | .980   | .27169   | 53 |
| 54 | .366   | .05619   | .899   | .12309   | .446   | .19517   | .56006 | .27304   | 54 |
| 55 | .51392 | I. 05727 | .52924 | I. 12425 | .54471 | I. 19642 | .56032 | I. 27439 | 55 |
| 56 | .417   | .05835   | .950   | .12540   | .497   | .19767   | .058   | .27574   | 56 |
| 57 | .443   | .05942   | .976   | .12657   | .523   | .19892   | .084   | .27710   | 57 |
| 58 | .468   | .06050   | .53001 | .12773   | .549   | .20018   | .111   | .27845   | 58 |
| 59 | .494   | .06158   | .027   | .12889   | .575   | .20143   | .137   | .27981   | 59 |
| 60 | .51519 | I. 06267 | .53053 | I. 13005 | .54601 | I. 20269 | .56163 | I. 28117 | 60 |

| M. | 64°    |         | 65°    |         | 66°    |         | 67°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  |    |
| 0  | .56163 | 1.28117 | .57738 | 1.36620 | .59326 | 1.45859 | .60927 | 1.55939 | 0  |
| 1  | 189    | .28253  | 765    | .36768  | 353    | .46020  | 954    | .56106  | 1  |
| 2  | 215    | .28390  | 791    | .36916  | 379    | .46181  | 980    | .56282  | 2  |
| 3  | 241    | .28526  | 817    | .37064  | 406    | .46342  | .61007 | .56458  | 3  |
| 4  | 267    | .28663  | 844    | .37212  | 433    | .46504  | 034    | .56634  | 4  |
| 5  | .56294 | 1.28800 | .57870 | 1.37361 | .59459 | 1.46665 | .61061 | 1.56811 | 5  |
| 6  | 320    | .28937  | 866    | .37509  | 486    | .46827  | 088    | .56988  | 6  |
| 7  | 346    | .29074  | 923    | .37658  | 512    | .46989  | 114    | .57165  | 7  |
| 8  | 372    | .29211  | 949    | .37808  | 539    | .47152  | 141    | .57342  | 8  |
| 9  | 398    | .29349  | 976    | .37957  | 566    | .47314  | 168    | .57520  | 9  |
| 10 | .56425 | 1.29487 | .58002 | 1.38107 | .59592 | 1.47477 | .61195 | 1.57698 | 10 |
| 11 | 451    | .29625  | 028    | .38256  | 619    | .47640  | 222    | .57876  | 11 |
| 12 | 477    | .29763  | 055    | .38406  | 645    | .47804  | 248    | .58054  | 12 |
| 13 | 503    | .29901  | 081    | .38556  | 672    | .47967  | 275    | .58233  | 13 |
| 14 | 529    | .30040  | 108    | .38707  | 699    | .48131  | 302    | .58412  | 14 |
| 15 | .56555 | 1.30179 | .58134 | 1.38857 | .59725 | 1.48295 | .61329 | 1.58591 | 15 |
| 16 | 582    | .30318  | 160    | .39008  | 752    | .48459  | 356    | .58771  | 16 |
| 17 | 608    | .30457  | 187    | .39159  | 779    | .48624  | 383    | .58950  | 17 |
| 18 | 634    | .30596  | 213    | .39311  | 805    | .48789  | 409    | .59130  | 18 |
| 19 | 660    | .30735  | 240    | .39462  | 832    | .48954  | 436    | .59311  | 19 |
| 20 | .56687 | 1.30875 | .58266 | 1.39614 | .59859 | 1.49119 | .61463 | 1.59491 | 20 |
| 21 | 713    | .31015  | 293    | .39766  | 885    | .49284  | 490    | .59672  | 21 |
| 22 | 739    | .31155  | 319    | .39918  | 912    | .49450  | 517    | .59853  | 22 |
| 23 | 765    | .31295  | 345    | .40070  | 938    | .49616  | 544    | .60035  | 23 |
| 24 | 791    | .31436  | 372    | .40222  | 965    | .49782  | 570    | .60217  | 24 |
| 25 | .56818 | 1.31576 | .58398 | 1.40375 | .59992 | 1.49948 | .61597 | 1.60399 | 25 |
| 26 | 844    | .31717  | 425    | .40528  | .60018 | .50115  | 624    | .60581  | 26 |
| 27 | 870    | .31858  | 451    | .40681  | 045    | .50282  | 651    | .60763  | 27 |
| 28 | 896    | .31999  | 478    | .40835  | 072    | .50449  | 678    | .60946  | 28 |
| 29 | 923    | .32140  | 504    | .40988  | 098    | .50617  | 705    | .61129  | 29 |
| 30 | .56949 | 1.32282 | .58531 | 1.41142 | .60125 | 1.50784 | .61732 | 1.61313 | 30 |
| 31 | 975    | .32424  | 557    | .41296  | 152    | .50952  | 759    | .61496  | 31 |
| 32 | .57001 | .32566  | 584    | .41450  | 178    | .51120  | 785    | .61680  | 32 |
| 33 | 028    | .32708  | 610    | .41605  | 205    | .51289  | 812    | .61864  | 33 |
| 34 | 054    | .32850  | 637    | .41760  | 232    | .51457  | 839    | .62049  | 34 |
| 35 | .57080 | 1.32993 | .58663 | 1.41914 | .60259 | 1.51626 | .61866 | 1.62234 | 35 |
| 36 | 106    | .33135  | 690    | .42070  | 285    | .51795  | 893    | .62419  | 36 |
| 37 | 133    | .33278  | 716    | .42225  | 312    | .51965  | 920    | .62604  | 37 |
| 38 | 159    | .33422  | 743    | .42380  | 339    | .52134  | 947    | .62790  | 38 |
| 39 | 185    | .33565  | 769    | .42536  | 365    | .52304  | 974    | .62976  | 39 |
| 40 | .57212 | 1.33708 | .58796 | 1.42692 | .60392 | 1.52474 | .62001 | 1.63162 | 40 |
| 41 | 238    | .33852  | 822    | .42848  | 419    | .52645  | 027    | .63348  | 41 |
| 42 | 264    | .33996  | 849    | .43005  | 445    | .52815  | 054    | .63535  | 42 |
| 43 | 291    | .34140  | 875    | .43162  | 472    | .52986  | 081    | .63722  | 43 |
| 44 | 317    | .34284  | 902    | .43318  | 499    | .53157  | 108    | .63909  | 44 |
| 45 | .57343 | 1.34429 | .58928 | 1.43476 | .60526 | 1.53329 | .62135 | 1.64097 | 45 |
| 46 | 369    | .34573  | 955    | .43633  | 552    | .53500  | 162    | .64285  | 46 |
| 47 | 396    | .34718  | 981    | .43790  | 579    | .53672  | 189    | .64473  | 47 |
| 48 | 422    | .34863  | .59008 | .43948  | 606    | .53845  | 216    | .64662  | 48 |
| 49 | 448    | .35009  | 034    | .44106  | 633    | .54017  | 243    | .64851  | 49 |
| 50 | .57475 | 1.35154 | .59061 | 1.44264 | .60659 | 1.54190 | .62270 | 1.65040 | 50 |
| 51 | 501    | .35300  | 087    | .44423  | 686    | .54363  | 297    | .65229  | 51 |
