calc2: All

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Contents

1 b_waves_PC

1. People don't usually perceive an echo when[1]
   A. it arrives less than a tenth of a second after the original sound
   B. it arrives at exactly the same pitch
   C. it arrives at a higher pitch
   D. it arrives at a lower pitch
   E. it takes more than a tenth of a second after the original sound to arrive

2. Why do rough walls give a concert hall a fuller sound, compared to smooth walls?[2]
   A. Rough walls make for a louder sound.
   B. The difference in path lengths creates more reverberation.
   C. The difference in path lengths creates more echo.

3. Comparing a typical church to a professional baseball stadium, the church is likely to have[3]
   A. reverberation instead of echo
   B. echo instead of reverberation
   C. both reverberation and echo

The next page might contain more answer choices for this question

D. neither reverberation nor echo

4. A dense rope is connected to a rope with less density (i.e. fewer kilograms per meter). If the rope is stretched and a wave is sent along high density rope towards the low density rope,[4]

   A. the low density rope supports a wave with a higher frequency

   B. the low density rope supports a wave with a lower frequency

   C. the low density rope supports a wave with a higher speed

   D. the low density rope supports a wave with a lower speed

5. A low density rope is connected to a rope with higher density (i.e. more kilograms per meter). If the rope is stretched and a wave is sent along the low density rope towards the high density rope,[5]

   A. the high density rope supports a wave with a higher frequency

   B. the high density rope supports a wave with a lower frequency

   C. the high density rope supports a wave with a higher speed

   D. the high density rope supports a wave with a lower speed

6. What happens to the wavelength on a wave on a stretched string if the wave passes from lightweight (low density) region of the rope to a heavy (high density) rope?[6]

   A. the wavelength gets longer

   B. the wavelength stays the same

   C. the wavelength gets shorter

7. When a wave is reflected off a stationary barrier, the reflected wave[7]

   A. has lower amplitude than the incident wave

   B. has higher frequency than the incident wave

   C. both of these are true

8.  These two pulses will collide and produce[8]

   A. constructive interference

   B. destructive interference

   C. constructive diffraction

   D. destructive diffraction

9.  These two pulses will collide and produce[9]

   A. constructive interference

   B. destructive interference

   C. constructive diffraction

   D. destructive diffraction

10.  The two solid signals add to a (dashed)[10]

   A. octave

   B. fifth

   C. dissonance

The next page might contain more answer choices for this question

11.  The two solid signals add to a (dashed)[11]

    A. octave

    B. fifth

    C. dissonance

12.  The two solid signals add to a (dashed)[12]

    A. octave

    B. fifth

    C. dissonance

13. Why don't we hear beats when two different notes on a piano are played at the same time?[13]

    A. The beats happen so many times per second you can't hear them.

    B. The note is over by the time the first beat is heard

    C. Reverberation usually stifles the beats

    D. Echo usually stifles the beats

14. A tuning fork with a frequency of 440 Hz is played simultaneously with a tuning fork of 442 Hz. How many beats are heard in 10 seconds?[14]

    A. 20

    B. 30

    C. 40

    D. 50

    E. 60

15. If you start moving towards a source of sound, the pitch[15]

    A. becomes higher

    B. becomes lower

    C. remains unchanged

16. If a source of sound is moving towards you, the pitch [16]

    A. becomes higher

    B. becomes lower

    C. remains unchanged

2 a18ElectricChargeField_findE

1. What is the magnitude of the electric field at the origin if a 1.8 nC charge is placed at x = 7.9 m, and a 2.1 nC charge is placed at y = 7 m?[17]

    A. 2.61 x 10^{-1}N/C

    B. 3.02 x 10^{-1}N/C

    C. 3.48 x 10^{-1}N/C

    D. 4.02 x 10^{-1}N/C

The next page might contain more answer choices for this question

E. 4.64×10^{-1}N/C

2. What angle does the electric field at the origin make with the x-axis if a 1.1 nC charge is placed at x = -6.5 m, and a 1.4 nC charge is placed at y = -8.3 m?[18]
   A. 3.8×10^{1}degrees
   B. 4.39×10^{1}degrees
   C. 5.06×10^{1}degrees
   D. 5.85×10^{1}degrees
   E. 6.75×10^{1}degrees

3. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 4a) is β kQ/a^2, where β equals[19]
   A. 1.33×10^{-3}
   B. 1.61×10^{-3}
   C. 1.95×10^{-3}
   D. 2.37×10^{-3}
   E. 2.87×10^{-3}

4. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals [20]
   A. 2.36×10^{-1}
   B. 2.86×10^{-1}
   C. 3.47×10^{-1}
   D. 4.2×10^{-1}
   E. 5.09×10^{-1}

2.1 Renditions

a18ElectricChargeField_findE Q1

1. What is the magnitude of the electric field at the origin if a 2.9 nC charge is placed at x = 5.9 m, and a 2.7 nC charge is placed at y = 9.2 m?
   A. 8.02×10^{-1}N/C
   B. 9.26×10^{-1}N/C
   C. 1.07×10^{0}N/C
   D. 1.23×10^{0}N/C
   E. 1.43×10^{0}N/C

2. What is the magnitude of the electric field at the origin if a 2.1 nC charge is placed at x = 7 m, and a 2.1 nC charge is placed at y = 8.6 m?
   A. 3×10^{-1}N/C
   B. 3.47×10^{-1}N/C
   C. 4×10^{-1}N/C
   D. 4.62×10^{-1}N/C
   E. 5.34×10^{-1}N/C

The next page might contain more answer choices for this question

3. What is the magnitude of the electric field at the origin if a 3.1 nC charge is placed at x = 6.2 m, and a 2.6 nC charge is placed at y = 6 m?
   A. 5.47 x 10^{-1}N/C
   B. 6.32 x 10^{-1}N/C
   C. 7.3 x 10^{-1}N/C
   D. 8.43 x 10^{-1}N/C
   E. 9.73 x 10^{-1}N/C

4. What is the magnitude of the electric field at the origin if a 3 nC charge is placed at x = 5.1 m, and a 2 nC charge is placed at y = 8.6 m?
   A. 7.99 x 10^{-1}N/C
   B. 9.22 x 10^{-1}N/C
   C. 1.07 x 10^{0}N/C
   D. 1.23 x 10^{0}N/C
   E. 1.42 x 10^{0}N/C