| 52 | 527    | .35446  | 114    | .44582  | 713    | .54536  | 324    | .65419  | 52 |
| 53 | 554    | .35592  | 140    | .44741  | 740    | .54709  | 351    | .65609  | 53 |
| 54 | 580    | .35738  | 167    | .44900  | 766    | .54883  | 378    | .65799  | 54 |
| 55 | .57606 | 1.35885 | .59194 | 1.45059 | .60793 | 1.55057 | .62405 | 1.65989 | 55 |
| 56 | 633    | .36031  | 220    | .45219  | 820    | .55231  | 431    | .66180  | 56 |
| 57 | 659    | .36178  | 247    | .45378  | 847    | .55405  | 458    | .66371  | 57 |
| 58 | 685    | .36325  | 273    | .45539  | 873    | .55580  | 485    | .66563  | 58 |
| 59 | 712    | .36473  | 300    | .45699  | 900    | .55755  | 512    | .66755  | 59 |
| 60 | .57738 | 1.36620 | .59326 | 1.45859 | .60927 | 1.55939 | .62539 | 1.66947 | 60 |

| M. | 68°    |         | 69°    |         | 70°    |         | 71°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  |    |
| 0  | .62539 | 1.66947 | .64163 | 1.79043 | .65798 | 1.92380 | .67443 | 2.07155 | 0  |
| 1  | 566    | .67139  | 190    | .79254  | 825    | .92614  | 471    | .07415  | 1  |
| 2  | 593    | .67332  | 218    | .79466  | 853    | .92849  | 498    | .07675  | 2  |
| 3  | 620    | .67525  | 245    | .79679  | 880    | .93083  | 526    | .07936  | 3  |
| 4  | 647    | .67718  | 272    | .79891  | 907    | .93318  | 553    | .08197  | 4  |
| 5  | .62674 | 1.67911 | .64299 | 1.80104 | .65935 | 1.93554 | .67581 | 2.08459 | 5  |
| 6  | 701    | .68105  | 326    | .80318  | 962    | .93790  | 608    | .08721  | 6  |
| 7  | 728    | .68299  | 353    | .80531  | 989    | .94026  | 636    | .08983  | 7  |
| 8  | 755    | .68494  | 381    | .80746  | .66017 | .94263  | 663    | .09246  | 8  |
| 9  | 782    | .68689  | 408    | .80960  | 044    | .94500  | 691    | .09510  | 9  |
| 10 | .62809 | 1.68884 | .64435 | 1.81175 | .66071 | 1.94737 | .67718 | 2.09774 | 10 |
| 11 | 836    | .69079  | 462    | .81390  | 099    | .94975  | 746    | .10038  | 11 |
| 12 | 863    | .69275  | 489    | .81605  | 126    | .95213  | 773    | .10303  | 12 |
| 13 | 890    | .69471  | 516    | .81821  | 154    | .95452  | 801    | .10568  | 13 |
| 14 | 917    | .69667  | 544    | .82037  | 181    | .95691  | 829    | .10834  | 14 |
| 15 | .62944 | 1.69864 | .64571 | 1.82254 | .66208 | 1.95931 | .67856 | 2.11101 | 15 |
| 16 | 971    | .70061  | 598    | .82471  | 236    | .96171  | 884    | .11367  | 16 |
| 17 | 998    | .70258  | 625    | .82688  | 263    | .96411  | 911    | .11635  | 17 |
| 18 | .63025 | .70455  | 653    | .82906  | 290    | .96652  | 939    | .11903  | 18 |
| 19 | 052    | .70653  | 680    | .83124  | 318    | .96893  | 966    | .12171  | 19 |
| 20 | .63079 | 1.70851 | .64707 | 1.83342 | .66345 | 1.97135 | .67994 | 2.12440 | 20 |
| 21 | 106    | .71050  | 734    | .83561  | 373    | .97377  | .68021 | .12709  | 21 |
| 22 | 133    | .71249  | 761    | .83780  | 400    | .97619  | 049    | .12979  | 22 |
| 23 | 161    | .71448  | 789    | .83999  | 427    | .97862  | 077    | .13249  | 23 |
| 24 | 188    | .71647  | 816    | .84219  | 455    | .98106  | 104    | .13520  | 24 |
| 25 | .63215 | 1.71847 | .64843 | 1.84439 | .66482 | 1.98349 | .68132 | 2.13791 | 25 |
| 26 | 242    | .72047  | 870    | .84659  | 510    | .98594  | 159    | .14063  | 26 |
| 27 | 269    | .72248  | 898    | .84880  | 537    | .98838  | 187    | .14335  | 27 |
| 28 | 296    | .72448  | 925    | .85102  | 564    | .99083  | 214    | .14608  | 28 |
| 29 | 323    | .72649  | 952    | .85323  | 592    | .99329  | 242    | .14881  | 29 |
| 30 | .63350 | 1.72850 | .64979 | 1.85545 | .66619 | 1.99574 | .68270 | 2.15155 | 30 |
| 31 | 377    | .73052  | .65007 | .85767  | 647    | .99821  | 297    | .15429  | 31 |
| 32 | 404    | .73254  | 034    | .85990  | 674    | 2.00067 | 325    | .15704  | 32 |
| 33 | 431    | .73456  | 061    | .86213  | 702    | .00315  | 352    | .15979  | 33 |
| 34 | 458    | .73659  | 088    | .86437  | 729    | .00562  | 380    | .16255  | 34 |
| 35 | .63485 | 1.73862 | .65116 | 1.86661 | .66756 | 2.00810 | .68407 | 2.16531 | 35 |
| 36 | 512    | .74065  | 143    | .86885  | 784    | .01059  | 435    | .16808  | 36 |
| 37 | 539    | .74269  | 170    | .87109  | 811    | .01308  | 463    | .17085  | 37 |
| 38 | 566    | .74473  | 197    | .87334  | 839    | .01557  | 490    | .17363  | 38 |
| 39 | 594    | .74677  | 225    | .87560  | 866    | .01807  | 518    | .17641  | 39 |
| 40 | .63621 | 1.74881 | .65252 | 1.87785 | .66894 | 2.02057 | .68546 | 2.17920 | 40 |
| 41 | 648    | .75086  | 279    | .88011  | 921    | .02308  | 573    | .18199  | 41 |
| 42 | 675    | .75292  | 306    | .88238  | 949    | .02559  | 601    | .18479  | 42 |
| 43 | 702    | .75497  | 334    | .88465  | 976    | .02810  | 628    | .18759  | 43 |
| 44 | 729    | .75703  | 361    | .88692  | .67003 | .03062  | 656    | .19040  | 44 |
| 45 | .63756 | 1.75909 | .65388 | 1.88920 | .67031 | 2.03315 | .68684 | 2.19322 | 45 |
| 46 | 783    | .76116  | 416    | .89148  | 058    | .03568  | 711    | .19604  | 46 |
| 47 | 810    | .76323  | 443    | .89376  | 086    | .03821  | 739    | .19886  | 47 |
| 48 | 838    | .76530  | 470    | .89605  | 113    | .04075  | 767    | .20169  | 48 |
| 49 | 865    | .76737  | 497    | .89834  | 141    | .04329  | 794    | .20453  | 49 |
| 50 | .63892 | 1.76945 | .65525 | 1.90063 | .67168 | 2.04584 | .68822 | 2.20737 | 50 |
| 51 | 919    | .77154  | 552    | .90293  | 196    | .04839  | 849    | .21021  | 51 |
| 52 | 946    | .77362  | 579    | .90524  | 223    | .05094  | 877    | .21306  | 52 |
| 53 | 973    | .77571  | 607    | .90754  | 251    | .05350  | 905    | .21592  | 53 |
| 54 | .64000 | .77780  | 634    | .90986  | 278    | .05607  | 932    | .21878  | 54 |
| 55 | .64027 | 1.77990 | .65661 | 1.91217 | .67306 | 2.05864 | .68960 | 2.22165 | 55 |
| 56 | 055    | .78200  | 689    | .91449  | 333    | .06121  | 988    | .22452  | 56 |
| 57 | 082    | .78410  | 716    | .91681  | 361    | .06379  | .69015 | .22740  | 57 |
| 58 | 109    | .78621  | 743    | .91914  | 388    | .06637  | 043    | .23028  | 58 |
| 59 | 136    | .78832  | 771    | .92147  | 416    | .06896  | 071    | .23317  | 59 |
| 60 | .64163 | 1.79043 | .65798 | 1.92380 | .67443 | 2.07155 | .69098 | 2.23607 | 60 |

| M. | 72°    |         | 73°    |         | 74°    |         | 75°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  |    |
| 0  | .69058 | 2.23607 | .70763 | 2.42030 | .72436 | 2.62796 | .74118 | 2.86379 | 0  |
| 1  | 126    | .23897  | 791    | .42356  | 464    | .63164  | 146    | .86790  | 1  |
| 2  | 154    | .24187  | 818    | .42583  | 492    | .63533  | 174    | .87211  | 2  |
| 3  | 181    | .24478  | 846    | .43010  | 520    | .63903  | 202    | .87633  | 3  |
| 4  | 209    | .24770  | 874    | .43337  | 548    | .64274  | 231    | .88056  | 4  |
| 5  | 69237  | 2.25062 | .70502 | 2.43666 | .72576 | 2.64645 | .74259 | 2.88479 | 5  |
| 6  | 264    | .25355  | 930    | .43995  | 604    | .65018  | 287    | .88904  | 6  |
| 7  | 292    | .25648  | 958    | .44324  | 632    | .65391  | 315    | .89330  | 7  |
| 8  | 320    | .25942  | 985    | .44655  | 660    | .65765  | 343    | .89756  | 8  |
| 9  | 347    | .26237  | .71013 | .44986  | 688    | .66140  | 371    | .90184  | 9  |
| 10 | .69375 | 2.26531 | .71041 | 2.45317 | .72716 | 2.66515 | .74399 | 2.90613 | 10 |
| 11 | 403    | .26827  | 069    | .45650  | 744    | .66892  | 427    | .91042  | 11 |
| 12 | 430    | .27123  | 097    | .45983  | 772    | .67269  | 455    | .91473  | 12 |
| 13 | 458    | .27420  | 125    | .46316  | 800    | .67647  | 484    | .91904  | 13 |
| 14 | 486    | .27717  | 153    | .46651  | 828    | .68025  | 512    | .92337  | 14 |
| 15 | .69514 | 2.28015 | .71180 | 2.46986 | .72856 | 2.68405 | .74540 | 2.92770 | 15 |
| 16 | 541    | .28313  | 208    | .47321  | 884    | .68785  | 568    | .93204  | 16 |
| 17 | 569    | .28612  | 236    | .47658  | 912    | .69167  | 596    | .93640  | 17 |
| 18 | 597    | .28912  | 264    | .47995  | 940    | .69549  | 624    | .94076  | 18 |
| 19 | 624    | .29212  | 292    | .48333  | 968    | .69931  | 652    | .94514  | 19 |
| 20 | .69652 | 2.29512 | .71320 | 2.48671 | .72996 | 2.70315 | .74680 | 2.94952 | 20 |
| 21 | 680    | .29814  | 348    | .49010  | .73024 | .70700  | 709    | .95392  | 21 |
| 22 | 708    | .30115  | 375    | .49350  | 052    | .71085  | 737    | .95832  | 22 |
| 23 | 735    | .30418  | 403    | .49691  | 080    | .71471  | 765    | .96274  | 23 |
| 24 | 763    | .30721  | 431    | .50032  | 108    | .71858  | 793    | .96716  | 24 |
| 25 | .69791 | 2.31024 | .71459 | 2.50374 | .73136 | 2.72246 | .74821 | 2.97160 | 25 |
| 26 | 818    | .31328  | 487    | .50716  | 164    | .72635  | 849    | .97604  | 26 |
| 27 | 846    | .31633  | 515    | .51060  | 192    | .73024  | 878    | .98050  | 27 |
| 28 | 874    | .31939  | 543    | .51404  | 220    | .73414  | 906    | .98497  | 28 |
| 29 | 902    | .32244  | 571    | .51748  | 248    | .73806  | 934    | .98944  | 29 |
| 30 | .69929 | 2.32551 | .71598 | 2.52094 | .73276 | 2.74198 | .74962 | 2.99393 | 30 |
| 31 | 957    | .32858  | 626    | .52440  | 304    | .74591  | 990    | .99843  | 31 |
| 32 | 985    | .33166  | 654    | .52787  | 332    | .74984  | .75018 | 3.00293 | 32 |
| 33 | .70013 | .33474  | .682   | .53134  | 360    | .75379  | 046    | .00745  | 33 |
| 34 | 040    | .33783  | 710    | .53482  | 388    | .75775  | 075    | .01198  | 34 |
| 35 | .70068 | 2.34092 | .71738 | 2.53831 | .73416 | 2.76171 | .75103 | 3.01652 | 35 |
| 36 | 096    | .34403  | 766    | .54181  | 444    | .76568  | 131    | .02107  | 36 |
| 37 | 124    | .34713  | 794    | .54531  | 472    | .76966  | 159    | .02563  | 37 |
| 38 | 151    | .35025  | 822    | .54883  | 500    | .77365  | 187    | .03020  | 38 |
| 39 | 179    | .35339  | 850    | .55234  | 529    | .77765  | 216    | .03479  | 39 |
| 40 | .70207 | 2.35649 | .71877 | 2.55587 | .73557 | 2.78166 | .75244 | 3.03938 | 40 |
| 41 | 235    | .35962  | 905    | .55940  | 585    | .78568  | 272    | .04398  | 41 |
| 42 | 263    | .36276  | 933    | .56294  | 613    | .78970  | 300    | .04860  | 42 |
| 43 | 290    | .36590  | 961    | .56649  | 641    | .79374  | 328    | .05322  | 43 |
| 44 | 318    | .36905  | 989    | .57005  | 669    | .79778  | 356    | .05786  | 44 |
| 45 | .70346 | 2.37221 | .72017 | 2.57361 | .73697 | 2.80183 | .75385 | 3.06251 | 45 |
| 46 | 374    | .37537  | 045    | .57718  | 725    | .80589  | 413    | .06717  | 46 |
| 47 | 401    | .37854  | 073    | .58076  | 753    | .80996  | 441    | .07184  | 47 |