5. What is the magnitude of the electric field at the origin if a 1.8 nC charge is placed at x = 9.6 m, and a 2 nC charge is placed at y = 8.7 m?
   A. 2.95 x 10^{-1}N/C
   B. 3.41 x 10^{-1}N/C
   C. 3.94 x 10^{-1}N/C
   D. 4.55 x 10^{-1}N/C
   E. 5.25 x 10^{-1}N/C

6. What is the magnitude of the electric field at the origin if a 1.7 nC charge is placed at x = 6.4 m, and a 3 nC charge is placed at y = 8 m?
   A. 4.22 x 10^{-1}N/C
   B. 4.87 x 10^{-1}N/C
   C. 5.63 x 10^{-1}N/C
   D. 6.5 x 10^{-1}N/C
   E. 7.51 x 10^{-1}N/C

7. What is the magnitude of the electric field at the origin if a 1.9 nC charge is placed at x = 9.7 m, and a 3.1 nC charge is placed at y = 5.5 m?
   A. 5.28 x 10^{-1}N/C
   B. 6.1 x 10^{-1}N/C
   C. 7.04 x 10^{-1}N/C
   D. 8.13 x 10^{-1}N/C
   E. 9.39 x 10^{-1}N/C

8. What is the magnitude of the electric field at the origin if a 2.7 nC charge is placed at x = 9.1 m, and a 2.5 nC charge is placed at y = 5.9 m?
   A. 3.99 x 10^{-1}N/C
   B. 4.6 x 10^{-1}N/C

The next page might contain more answer choices for this question

C. 5.32×10^{-1}N/C

D. 6.14×10^{-1}N/C

E. 7.09×10^{-1}N/C

9. What is the magnitude of the electric field at the origin if a 1.2 nC charge is placed at x = 5.9 m, and a 3.1 nC charge is placed at y = 6.1 m?

A. 7.02×10^{-1}N/C

B. 8.11×10^{-1}N/C

C. 9.36×10^{-1}N/C

D. 1.08×10^{0}N/C

E. 1.25×10^{0}N/C

10. What is the magnitude of the electric field at the origin if a 1.4 nC charge is placed at x = 8.2 m, and a 2.3 nC charge is placed at y = 5.9 m?

A. 5.39×10^{-1}N/C

B. 6.23×10^{-1}N/C

C. 7.19×10^{-1}N/C

D. 8.31×10^{-1}N/C

E. 9.59×10^{-1}N/C

11. What is the magnitude of the electric field at the origin if a 3 nC charge is placed at x = 8.8 m, and a 2.9 nC charge is placed at y = 6.9 m?

A. 4.87×10^{-1}N/C

B. 5.62×10^{-1}N/C

C. 6.49×10^{-1}N/C

D. 7.49×10^{-1}N/C

E. 8.65×10^{-1}N/C

12. What is the magnitude of the electric field at the origin if a 2.5 nC charge is placed at x = 5.3 m, and a 1.9 nC charge is placed at y = 5.6 m?

A. 7.26×10^{-1}N/C

B. 8.38×10^{-1}N/C

C. 9.68×10^{-1}N/C

D. 1.12×10^{0}N/C

E. 1.29×10^{0}N/C

13. What is the magnitude of the electric field at the origin if a 1.8 nC charge is placed at x = 5.2 m, and a 3.1 nC charge is placed at y = 7.6 m?

A. 7.69×10^{-1}N/C

B. 8.88×10^{-1}N/C

C. 1.03×10^{0}N/C

D. 1.18×10^{0}N/C

E. 1.37×10^{0}N/C

The next page might contain more answer choices for this question

a18ElectricChargeField_findE Q2

1. What angle does the electric field at the origin make with the x-axis if a 1.3 nC charge is placed at x = -9 m, and a 1.5 nC charge is placed at y = -5.2 m?
   - A. 4.15 x 10^1degrees
   - B. 4.8 x 10^1degrees
   - C. 5.54 x 10^1degrees
   - D. 6.4 x 10^1degrees
   - **E. 7.39 x 10^1degrees**
2. What angle does the electric field at the origin make with the x-axis if a 1.4 nC charge is placed at x = -8.7 m, and a 2.7 nC charge is placed at y = -8.3 m?
   - A. 4.85 x 10^1degrees
   - B. 5.61 x 10^1degrees
   - **C. 6.47 x 10^1degrees**
   - D. 7.48 x 10^1degrees
   - E. 8.63 x 10^1degrees
3. What angle does the electric field at the origin make with the x-axis if a 2 nC charge is placed at x = -8.7 m, and a 2.7 nC charge is placed at y = -5.2 m?
   - A. 4.23 x 10^1degrees
   - B. 4.88 x 10^1degrees
   - C. 5.64 x 10^1degrees
   - D. 6.51 x 10^1degrees
   - **E. 7.52 x 10^1degrees**
4. What angle does the electric field at the origin make with the x-axis if a 2 nC charge is placed at x = -8 m, and a 1.4 nC charge is placed at y = -9.3 m?
   - A. 2.37 x 10^1degrees
   - **B. 2.74 x 10^1degrees**
   - C. 3.16 x 10^1degrees
   - D. 3.65 x 10^1degrees
   - E. 4.22 x 10^1degrees
5. What angle does the electric field at the origin make with the x-axis if a 1.9 nC charge is placed at x = -5.4 m, and a 1.5 nC charge is placed at y = -7.1 m?
   - A. 1.38 x 10^1degrees
   - B. 1.59 x 10^1degrees
   - C. 1.84 x 10^1degrees
   - D. 2.13 x 10^1degrees
   - **E. 2.45 x 10^1degrees**
6. What angle does the electric field at the origin make with the x-axis if a 1.8 nC charge is placed at x = -6.9 m, and a 2.5 nC charge is placed at y = -7.5 m?
   - A. 2.79 x 10^1degrees

The next page might contain more answer choices for this question

B. 3.22×10^{1}degrees
C. 3.72×10^{1}degrees
D. 4.3×10^{1}degrees
E. 4.96×10^{1}degrees

7. What angle does the electric field at the origin make with the x-axis if a 1.4 nC charge is placed at x = -5.5 m, and a 2.8 nC charge is placed at y = -6.8 m?
   A. 3.95×10^{1}degrees
   B. 4.56×10^{1}degrees
   C. 5.26×10^{1}degrees
   D. 6.08×10^{1}degrees
   E. 7.02×10^{1}degrees