| 48 | 429    | .38171  | 101    | .58434  | 781    | .81404  | 469    | .07652  | 48 |
| 49 | 457    | .38489  | 129    | .58794  | 809    | .81813  | 497    | .08121  | 49 |
| 50 | .70485 | 2.38808 | .72157 | 2.59154 | .73837 | 2.82223 | .75526 | 3.08591 | 50 |
| 51 | 513    | .39128  | 185    | .59514  | 865    | .82633  | 554    | .09063  | 51 |
| 52 | 540    | .39448  | 213    | .59876  | 893    | .83045  | 582    | .09535  | 52 |
| 53 | 568    | .39768  | 241    | .60238  | 921    | .83457  | 610    | .10009  | 53 |
| 54 | 596    | .40089  | 269    | .60601  | 950    | .83871  | 638    | .10484  | 54 |
| 55 | .70624 | 2.40411 | .72296 | 2.60965 | .73978 | 2.84285 | .75667 | 3.10960 | 55 |
| 56 | 652    | .40734  | 324    | .61330  | .74006 | .84700  | 695    | .11437  | 56 |
| 57 | 679    | .41057  | 352    | .61695  | 034    | .85116  | 723    | .11915  | 57 |
| 58 | 707    | .41381  | 380    | .62061  | 062    | .85533  | 751    | .12394  | 58 |
| 59 | 735    | .41705  | 408    | .62428  | 090    | .85951  | 780    | .12875  | 59 |
| 60 | .70763 | 2.42030 | .72436 | 2.62796 | .74118 | 2.86370 | .75808 | 3.13357 | 60 |

| M. | 76°    |         | 77°    |         | 78°    |         | 79°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  |    |
| 0  | .75808 | 3.13357 | .77505 | 3.44541 | .79209 | 3.80973 | .80919 | 4.24084 | 0  |
| 1  | 836    | .13839  | 533    | .45102  | 237    | .81633  | 948    | .24870  | 1  |
| 2  | 864    | .14323  | 562    | .45664  | 266    | .82294  | 976    | .25658  | 2  |
| 3  | 892    | .14809  | 590    | .46228  | 294    | .82956  | .81005 | .26448  | 3  |
| 4  | 921    | .15295  | 618    | .46793  | 323    | .83621  | 933    | .27241  | 4  |
| 5  | .75949 | 3.15782 | .77647 | 3.47360 | .79351 | 3.84288 | .81062 | 4.28036 | 5  |
| 6  | 977    | .16271  | 675    | .47928  | 380    | .84956  | 090    | .28833  | 6  |
| 7  | .76005 | .16761  | 703    | .48498  | 408    | .85627  | 119    | .29634  | 7  |
| 8  | 034    | .17252  | 732    | .49069  | 437    | .86299  | 148    | .30436  | 8  |
| 9  | 062    | .17744  | 760    | .49642  | 465    | .86973  | 176    | .31241  | 9  |
| 10 | .76090 | 3.18238 | .77788 | 3.50216 | .79493 | 3.87649 | .81205 | 4.32049 | 10 |
| 11 | 118    | .18733  | 817    | .50791  | 522    | .88327  | 233    | .32859  | 11 |
| 12 | 147    | .19228  | 845    | .51368  | 550    | .89007  | 262    | .33671  | 12 |
| 13 | 175    | .19725  | 874    | .51947  | 579    | .89689  | 290    | .34486  | 13 |
| 14 | 203    | .20224  | 902    | .52527  | 607    | .90373  | 319    | .35304  | 14 |
| 15 | .76231 | 3.20723 | .77930 | 3.53109 | .79636 | 3.91058 | .81348 | 4.36124 | 15 |
| 16 | 260    | .21224  | 959    | .53692  | 664    | .91746  | 376    | .36947  | 16 |
| 17 | 288    | .21726  | 987    | .54277  | 693    | .92436  | 405    | .37772  | 17 |
| 18 | 316    | .22229  | .78015 | .54863  | 721    | .93128  | 433    | .38600  | 18 |
| 19 | 344    | .22734  | 044    | .55451  | 750    | .93821  | 462    | .39430  | 19 |
| 20 | .76373 | 3.23239 | .78072 | 3.56041 | .79778 | 3.94517 | .81491 | 4.40263 | 20 |
| 21 | 401    | .23746  | 101    | .56632  | 807    | .95215  | 519    | .41099  | 21 |
| 22 | 429    | .24255  | 129    | .57224  | 835    | .95914  | 548    | .41937  | 22 |
| 23 | 458    | .24764  | 157    | .57819  | 864    | .96616  | 576    | .42778  | 23 |
| 24 | 486    | .25275  | 186    | .58414  | 892    | .97320  | 605    | .43622  | 24 |
| 25 | .76514 | 3.25787 | .78214 | 3.59012 | .79921 | 3.98025 | .81633 | 4.44468 | 25 |
| 26 | 542    | .26300  | 242    | .59611  | 949    | .98733  | 662    | .45317  | 26 |
| 27 | 571    | .26814  | 271    | .60211  | 978    | .99443  | 691    | .46169  | 27 |
| 28 | 599    | .27330  | 299    | .60813  | .80006 | 4.00155 | 719    | .47023  | 28 |
| 29 | 627    | .27847  | 328    | .61417  | 085    | .00869  | 748    | .47881  | 29 |
| 30 | .76655 | 3.28366 | .78356 | 3.62023 | .80063 | 4.01585 | .81776 | 4.48740 | 30 |
| 31 | 684    | .28885  | 384    | .62630  | 092    | .02303  | 805    | .49603  | 31 |
| 32 | 712    | .29406  | 413    | .63238  | 120    | .03024  | 834    | .50468  | 32 |
| 33 | 740    | .29929  | 441    | .63849  | 149    | .03746  | 862    | .51337  | 33 |
| 34 | 769    | .30452  | 470    | .64461  | 177    | .04471  | 891    | .52208  | 34 |
| 35 | .76797 | 3.30977 | .78498 | 3.65074 | .80206 | 4.05197 | .81919 | 4.53081 | 35 |
| 36 | 825    | .31503  | 526    | .65690  | 234    | .05926  | 948    | .53958  | 36 |
| 37 | 854    | .32031  | 555    | .66307  | 263    | .06657  | 977    | .54837  | 37 |
| 38 | 882    | .32560  | 583    | .66925  | 291    | .07390  | .82005 | .55720  | 38 |
| 39 | 910    | .33090  | 612    | .67545  | 320    | .08125  | 034    | .56605  | 39 |
| 40 | .76938 | 3.33622 | .78640 | 3.68167 | .80348 | 4.08863 | .82063 | 4.57493 | 40 |
| 41 | 967    | .34154  | 669    | .68791  | 377    | .09602  | 091    | .58383  | 41 |
| 42 | 995    | .34689  | 697    | .69417  | 405    | .10344  | 120    | .59277  | 42 |
| 43 | .77023 | .35224  | 725    | .70044  | 434    | .11088  | 148    | .60174  | 43 |
| 44 | 052    | .35761  | 754    | .70673  | 462    | .11835  | 177    | .61073  | 44 |
| 45 | .77080 | 3.36299 | .78782 | 3.71303 | .80491 | 4.12583 | .82206 | 4.61976 | 45 |
| 46 | 108    | .36839  | 811    | .71935  | 519    | .13334  | 234    | .62881  | 46 |
| 47 | 137    | .37380  | 839    | .72569  | 548    | .14087  | 263    | .63790  | 47 |
| 48 | 165    | .37923  | 868    | .73205  | 577    | .14842  | 292    | .64701  | 48 |
| 49 | 193    | .38466  | 896    | .73843  | 605    | .15599  | 320    | .65616  | 49 |
| 50 | .77222 | 3.39012 | .78924 | 3.74482 | .80634 | 4.16359 | .82349 | 4.66533 | 50 |
| 51 | 250    | .39558  | 953    | .75123  | 662    | .17121  | 377    | .67454  | 51 |
| 52 | 278    | .40106  | 981    | .75766  | 691    | .17886  | 406    | .68377  | 52 |
| 53 | 307    | .40656  | .79010 | .76411  | 719    | .18652  | 435    | .69304  | 53 |
| 54 | 335    | .41206  | 038    | .77057  | 748    | .19421  | 463    | .70234  | 54 |
| 55 | .77363 | 3.41759 | .79067 | 3.77705 | .80776 | 4.20193 | .82492 | 4.71166 | 55 |
| 56 | 392    | .42312  | 095    | .78355  | 805    | .20966  | 521    | .72102  | 56 |
| 57 | 420    | .42867  | 123    | .79007  | 833    | .21742  | 549    | .73041  | 57 |
| 58 | 448    | .43424  | 152    | .79661  | 862    | .22521  | 578    | .73983  | 58 |
| 59 | 477    | .43982  | 180    | .80316  | 891    | .23301  | 607    | .74929  | 59 |
| 60 | .77505 | 3.44541 | .79209 | 3.80973 | .80919 | 4.24084 | .82635 | 4.75877 | 60 |

| M. | 80°    |         | 81°    |         | 82°    |         | 83°    |         | M. |
|----|--------|---------|--------|---------|--------|---------|--------|---------|----|
|    | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  | Vers.  | Exsec.  |    |
| 0  | .82635 | 4.75877 | .84357 | 5.39245 | .86083 | 6.18530 | .87813 | 7.20551 | 0  |
| 1  | 664    | .76829  | 385    | .40422  | 111    | .20020  | 842    | .22500  | 1  |
| 2  | 692    | .77783  | 414    | .41602  | 140    | .21517  | 871    | .24457  | 2  |
| 3  | 721    | .78742  | 443    | .42787  | 169    | .23019  | 900    | .26425  | 3  |
| 4  | 750    | .79703  | 471    | .43977  | 198    | .24529  | 929    | .28402  | 4  |
| 5  | .82778 | 4.80667 | .84500 | 5.45171 | .86227 | 6.26044 | .87957 | 7.30388 | 5  |
| 6  | 807    | .81635  | 529    | .46369  | 256    | .27566  | 986    | .32384  | 6  |
| 7  | 836    | .82606  | 558    | .47572  | 284    | .29095  | .88015 | .34390  | 7  |
| 8  | 864    | .83581  | 586    | .48779  | 313    | .30630  | 044    | .36405  | 8  |
| 9  | 893    | .84558  | 615    | .49991  | 342    | .32171  | 073    | .38431  | 9  |
| 10 | .82922 | 4.85539 | .84644 | 5.51208 | .86371 | 6.33719 | .88102 | 7.40466 | 10 |
| 11 | 950    | .86524  | 673    | .52429  | 400    | .35274  | 131    | .42511  | 11 |
| 12 | 979    | .87511  | 701    | .53655  | 428    | .36835  | 160    | .44566  | 12 |
| 13 | .83008 | .88502  | 730    | .54880  | 457    | .38403  | 188    | .46632  | 13 |
| 14 | 036    | .89497  | 759    | .56121  | 486    | .39978  | 217    | .48707  | 14 |
| 15 | .83005 | 4.90495 | .84788 | 5.57361 | .86515 | 6.41560 | .88246 | 7.50793 | 15 |
| 16 | 094    | .91496  | 816    | .58606  | 544    | .43148  | 275    | .52889  | 16 |
| 17 | 122    | .92501  | 845    | .59855  | 573    | .44743  | 304    | .54966  | 17 |
| 18 | 151    | .93509  | 874    | .61110  | 601    | .46346  | 333    | .57113  | 18 |
| 19 | 180    | .94521  | 903    | .62369  | 630    | .47955  | 362    | .59241  | 19 |
| 20 | .83208 | 4.95536 | .84931 | 5.63633 | .86659 | 6.49571 | .88391 | 7.61379 | 20 |
| 21 | 237    | .96555  | 960    | .64902  | 688    | .51194  | 420    | .63528  | 21 |
| 22 | 266    | .97577  | 989    | .66176  | 717    | .52825  | 448    | .65688  | 22 |
| 23 | 294    | .98603  | .85018 | .67454  | 746    | .54462  | 477    | .67859  | 23 |
| 24 | 323    | .99633  | 046    | .68738  | 774    | .56107  | 506    | .70041  | 24 |
| 25 | .83352 | 5.00666 | .85075 | 5.70027 | .86803 | 6.57759 | .88535 | 7.72234 | 25 |
| 26 | 380    | .01702  | 104    | .71321  | 832    | .59418  | 564    | .74438  | 26 |
| 27 | 409    | .02743  | 133    | .72620  | 861    | .61085  | 593    | .76653  | 27 |
| 28 | 438    | .03787  | 162    | .73924  | 890    | .62759  | 622    | .78880  | 28 |
| 29 | 467    | .04834  | 190    | .75233  | 919    | .64441  | 651    | .81118  | 29 |
| 30 | .83495 | 5.05886 | .85219 | 5.76547 | .86947 | 6.66130 | .88680 | 7.83367 | 30 |
| 31 | 524    | .06941  | 248    | .77866  | 976    | .67826  | 709    | .85628  | 31 |
| 32 | 553    | .08000  | 277    | .79191  | .87005 | .69530  | 737    | .87901  | 32 |
| 33 | 581    | .09062  | 305    | .80521  | 034    | .71242  | 766    | .90186  | 33 |
| 34 | 610    | .10129  | 334    | .81856  | 063    | .72962  | 795    | .92482  | 34 |
| 35 | .83639 | 5.11199 | .85316 | 5.83106 | .87092 | 6.74689 | .88824 | 7.94791 | 35 |
| 36 | 667    | .12273  | 392    | .84542  | 120    | .76424  | 833    | .97111  | 36 |
| 37 | 696    | .13350  | 420    | .85893  | 149    | .78167  | 882    | .99444  | 37 |
| 38 | 725    | .14432  | 449    | .87250  | 178    | .79918  | 911    | 8.01788 | 38 |
| 39 | 754    | .15517  | 478    | .88612  | 207    | .81677  | 940    | .04146  | 39 |
| 40 | .83782 | 5.16607 | .85507 | 5.89979 | .87236 | 6.83443 | .88969 | 8.06515 | 40 |
| 41 | 811    | .17700  | 536    | .91352  | 265    | .85218  | 998    | .08897  | 41 |
| 42 | 840    | .18797  | 564    | .92731  | 294    | .87001  | .89027 | .11292  | 42 |
| 43 | 868    | .19898  | 593    | .94115  | 322    | .88792  | 055    | .13699  | 43 |