8. What angle does the electric field at the origin make with the x-axis if a 2.6 nC charge is placed at x = -8.3 m, and a 2.5 nC charge is placed at y = -9.6 m?
   A. 2.32×10^{1}degrees
   B. 2.68×10^{1}degrees
   C. 3.09×10^{1}degrees
   D. 3.57×10^{1}degrees
   E. 4.12×10^{1}degrees

9. What angle does the electric field at the origin make with the x-axis if a 2.8 nC charge is placed at x = -8 m, and a 1.5 nC charge is placed at y = -8.7 m?
   A. 2.44×10^{1}degrees
   B. 2.81×10^{1}degrees
   C. 3.25×10^{1}degrees
   D. 3.75×10^{1}degrees
   E. 4.33×10^{1}degrees

10. What angle does the electric field at the origin make with the x-axis if a 2.9 nC charge is placed at x = -7.3 m, and a 1.7 nC charge is placed at y = -8.1 m?
    A. 2.55×10^{1}degrees
    B. 2.94×10^{1}degrees
    C. 3.4×10^{1}degrees
    D. 3.92×10^{1}degrees
    E. 4.53×10^{1}degrees

11. What angle does the electric field at the origin make with the x-axis if a 2.8 nC charge is placed at x = -9.8 m, and a 2.8 nC charge is placed at y = -5.8 m?
    A. 7.07×10^{1}degrees
    B. 8.16×10^{1}degrees
    C. 9.43×10^{1}degrees
    D. 1.09×10^{2}degrees
    E. 1.26×10^{2}degrees

The next page might contain more answer choices for this question

12. What angle does the electric field at the origin make with the x-axis if a 1.2 nC charge is placed at x = -6.7 m, and a 1.7 nC charge is placed at y = -6.1 m?
    A. 4.47 x 10^1degrees
    B. 5.17 x 10^1degrees
    C. 5.97 x 10^1degrees
    D. 6.89 x 10^1degrees
    E. 7.96 x 10^1degrees

13. What angle does the electric field at the origin make with the x-axis if a 2.9 nC charge is placed at x = -6.3 m, and a 2.1 nC charge is placed at y = -8.8 m?
    A. 1.32 x 10^1degrees
    B. 1.53 x 10^1degrees
    C. 1.76 x 10^1degrees
    D. 2.04 x 10^1degrees
    E. 2.35 x 10^1degrees

a18ElectricChargeField_findE Q3

1. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 3a) is β kQ/a^2, where β equals
    A. 4.1 x 10^{-3}
    B. 4.96 x 10^{-3}
    C. 6.01 x 10^{-3}
    D. 7.28 x 10^{-3}
    E. 8.82 x 10^{-3}

2. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 5a) is β kQ/a^2, where β equals
    A. 6.11 x 10^{-4}
    B. 7.4 x 10^{-4}
    C. 8.97 x 10^{-4}
    D. 1.09 x 10^{-3}
    E. 1.32 x 10^{-3}

3. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 5a) is β kQ/a^2, where β equals
    A. 1.61 x 10^{-3} unit
    B. 1.95 x 10^{-3} unit
    C. 2.36 x 10^{-3} unit
    D. 2.86 x 10^{-3} unit
    E. 3.46 x 10^{-3} unit

4. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 3a) is β kQ/a^2, where β equals

The next page might contain more answer choices for this question

A. 3.38 x 10^{-3} unit
B. 4.1 x 10^{-3} unit
C. 4.96 x 10^{-3} unit
D. 6.01 x 10^{-3} unit
E. 7.28 x 10^{-3} unit

5. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(5a, 4a) is β kQ/a^2, where β equals
   A. 1.76 x 10^{-3} unit
   B. 2.13 x 10^{-3} unit
   C. 2.59 x 10^{-3} unit
   D. 3.13 x 10^{-3} unit
   E. 3.79 x 10^{-3} unit
6. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 6a) is β kQ/a^2, where β equals
   A. 1.52 x 10^{-4} unit
   B. 1.85 x 10^{-4} unit
   C. 2.24 x 10^{-4} unit
   D. 2.71 x 10^{-4} unit
   E. 3.28 x 10^{-4} unit
7. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 4a) is β kQ/a^2, where β equals
   A. 2.22 x 10^{-3} unit
   B. 2.69 x 10^{-3} unit
   C. 3.26 x 10^{-3} unit
   D. 3.95 x 10^{-3} unit
   E. 4.79 x 10^{-3} unit
8. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 5a) is β kQ/a^2, where β equals
   A. 1.09 x 10^{-3} unit
   B. 1.33 x 10^{-3} unit
   C. 1.61 x 10^{-3} unit
   D. 1.95 x 10^{-3} unit
   E. 2.36 x 10^{-3} unit
9. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(3a, 5a) is β kQ/a^2, where β equals
   A. 1.08 x 10^{-3} unit
   B. 1.31 x 10^{-3} unit
   C. 1.59 x 10^{-3} unit
   D. 1.93 x 10^{-3} unit

The next page might contain more answer choices for this question

E. 2.34×10^{-3} unit

10. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(4a, 2a) is β kQ/a^2, where β equals

    A. 7.31×10^{-3} unit

    B. 8.86×10^{-3} unit

    C. 1.07×10^{-2} unit

    D. 1.3×10^{-2} unit

    E. 1.57×10^{-2} unit

11. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 4a) is β kQ/a^2, where β equals

    A. 1.33×10^{-3} unit

    B. 1.61×10^{-3} unit

    C. 1.95×10^{-3} unit

    D. 2.37×10^{-3} unit

    E. 2.87×10^{-3} unit

12. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(5a, 5a) is β kQ/a^2, where β equals

    A. 6.46×10^{-4} unit

    B. 7.82×10^{-4} unit

    C. 9.48×10^{-4} unit

    D. 1.15×10^{-3} unit

    E. 1.39×10^{-3} unit

13. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the x component of the electric field at (x,y) =(6a, 5a) is β kQ/a^2, where β equals

    A. 1.33×10^{-3} unit

    B. 1.61×10^{-3} unit

    C. 1.95×10^{-3} unit

    D. 2.36×10^{-3} unit

    E. 2.86×10^{-3} unit

a18ElectricChargeField_findE Q4

1. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals

    A. 1.61×10^{-1}

    B. 1.95×10^{-1}

    C. 2.36×10^{-1}

    D. 2.86×10^{-1}

    E. 3.47×10^{-1}

The next page might contain more answer choices for this question

2. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals
   - A. 2.86 x 10^{-1}
   - **B. 3.47 x 10^{-1}**
   - C. 4.2 x 10^{-1}
   - D. 5.09 x 10^{-1}
   - E. 6.17 x 10^{-1}

3. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals
   - **A. 3.47 x 10^{-1} unit**
   - B. 4.2 x 10^{-1} unit
   - C. 5.09 x 10^{-1} unit
   - D. 6.17 x 10^{-1} unit
   - E. 7.47 x 10^{-1} unit

4. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals
   - A. 2.36 x 10^{-1} unit
   - B. 2.86 x 10^{-1} unit
   - **C. 3.47 x 10^{-1} unit**
   - D. 4.2 x 10^{-1} unit
   - E. 5.09 x 10^{-1} unit

5. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals
   - A. 1.61 x 10^{-1} unit
   - B. 1.95 x 10^{-1} unit
   - C. 2.36 x 10^{-1} unit
   - D. 2.86 x 10^{-1} unit
   - **E. 3.47 x 10^{-1} unit**

6. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals
   - A. 2.36 x 10^{-1} unit
   - B. 2.86 x 10^{-1} unit
   - **C. 3.47 x 10^{-1} unit**
   - D. 4.2 x 10^{-1} unit
   - E. 5.09 x 10^{-1} unit

7. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals
   - A. 2.86 x 10^{-1} unit
   - **B. 3.47 x 10^{-1} unit**

The next page might contain more answer choices for this question

C. 4.2×10^{-1} unit

D. 5.09×10^{-1} unit

E. 6.17×10^{-1} unit

8. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals

A. 3.47×10^{-1} unit

B. 4.2×10^{-1} unit

C. 5.09×10^{-1} unit

D. 6.17×10^{-1} unit

E. 7.47×10^{-1} unit

9. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals

A. 1.95×10^{-1} unit

B. 2.36×10^{-1} unit

C. 2.86×10^{-1} unit

D. 3.47×10^{-1} unit

E. 4.2×10^{-1} unit

10. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals

A. 1.95×10^{-1} unit

B. 2.36×10^{-1} unit

C. 2.86×10^{-1} unit

D. 3.47×10^{-1} unit

E. 4.2×10^{-1} unit

11. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals

A. 1.61×10^{-1} unit

B. 1.95×10^{-1} unit

C. 2.36×10^{-1} unit

D. 2.86×10^{-1} unit

E. 3.47×10^{-1} unit

12. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals

A. 1.95×10^{-1} unit

B. 2.36×10^{-1} unit

C. 2.86×10^{-1} unit

D. 3.47×10^{-1} unit

E. 4.2×10^{-1} unit

The next page might contain more answer choices for this question

13. A dipole at the origin consists of charge Q placed at x = 0.5a, and charge of -Q placed at x = -0.5a. The absolute value of the y component of the electric field at (x,y) =(1.1a, 1.2a) is β kQ/a^2, where β equals

A. 1.95 x 10^{-1} unit

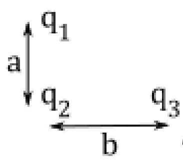
B. 2.36 x 10^{-1} unit

C. 2.86 x 10^{-1} unit

D. 3.47 x 10^{-1} unit

E. 4.2 x 10^{-1} unit

3 d_cp2.5



1. Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 2e$, $q_2 = -3e$, and $q_3 = 5e$?[21]

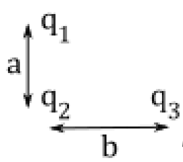
A. 3.710E-14 N

B. 4.081E-14 N

C. 4.489E-14 N

D. 4.938E-14 N

E. 5.432E-14 N



2. Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 2e$, $q_2 = -3e$, and $q_3 = 5e$?[22]

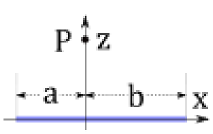
A. 3.961E+01 degrees

B. 4.357E+01 degrees

C. 4.793E+01 degrees

D. 5.272E+01 degrees

E. 5.799E+01 degrees



3. $E_z(x = 0, z) = \int_{-a}^{b} f(x, z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.5 m. Evaluate $f(x, y)$ at x=1 m if a=0.7 m, b=1.2 m. The total charge on the rod is 2 nC.[23]

A. 2.422E+00 V/m^2

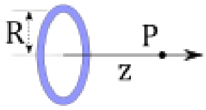
B. 2.664E+00 V/m^2

C. 2.931E+00 V/m^2

D. 3.224E+00 V/m^2

E. 3.546E+00 V/m^2

The next page might contain more answer choices for this question

4. 

A ring is uniformly charged with a net charge of 2 nC. The radius of the ring is R=1.1 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=0.5 m (on axis) away from the loop's center?[24]

   A. 4.210E+09 N/C^2
   B. 4.631E+09 N/C^2
   C. 5.095E+09 N/C^2
   D. 5.604E+09 N/C^2
   E. 6.164E+09 N/C^2

5. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 2$ m and the surface charge density is $\sigma = 1$ nC/m^3. Evaluate $f(r', z)$ at $r' = 1$ m.[25]

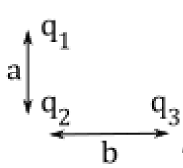
   A. 1.364E+01 V/m^2
   B. 1.500E+01 V/m^2
   C. 1.650E+01 V/m^2
   D. 1.815E+01 V/m^2
   E. 1.997E+01 V/m^2

6. A large thin isolated square plate has an area of 2 m^2. It is uniformly charged with 3 nC of charge. What is the magnitude of the electric field 2 mm from the center of the plate's surface?[26]

   A. 8.471E+01 N/C
   B. 9.318E+01 N/C
   C. 1.025E+02 N/C
   D. 1.127E+02 N/C
   E. 1.240E+02 N/C

3.1 Renditions

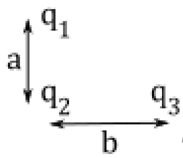
d_cp2.5 Q1

1. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -8e$, and $q_3 = 3e$?

   A. 5.768E-14 N
   B. 6.344E-14 N
   C. 6.979E-14 N
   D. 7.677E-14 N
   E. 8.444E-14 N

The next page might contain more answer choices for this question



2. Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 3e$, $q_2 = -7e$, and $q_3 = 6e$?