| 44 | 897    | .21004  | 622    | .95505  | 351    | .90592  | 084    | .16120  | 44 |
| 45 | .83926 | 5.22113 | .85651 | 5.96900 | .87330 | 6.92399 | .89113 | 8.18553 | 45 |
| 46 | 954    | .23226  | 680    | .98301  | 409    | .94216  | 142    | .20999  | 46 |
| 47 | 983    | .24343  | 708    | .99708  | 438    | .96040  | 171    | .23459  | 47 |
| 48 | .84012 | .25464  | 737    | 6.01120 | 467    | .97873  | 200    | .25931  | 48 |
| 49 | 041    | .26590  | 766    | .02538  | 496    | .99714  | 229    | .28417  | 49 |
| 50 | .84069 | 5.27719 | .85795 | 6.03962 | .87524 | 7.01565 | .89258 | 8.30917 | 50 |
| 51 | 098    | .28853  | 823    | .05392  | 553    | .03423  | 287    | .33430  | 51 |
| 52 | 127    | .29991  | 852    | .06828  | 582    | .05291  | 316    | .35957  | 52 |
| 53 | 155    | .31133  | 881    | .08269  | 611    | .07167  | 345    | .38497  | 53 |
| 54 | 184    | .32279  | 910    | .09717  | 640    | .09052  | 374    | .41052  | 54 |
| 55 | .84213 | 5.33429 | .85939 | 6.11171 | .87669 | 7.10946 | .89403 | 8.43620 | 55 |
| 56 | 242    | .34584  | 967    | .12630  | 698    | .12849  | 431    | .46203  | 56 |
| 57 | 270    | .35743  | 996    | .14096  | 726    | .14760  | 460    | .48800  | 57 |
| 58 | 299    | .36906  | .86025 | .15568  | 755    | .16681  | 489    | .51411  | 58 |
| 59 | 328    | .38073  | 054    | .17046  | 784    | .18612  | 518    | .54037  | 59 |
| 60 | .84357 | 5.39245 | .86083 | 6.18530 | .87813 | 7.20551 | 89547  | 8.56677 | 60 |

| M. | 84°    |          | 85°    |          | 86°    |          | M. |
|----|--------|----------|--------|----------|--------|----------|----|
|    | Vers.  | Exsec.   | Vers.  | Exsec.   | Vers.  | Exsec.   |    |
| 0  | .89547 | 8.56677  | .91284 | 10.47371 | .93024 | 13.33559 | 0  |
| 1  | 576    | .59332   | 313    | .51199   | 053    | .39547   | 1  |
| 2  | 605    | .62002   | 342    | .55052   | 082    | .45586   | 2  |
| 3  | 634    | .64687   | 371    | .58932   | 111    | .51676   | 3  |
| 4  | 663    | .67387   | 400    | .62837   | 140    | .57817   | 4  |
| 5  | .89692 | 8.70103  | .91429 | 10.66769 | .93169 | 13.64011 | 5  |
| 6  | 721    | .72833   | 458    | .70728   | 198    | .70258   | 6  |
| 7  | 750    | .75579   | 487    | .74714   | 227    | .76558   | 7  |
| 8  | 779    | .78341   | 516    | .78727   | 257    | .82913   | 8  |
| 9  | 808    | .81119   | 545    | .82768   | 286    | .89323   | 9  |
| 10 | .89836 | 8.83912  | .91574 | 10.86837 | .93315 | 13.95788 | 10 |
| 11 | 865    | .86722   | 603    | .90934   | 344    | 14.02310 | 11 |
| 12 | 894    | .89547   | 632    | .95060   | 373    | .08890   | 12 |
| 13 | 923    | .92389   | 661    | .99214   | 402    | .15527   | 13 |
| 14 | 952    | .95248   | 690    | II.03397 | 431    | .22223   | 14 |
| 15 | .89981 | 8.98123  | .91719 | II.07610 | .93460 | 14.28979 | 15 |
| 16 | .90010 | 9.01015  | 748    | .11852   | 489    | .35795   | 16 |
| 17 | 039    | .03923   | 777    | .16125   | 518    | .42672   | 17 |
| 18 | 068    | .06849   | 806    | .20427   | 547    | .49611   | 18 |
| 19 | 097    | .09792   | 835    | .24761   | 576    | .56613   | 19 |
| 20 | .90126 | 9.12752  | .91864 | II.29125 | .93605 | 14.63679 | 20 |
| 21 | 155    | .15730   | 893    | .33521   | 634    | .70810   | 21 |
| 22 | 184    | .18725   | 922    | .37948   | 663    | .78005   | 22 |
| 23 | 213    | .21739   | 951    | .42408   | 692    | .85268   | 23 |
| 24 | 242    | .24770   | 980    | .46900   | 721    | .92597   | 24 |
| 25 | .90271 | 9.27819  | .92009 | II.51424 | .93750 | 14.99995 | 25 |
| 26 | 300    | .30887   | 038    | .55981   | 779    | 15.07462 | 26 |
| 27 | 329    | .33973   | 067    | .60572   | 808    | .14999   | 27 |
| 28 | 358    | .37077   | 096    | .65197   | 837    | .22607   | 28 |
| 29 | 386    | .40201   | 125    | .69856   | 866    | .30287   | 29 |
| 30 | .90415 | 9.43343  | .92154 | II.74549 | .93895 | 15.38041 | 30 |
| 31 | 444    | .46505   | 183    | .79278   | 924    | .45869   | 31 |
| 32 | 473    | .49685   | 212    | .84042   | 953    | .53772   | 32 |
| 33 | 502    | .52886   | 241    | .88841   | 982    | .61751   | 33 |
| 34 | 531    | .56106   | 270    | .93677   | .94011 | .69808   | 34 |
| 35 | .90560 | 9.59346  | .92209 | II.98549 | .94040 | 15.77944 | 35 |
| 36 | 589    | .62605   | 328    | 12.03458 | 069    | .86159   | 36 |
| 37 | 618    | .65885   | 357    | .08404   | 098    | .94456   | 37 |
| 38 | 647    | .69186   | 386    | .13388   | 127    | 16.02835 | 38 |
| 39 | 676    | .72507   | 415    | .18411   | 156    | .11297   | 39 |
| 40 | .90705 | 9.75849  | .92444 | 12.23472 | .94186 | 16.10843 | 40 |
| 41 | 734    | .79212   | 473    | .28572   | 215    | .28476   | 41 |
| 42 | 763    | .82596   | 502    | .33712   | 244    | .37196   | 42 |
| 43 | 792    | .86001   | 531    | .38891   | 273    | .46005   | 43 |
| 44 | 821    | .89428   | 560    | .44112   | 302    | .54993   | 44 |
| 45 | .90850 | 9.92877  | .92589 | 12.49373 | .94331 | 16.63893 | 45 |
| 46 | 879    | .96348   | 618    | .54676   | 360    | .72975   | 46 |
| 47 | 908    | .99841   | 647    | .60021   | 389    | .82152   | 47 |
| 48 | 937    | 10.03356 | 676    | .65408   | 418    | .91424   | 48 |
| 49 | 966    | .06894   | 705    | .70838   | 447    | 17.00794 | 49 |