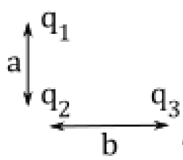
A. 2.544E-14 N

B. 2.798E-14 N

C. 3.078E-14 N

D. 3.385E-14 N

E. 3.724E-14 N



3. Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 3e$, $q_2 = -7e$, and $q_3 = 6e$?

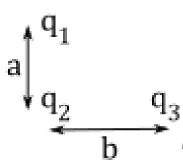
A. 1.028E-14 N

B. 1.130E-14 N

C. 1.244E-14 N

D. 1.368E-14 N

E. 1.505E-14 N



4. Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 2e$, $q_2 = -8e$, and $q_3 = 4e$?

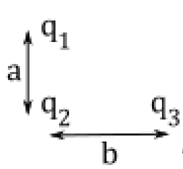
A. 8.613E-15 N

B. 9.474E-15 N

C. 1.042E-14 N

D. 1.146E-14 N

E. 1.261E-14 N



5. Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 3e$, $q_2 = -9e$, and $q_3 = 6e$?

A. 1.308E-13 N

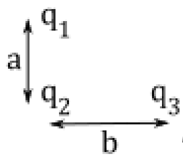
B. 1.439E-13 N

C. 1.583E-13 N

D. 1.741E-13 N

E. 1.915E-13 N

The next page might contain more answer choices for this question

6. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -8e$, and $q_3 = 3e$?

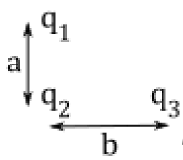
A. 5.243E-14 N

B. 5.768E-14 N

C. 6.344E-14 N

D. 6.979E-14 N

E. 7.677E-14 N

7. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -8e$, and $q_3 = 2e$?

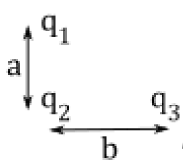
A. 5.732E-15 N

B. 6.305E-15 N

C. 6.936E-15 N

D. 7.629E-15 N

E. 8.392E-15 N

8. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -7e$, and $q_3 = 2e$?

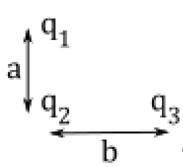
A. 3.426E-15 N

B. 3.768E-15 N

C. 4.145E-15 N

D. 4.560E-15 N

E. 5.015E-15 N

9. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 2e$, $q_2 = -8e$, and $q_3 = 5e$?

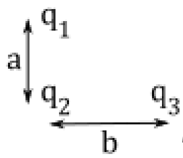
A. 8.259E-15 N

B. 9.085E-15 N

C. 9.993E-15 N

D. 1.099E-14 N

E. 1.209E-14 N



10. Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 2e$, $q_2 = -7e$, and $q_3 = 3e$?

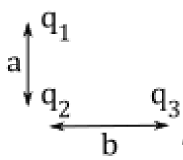
A. 1.473E-14 N

B. 1.620E-14 N

C. 1.782E-14 N

D. 1.960E-14 N

E. 2.156E-14 N



11. Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 2e$, $q_2 = -8e$, and $q_3 = 5e$?

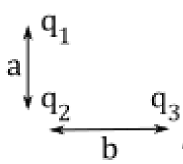
A. 2.248E-14 N

B. 2.473E-14 N

C. 2.721E-14 N

D. 2.993E-14 N

E. 3.292E-14 N



12. Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 3e$, $q_2 = -7e$, and $q_3 = 5e$?

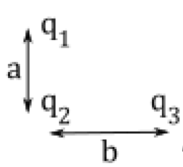
A. 9.958E-15 N

B. 1.095E-14 N

C. 1.205E-14 N

D. 1.325E-14 N

E. 1.458E-14 N



13. Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -7e$, and $q_3 = 3e$?

A. 4.171E-14 N

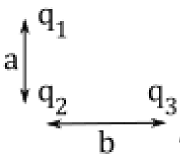
B. 4.588E-14 N

C. 5.047E-14 N

D. 5.551E-14 N

E. 6.107E-14 N

The next page might contain more answer choices for this question

14. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -8e$, and $q_3 = 2e$?

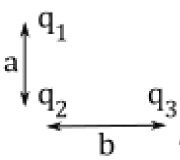
A. 1.172E-14 N

B. 1.290E-14 N

C. 1.419E-14 N

D. 1.561E-14 N

E. 1.717E-14 N

15. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -8e$, and $q_3 = 2e$?

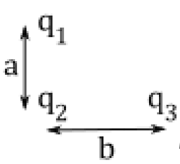
A. 3.876E-14 N

B. 4.263E-14 N

C. 4.690E-14 N

D. 5.159E-14 N

E. 5.675E-14 N

16. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -7e$, and $q_3 = 2e$?

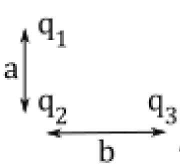
A. 3.391E-14 N

B. 3.731E-14 N

C. 4.104E-14 N

D. 4.514E-14 N

E. 4.965E-14 N

17. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 2e$, $q_2 = -8e$, and $q_3 = 3e$?

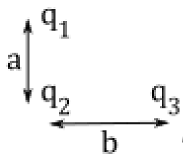
A. 2.036E-14 N

B. 2.240E-14 N

C. 2.464E-14 N

D. 2.710E-14 N

E. 2.981E-14 N



18. Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -7e$, and $q_3 = 4e$?

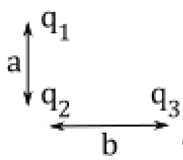
A. 9.750E-15 N

B. 1.072E-14 N

C. 1.180E-14 N

D. 1.298E-14 N

E. 1.427E-14 N



19. Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m. What is the magnitude of the net force on q_2 if $q_1 = 1e$, $q_2 = -9e$, and $q_3 = 4e$?

A. 5.014E-14 N

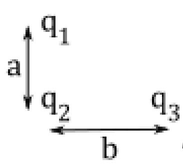
B. 5.515E-14 N

C. 6.067E-14 N

D. 6.674E-14 N

E. 7.341E-14 N

d_cp2.5 Q2



1. Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 2e$, $q_2 = -7e$, and $q_3 = 3e$?

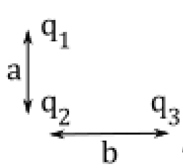
A. 5.217E+01 degrees

B. 5.739E+01 degrees

C. 6.313E+01 degrees

D. 6.944E+01 degrees

E. 7.639E+01 degrees



2. Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 1e$, $q_2 = -7e$, and $q_3 = 4e$?

A. 4.091E+01 degrees

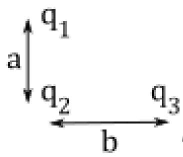
B. 4.500E+01 degrees

C. 4.950E+01 degrees

D. 5.445E+01 degrees

The next page might contain more answer choices for this question

E. 5.990E+01 degrees



3. Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 1e$, $q_2 = -8e$, and $q_3 = 4e$?

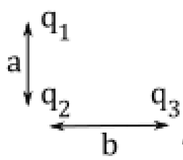
A. 3.719E+01 degrees

B. 4.091E+01 degrees

C. 4.500E+01 degrees

D. 4.950E+01 degrees

E. 5.445E+01 degrees



4. Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 3e$, $q_2 = -7e$, and $q_3 = 5e$?

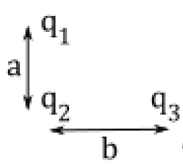
A. 5.569E+01 degrees

B. 6.125E+01 degrees

C. 6.738E+01 degrees

D. 7.412E+01 degrees

E. 8.153E+01 degrees



5. Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 2e$, $q_2 = -9e$, and $q_3 = 5e$?

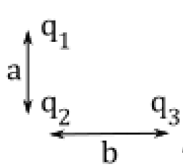
A. 5.272E+01 degrees

B. 5.799E+01 degrees

C. 6.379E+01 degrees

D. 7.017E+01 degrees

E. 7.719E+01 degrees



6. Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 3e$, $q_2 = -9e$, and $q_3 = 5e$?

A. 6.125E+01 degrees

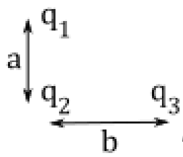
B. 6.738E+01 degrees

C. 7.412E+01 degrees

D. 8.153E+01 degrees

The next page might contain more answer choices for this question

E. 8.968E+01 degrees

7. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 3e$, $q_2 = -7e$, and $q_3 = 5e$?

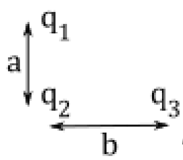
A. 5.569E+01 degrees

B. 6.125E+01 degrees

C. 6.738E+01 degrees

D. 7.412E+01 degrees

E. 8.153E+01 degrees

8. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 3e$, $q_2 = -7e$, and $q_3 = 6e$?

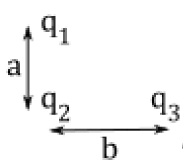
A. 6.343E+01 degrees

B. 6.978E+01 degrees

C. 7.676E+01 degrees

D. 8.443E+01 degrees

E. 9.288E+01 degrees

9. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 2e$, $q_2 = -9e$, and $q_3 = 5e$?

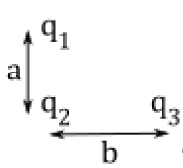
A. 3.961E+01 degrees

B. 4.357E+01 degrees

C. 4.793E+01 degrees

D. 5.272E+01 degrees

E. 5.799E+01 degrees

10. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 3e$, $q_2 = -7e$, and $q_3 = 4e$?

A. 5.377E+01 degrees

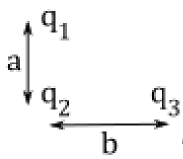
B. 5.914E+01 degrees

C. 6.506E+01 degrees

D. 7.157E+01 degrees

The next page might contain more answer choices for this question

E. 7.872E+01 degrees

11. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 2e$, $q_2 = -7e$, and $q_3 = 5e$?

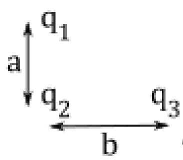
A. 4.357E+01 degrees

B. 4.793E+01 degrees

C. 5.272E+01 degrees

D. 5.799E+01 degrees

E. 6.379E+01 degrees

12. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 2e$, $q_2 = -7e$, and $q_3 = 3e$?

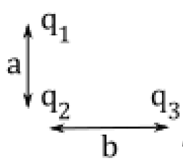
A. 4.743E+01 degrees

B. 5.217E+01 degrees

C. 5.739E+01 degrees

D. 6.313E+01 degrees

E. 6.944E+01 degrees

13. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 2e$, $q_2 = -9e$, and $q_3 = 4e$?

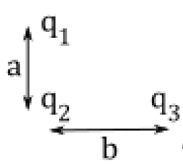
A. 5.243E+01 degrees

B. 5.767E+01 degrees

C. 6.343E+01 degrees

D. 6.978E+01 degrees

E. 7.676E+01 degrees

14. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 3e$, $q_2 = -9e$, and $q_3 = 6e$?

A. 5.767E+01 degrees

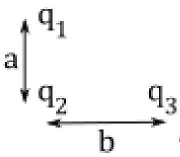
B. 6.343E+01 degrees

C. 6.978E+01 degrees

D. 7.676E+01 degrees

The next page might contain more answer choices for this question

E. 8.443E+01 degrees



15. Three small charged objects are placed as shown, where $b = 2a$, and $a = 4 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 3e$, $q_2 = -8e$, and $q_3 = 6e$?

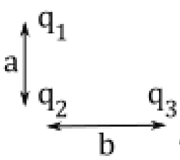
A. 5.243E+01 degrees

B. 5.767E+01 degrees

C. 6.343E+01 degrees

D. 6.978E+01 degrees

E. 7.676E+01 degrees



16. Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 3e$, $q_2 = -7e$, and $q_3 = 4e$?

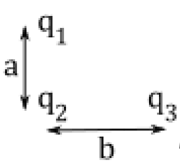
A. 5.914E+01 degrees

B. 6.506E+01 degrees

C. 7.157E+01 degrees

D. 7.872E+01 degrees

E. 8.659E+01 degrees



17. Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 2e$, $q_2 = -9e$, and $q_3 = 4e$?

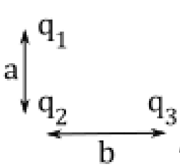
A. 4.766E+01 degrees

B. 5.243E+01 degrees

C. 5.767E+01 degrees

D. 6.343E+01 degrees

E. 6.978E+01 degrees



18. Three small charged objects are placed as shown, where $b = 2a$, and $a = 6 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 3e$, $q_2 = -8e$, and $q_3 = 5e$?