| 50 | .90995 | 10.10455 | .92734 | 12.76311 | .94476 | 17.10262 | 50 |
| 51 | .91024 | .14039   | 763    | .81829   | 505    | .19830   | 51 |
| 52 | 053    | .17646   | 792    | .87391   | 534    | .29500   | 52 |
| 53 | 082    | .21277   | 821    | .92999   | 563    | .39274   | 53 |
| 54 | 111    | .24932   | 850    | .98651   | 592    | .49155   | 54 |
| 55 | .91140 | 10.28610 | .92879 | 13.04350 | .94621 | 17.59139 | 55 |
| 56 | 169    | .32313   | 908    | .10096   | 650    | .69233   | 56 |
| 57 | 197    | .36040   | 937    | .15889   | 679    | .79438   | 57 |
| 58 | 226    | .39792   | 966    | .21730   | 708    | .89755   | 58 |
| 59 | 255    | .43509   | 995    | .27620   | 737    | 18.00185 | 59 |
| 60 | .91284 | 10.47371 | .93024 | 13.33559 | .94766 | 18.10732 | 60 |



| M. | 87°    |           | 88°    |           | 89°      |             | M. |
|----|--------|-----------|--------|-----------|----------|-------------|----|
|    | Vers.  | Exsec.    | Vers.  | Exsec.    | Vers.    | Exsec.      |    |
| 0  | .94766 | 18. 10732 | .96510 | 27. 65371 | .98255   | 56. 29869   | 0  |
| 1  | .795   | . 21397   | . 539  | . 80440   | . 284    | 57. 26975   | 1  |
| 2  | . 825  | . 32182   | . 568  | 28. 13917 | . 313    | 58. 27431   | 2  |
| 3  | . 854  | . 43088   | . 597  | . 38812   | . 342    | 59. 31411   | 3  |
| 4  | . 883  | . 54119   | . 626  | . 64137   | . 371    | 60. 39105   | 4  |
| 5  | .94912 | 18. 65275 | .96655 | 28. 89903 | .98400   | 61. 50715   | 5  |
| 6  | . 941  | . 76560   | . 684  | 29. 16120 | . 429    | 62. 66460   | 6  |
| 7  | . 970  | . 87976   | . 714  | . 42802   | . 458    | 63. 86572   | 7  |
| 8  | . 999  | . 99524   | . 743  | . 69960   | . 487    | 65. 11304   | 8  |
| 9  | .95028 | 19. 11207 | . 772  | . 97607   | . 517    | 66. 40927   | 9  |
| 10 | .95057 | 19. 23028 | .96801 | 30. 25758 | .98546   | 67. 75736   | 10 |
| 11 | .086   | . 34989   | . 830  | . 54425   | . 575    | 69. 16047   | 11 |
| 12 | . 115  | . 47093   | . 859  | . 83623   | . 604    | 70. 62205   | 12 |
| 13 | . 144  | . 59341   | . 888  | 31. 13366 | . 633    | 72. 14583   | 13 |
| 14 | . 173  | . 71737   | . 917  | . 43671   | . 662    | 73. 73586   | 14 |
| 15 | .95202 | 19. 84283 | .96946 | 31. 74554 | .98691   | 75. 39655   | 15 |
| 16 | . 231  | . 96982   | . 975  | 32. 06030 | . 720    | 77. 13274   | 16 |
| 17 | . 260  | 20. 09838 | .97004 | . 38118   | . 749    | 78. 94968   | 17 |
| 18 | . 289  | . 22852   | . 933  | . 70835   | . 778    | 80. 85315   | 18 |
| 19 | . 318  | . 36027   | . 062  | 33. 04199 | . 807    | 82. 84947   | 19 |
| 20 | .95347 | 20. 49368 | .97092 | 33. 38232 | .98836   | 84. 94561   | 20 |
| 21 | . 377  | . 62876   | . 121  | . 72951   | . 866    | 87. 14924   | 21 |
| 22 | . 406  | . 76555   | . 150  | 34. 08380 | . 895    | 89. 46886   | 22 |
| 23 | . 435  | . 90409   | . 179  | . 44539   | . 924    | 91. 91387   | 23 |
| 24 | . 464  | 21. 04440 | . 208  | . 81452   | . 953    | 94. 49471   | 24 |
| 25 | .95493 | 21. 18653 | .97237 | 35. 19141 | .98982   | 97. 22303   | 25 |
| 26 | . 522  | . 33950   | . 266  | . 57633   | .99011   | 100. 11185  | 26 |
| 27 | . 551  | . 47635   | . 295  | . 96953   | . 040    | 103. 17574  | 27 |
| 28 | . 580  | . 62413   | . 324  | 36. 37127 | . 069    | 106. 43114  | 28 |
| 29 | . 609  | . 77386   | . 353  | . 78185   | . 098    | 109. 89656  | 29 |
| 30 | .95638 | 21. 92559 | .97382 | 37. 20155 | .99127   | 113. 59301  | 30 |
| 31 | . 667  | 22. 07935 | . 411  | . 63068   | . 156    | 117. 54440  | 31 |
| 32 | . 696  | . 23520   | . 440  | 38. 06957 | . 186    | 121. 77803  | 32 |
| 33 | . 725  | . 39316   | . 470  | . 51855   | . 215    | 126. 32526  | 33 |
| 34 | . 754  | . 55329   | . 499  | . 97797   | . 244    | 131. 22229  | 34 |
| 35 | .95783 | 22. 71563 | .97528 | 39. 44820 | .99273   | 136. 51108  | 35 |
| 36 | . 812  | . 88022   | . 557  | . 92963   | . 302    | 142. 24061  | 36 |
| 37 | . 841  | 23. 04712 | . 586  | 40. 42266 | . 331    | 148. 46837  | 37 |
| 38 | . 871  | . 21637   | . 615  | . 92772   | . 360    | 155. 26228  | 38 |
| 39 | . 900  | . 38802   | . 644  | 41. 44525 | . 389    | 162. 70325  | 39 |
| 40 | .95929 | 23. 56212 | .97673 | 41. 97571 | .99418   | 170. 88831  | 40 |
| 41 | . 958  | . 73873   | . 702  | 42. 51961 | . 447    | 179. 93496  | 41 |
| 42 | . 987  | . 91790   | . 731  | 43. 07746 | . 476    | 189. 98680  | 42 |
| 43 | .96016 | 24. 09969 | . 760  | . 64980   | . 505    | 201. 22122  | 43 |
| 44 | . 045  | . 28414   | . 789  | 44. 23719 | . 535    | 213. 85995  | 44 |
| 45 | .96074 | 24. 47134 | .97819 | 44. 84026 | .99564   | 228. 18385  | 45 |
| 46 | . 103  | . 66132   | . 848  | 45. 45963 | . 593    | 244. 55402  | 46 |
| 47 | . 132  | . 85417   | . 877  | 46. 09596 | . 622    | 263. 44269  | 47 |
| 48 | . 161  | 25. 04994 | . 906  | . 74997   | . 651    | 285. 47948  | 48 |
| 49 | . 190  | . 24869   | . 935  | 47. 42241 | . 680    | 311. 52297  | 49 |
| 50 | .96219 | 25. 45951 | .97964 | 48. 11406 | .99709   | 342. 77516  | 50 |
| 51 | . 248  | . 65545   | . 993  | . 82576   | . 738    | 380. 97230  | 51 |
| 52 | . 277  | . 86360   | .98022 | 49. 55840 | . 767    | 428. 71873  | 52 |
| 53 | . 307  | 26. 07503 | . 051  | 50. 31290 | . 796    | 490. 10702  | 53 |
| 54 | . 336  | . 28981   | . 080  | 51. 09027 | . 825    | 571. 95809  | 54 |