A. 5.062E+01 degrees

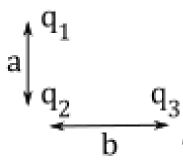
B. 5.569E+01 degrees

C. 6.125E+01 degrees

D. 6.738E+01 degrees

The next page might contain more answer choices for this question

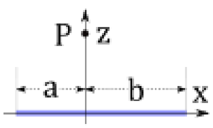
E. 7.412E+01 degrees

19. 

Three small charged objects are placed as shown, where $b = 2a$, and $a = 2 \times 10^{-7}$m.what angle does the force on q_2 make above the $-x$ axis if $q_1 = 1e$, $q_2 = -8e$, and $q_3 = 3e$?

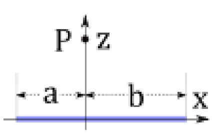
A. 3.629E+01 degrees
B. 3.992E+01 degrees
C. 4.391E+01 degrees
D. 4.830E+01 degrees
E. 5.313E+01 degrees

d_cp2.5 Q3

1. 

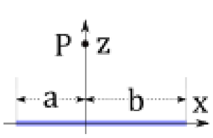
$E_z(x = 0, z) = \int_{-a}^{b} f(x, z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.8 m. Evaluate $f(x, y)$ at x=0.83 m if a=1.1 m, b=1.9 m. The total charge on the rod is 2 nC.

A. 1.040E+00 V/m^2
B. 1.145E+00 V/m^2
C. 1.259E+00 V/m^2
D. 1.385E+00 V/m^2
E. 1.523E+00 V/m^2

2. 

$E_z(x = 0, z) = \int_{-a}^{b} f(x, z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.7 m. Evaluate $f(x, y)$ at x=0.76 m if a=1.1 m, b=1.6 m. The total charge on the rod is 8 nC.

A. 5.267E+00 V/m^2
B. 5.794E+00 V/m^2
C. 6.374E+00 V/m^2
D. 7.011E+00 V/m^2
E. 7.712E+00 V/m^2

3. 

$E_z(x = 0, z) = \int_{-a}^{b} f(x, z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.4 m. Evaluate $f(x, y)$ at x=1.1 m if a=0.69 m, b=2.2 m. The total charge on the rod is 6 nC.

The next page might contain more answer choices for this question

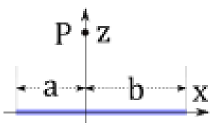
A. 3.161E+00 V/m^2

B. 3.477E+00 V/m^2

C. 3.825E+00 V/m^2

D. 4.208E+00 V/m^2

E. 4.628E+00 V/m^2

4. 

$E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.5 m. Evaluate $f(x,y)$ at x=1.1 m if a=0.61 m, b=1.7 m. The total charge on the rod is 8 nC.

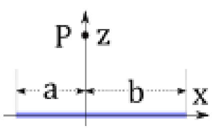
A. 5.995E+00 V/m^2

B. 6.595E+00 V/m^2

C. 7.254E+00 V/m^2

D. 7.980E+00 V/m^2

E. 8.778E+00 V/m^2

5. 

$E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.3 m. Evaluate $f(x,y)$ at x=0.83 m if a=0.82 m, b=1.3 m. The total charge on the rod is 7 nC.

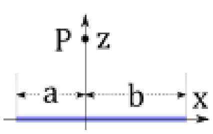
A. 8.690E+00 V/m^2

B. 9.559E+00 V/m^2

C. 1.051E+01 V/m^2

D. 1.157E+01 V/m^2

E. 1.272E+01 V/m^2

6. 

$E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.8 m. Evaluate $f(x,y)$ at x=1.0 m if a=1.0 m, b=1.8 m. The total charge on the rod is 6 nC.

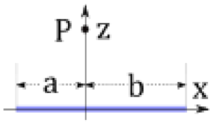
A. 3.610E+00 V/m^2

B. 3.971E+00 V/m^2

C. 4.368E+00 V/m^2

D. 4.804E+00 V/m^2

E. 5.285E+00 V/m^2

7. 

$E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.5 m. Evaluate $f(x,y)$ at x=1.0 m if a=1.1 m, b=1.4 m. The total charge on the rod is 5 nC.

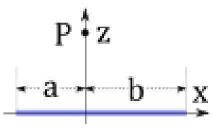
A. 4.602E+00 V/m^2

B. 5.062E+00 V/m^2

C. 5.568E+00 V/m^2

D. 6.125E+00 V/m^2

E. 6.738E+00 V/m^2

8. 

$E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.2 m. Evaluate $f(x,y)$ at x=0.73 m if a=0.52 m, b=1.6 m. The total charge on the rod is 7 nC.

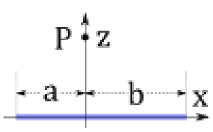
A. 9.655E+00 V/m^2

B. 1.062E+01 V/m^2

C. 1.168E+01 V/m^2

D. 1.285E+01 V/m^2

E. 1.414E+01 V/m^2

9. 

$E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.5 m. Evaluate $f(x,y)$ at x=0.79 m if a=0.75 m, b=2.1 m. The total charge on the rod is 6 nC.

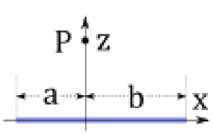
A. 5.825E+00 V/m^2

B. 6.407E+00 V/m^2

C. 7.048E+00 V/m^2

D. 7.753E+00 V/m^2

E. 8.528E+00 V/m^2

10. 

$E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.3 m. Evaluate $f(x,y)$ at x=0.96 m if a=0.63 m, b=1.4 m. The total charge on the rod is 3 nC.

A. 3.719E+00 V/m^2

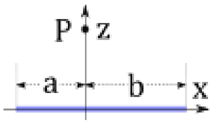
The next page might contain more answer choices for this question

B. 4.091E+00 V/m^2

C. 4.500E+00 V/m^2

D. 4.950E+00 V/m^2

E. 5.445E+00 V/m^2

11. 

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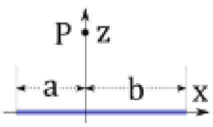
A. 3.959E+00 V/m^2

B. 4.355E+00 V/m^2

C. 4.790E+00 V/m^2

D. 5.269E+00 V/m^2

E. 5.796E+00 V/m^2

12. 

$E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.8 m. Evaluate $f(x,y)$ at x=0.5 m if a=0.67 m, b=2.4 m. The total charge on the rod is 9 nC.