| 55 | .96365 | 26. 50804 | .98109 | 51. 89156 | .99855   | 686. 54960  | 55 |
| 56 | . 394  | . 72978   | . 138  | 52. 71790 | . 884    | 858. 43689  | 56 |
| 57 | . 423  | . 95512   | . 168  | 53. 57046 | . 913    | 1144. 91574 | 57 |
| 58 | . 452  | 27. 18417 | . 197  | 54. 45953 | . 942    | 1717. 87348 | 58 |
| 59 | . 481  | . 41700   | . 226  | 55. 35946 | . 971    | 3436. 74682 | 59 |
| 60 | .96510 | 27. 65371 | .98255 | 56. 29869 | 1. 00000 | ∞           | 60 |

## 中英名詞對照表

|       |   |       |  |
|-------|---|-------|--|
| 草測    | Reconnaissance                          | 繫綫    | Tie Lie                                    |
| 初測    | Preliminary Survey                      | 平板遊標  | Plate Vernier                              |
| 定測    | Location Survey                         | 下止動螺絲 | Lower Clamp                                |
| 空盒驗壓器 | Aneroid Barometer                       | 偏角法   | Deflection Angle Method                    |
| 記步器   | Pedometer                               | 全圓方位法 | Azimuth Method                             |
| 轉數器   | Odometer                                | 視距測量  | Stadia Survey                              |
| 山脊綫   | Ridge Line                              | 視距綫   | Stadia Wires                               |
| 山谷綫   | Valley Line                             | 十字綫   | Cross Hair                                 |
| 限制坡度  | Ruling Grade                            | 經距    | Departures                                 |
| 展綫法   | Development                             | 緯距    | Latitudes                                  |
| 氣壓觀測  | Barometric Levelling                    | 紙上定綫法 | Paper Location                             |
| 水銀氣壓表 | Mercurial Barometer                     | 曲綫補償率 | Curve Compensation                         |
| 固定站   | Fixed Station                           | 洩水面積  | Drainage Area                              |
| 指差    | Index Error                             | 細部測定  | Detail Survey                              |
| 水平基面  | Datum Plane                             | 單曲綫   | Simple Curves                              |
| 視距儀   | Telemeter                               | 切綫    | Tangent                                    |
| 坡度    | Grade                                   | 頂點    | Vertex                                     |
| 上坡道   | Up Grade                                | 曲綫起點  | Beginning of Curve 或<br>Point of Curvature |
| 下坡道   | Down Grade                              | 曲綫終點  | End of Curve 或 Point of<br>Tangency        |
| 最大坡度  | Maximum Grade                           | 切綫距   | Tangent Distance                           |
| 護樁    | Guard Stakes                            | 外距    | External Distance                          |
| 比較綫   | Alternative Line                        | 中長    | Middle Ordinate                            |
| 管取點   | Controlling Point, Govern-<br>ing Point | 半徑    | Radius                                     |
| 中斷數   | Broken Chainage                         | 中心角   | Intersection Angle                         |
| 中綫組   | Center Line                             | 弦長    | Long Chord                                 |
| 經緯儀組  | Transit Party                           | 曲度    | Degree of Curve                            |
| 中平組   | Center Level Party                      | 分弦    | Sub-Chord                                  |
| 覆平組   | Check Level Party                       | 分角    | Sub-Angle                                  |
| 地形組   | Topographical Party                     | 曲綫長   | Length of Curve                            |
| 水平基點  | Bench Marks                             | 鐵路曲綫板 | Railroad Curves                            |
| 等高綫   | Contours                                | 切綫橫距  | Co-ordinates                               |
| 方位角   | Bearing                                 | 切綫縱距  | Ordinates                                  |
| 磁子午綫  | Magnetic Meridian                       | 割綫    | Secant                                     |
| 真子午綫  | True Meridian                           |       |  |

- 總偏角 Total Deflections  
 切綫支距 Tangential Offsets  
 切綫偏距 Tangential Deflection Offsets  
 弦綫偏距 Chord Deflection Offsets  
 複曲綫 Compound Curves  
 複綫點 Point of Compound Curvature  
 緩和曲綫 Transition Curve, 或 Spiral Easement Curve  
 外軌超高度 Superelevation of Outer rail  
 螺旋角 Spiral Angle  
 螺旋綫 Spiral  
 三次拋物綫 Cubic Parabola  
 三次螺旋綫 Cubic Spiral  
 豎曲綫 Vertical Curves  
 填土 Embankment  
 挖土 Excavation  
 路坡 Side Slope  
 坡度角 Slope Angle  
 土方 Earthwork  
 石方 Rock Excavation  
 水平橫斷面 Level Cross-Section  
 三點橫斷面 Three-Level Section  
 五點橫斷面 Five-Level Section  
 不規則橫斷面 Irregular Section  
 面積計 Planimeter  
 安斯萊定極面積計 Amsler's Polar Planimeter  
 平均面積 Averaging End Areas  
 擬壩公式 Prismoidal Formula  
 稜形體 Prism  
 稜錐體 Pyramid  
 楔形體 Wedge  
 擬壩更正數 Prismoidal Correctior  
 取土坑 Borrow Pit  
 截形三稜體 Truncated Triangular Prisms  
 截形四稜體 Truncated Rectangular Prisms  
 積合稜形體 Assembled Prisms  
 沉落土 Shrinkage  
 邊樁 Slope Stakes  
 護土牆 Retaining Walls  
 上承鋼桁橋 Thru Truss Bridge  
 下承鋼桁橋 Deck Truss Bridge  
 上承鋼版橋 Deck Plate Girder Bridge  
 拱石 Arch Ring  
 面石 Surfacing Stone  
 塊石 Square Stone  
 蠻石 Loose Rubble  
 交路 Road Crossing  
 轉轍器 Turnouts  
 遠距號誌 Distance signal  
 進站號誌 Home Signal  
 灰坑 Ash Pits  
 旋橋 Turntable  
 水塔 Water Tower  
 水櫃 Water Tank  
 水鶴 Stand Pipes