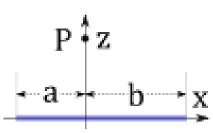
A. 5.465E+00 V/m^2

B. 6.012E+00 V/m^2

C. 6.613E+00 V/m^2

D. 7.274E+00 V/m^2

E. 8.002E+00 V/m^2

13. 

$E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.5 m. Evaluate $f(x,y)$ at x=1.1 m if a=0.62 m, b=1.3 m. The total charge on the rod is 7 nC.

A. 6.311E+00 V/m^2

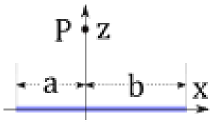
B. 6.943E+00 V/m^2

C. 7.637E+00 V/m^2

D. 8.401E+00 V/m^2

E. 9.241E+00 V/m^2

The next page might contain more answer choices for this question

14. 

$E_z(x=0,z)=\int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.9 m. Evaluate $f(x,y)$ at x=0.83 m if a=0.7 m, b=1.8 m. The total charge on the rod is 9 nC.

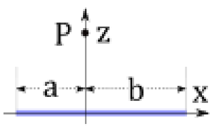
A. 6.897E+00 V/m^2

B. 7.587E+00 V/m^2

C. 8.345E+00 V/m^2

D. 9.180E+00 V/m^2

E. 1.010E+01 V/m^2

15. 

$E_z(x=0,z)=\int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.7 m. Evaluate $f(x,y)$ at x=0.52 m if a=0.88 m, b=1.3 m. The total charge on the rod is 6 nC.

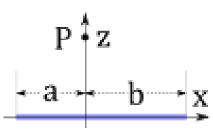
A. 6.804E+00 V/m^2

B. 7.485E+00 V/m^2

C. 8.233E+00 V/m^2

D. 9.056E+00 V/m^2

E. 9.962E+00 V/m^2

16. 

$E_z(x=0,z)=\int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.2 m. Evaluate $f(x,y)$ at x=0.54 m if a=0.76 m, b=1.7 m. The total charge on the rod is 8 nC.

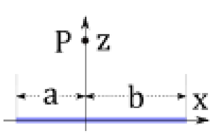
A. 1.399E+01 V/m^2

B. 1.539E+01 V/m^2

C. 1.693E+01 V/m^2

D. 1.862E+01 V/m^2

E. 2.049E+01 V/m^2

17. 

$E_z(x=0,z)=\int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.9 m. Evaluate $f(x,y)$ at x=0.54 m if a=1.0 m, b=2.0 m. The total charge on the rod is 3 nC.

A. 1.665E+00 V/m^2

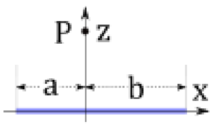
The next page might contain more answer choices for this question

B. 1.831E+00 V/m^2

C. 2.014E+00 V/m^2

D. 2.216E+00 V/m^2

E. 2.437E+00 V/m^2



18. $E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.6 m. Evaluate $f(x,y)$ at x=0.73 m if a=0.64 m, b=1.8 m. The total charge on the rod is 3 nC.

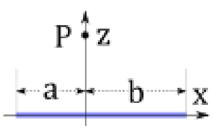
A. 2.955E+00 V/m^2

B. 3.250E+00 V/m^2

C. 3.575E+00 V/m^2

D. 3.933E+00 V/m^2

E. 4.326E+00 V/m^2



19. $E_z(x=0,z) = \int_{-a}^{b} f(x,z)dx$is an integral that calculates the z-component of the electric field at point P situated above the x-axis where a charged rod of length (a+b) is located. The distance between point P and the x-axis is z=1.9 m. Evaluate $f(x,y)$ at x=0.96 m if a=0.95 m, b=1.8 m. The total charge on the rod is 7 nC.

A. 3.385E+00 V/m^2

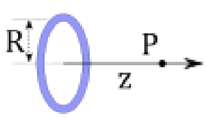
B. 3.724E+00 V/m^2

C. 4.096E+00 V/m^2

D. 4.506E+00 V/m^2

E. 4.957E+00 V/m^2

d_cp2.5 Q4



1. A ring is uniformly charged with a net charge of 3 nC. The radius of the ring is R=1.5 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.1 m (on axis) away from the loop's center?

A. 4.608E+09 N/C^2

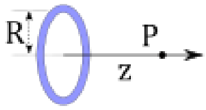
B. 5.069E+09 N/C^2

C. 5.576E+09 N/C^2

D. 6.134E+09 N/C^2

E. 6.747E+09 N/C^2

The next page might contain more answer choices for this question

2. 

A ring is uniformly charged with a net charge of 4 nC. The radius of the ring is R=1.6 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.1 m (on axis) away from the loop's center?

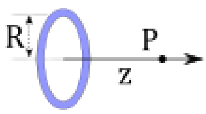
A. 5.402E+09 N/C^2

B. 5.943E+09 N/C^2

C. 6.537E+09 N/C^2

D. 7.191E+09 N/C^2

E. 7.910E+09 N/C^2

3. 

A ring is uniformly charged with a net charge of 9 nC. The radius of the ring is R=1.9 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.4 m (on axis) away from the loop's center?

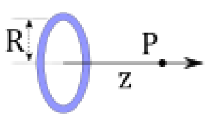
A. 7.119E+09 N/C^2

B. 7.831E+09 N/C^2

C. 8.614E+09 N/C^2

D. 9.476E+09 N/C^2

E. 1.042E+10 N/C^2

4. 

A ring is uniformly charged with a net charge of 6 nC. The radius of the ring is R=1.9 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=0.4 m (on axis) away from the loop's center?

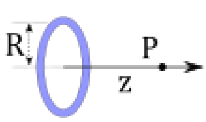
A. 2.013E+09 N/C^2

B. 2.214E+09 N/C^2

C. 2.435E+09 N/C^2

D. 2.679E+09 N/C^2

E. 2.947E+09 N/C^2

5. 

A ring is uniformly charged with a net charge of 9 nC. The radius of the ring is R=1.6 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=0.73 m (on axis) away from the loop's center?

A. 7.415E+09 N/C^2

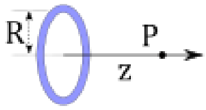
B. 8.156E+09 N/C^2

C. 8.972E+09 N/C^2

D. 9.869E+09 N/C^2

E. 1.086E+10 N/C^2

The next page might contain more answer choices for this question

6. 

A ring is uniformly charged with a net charge of 7 nC. The radius of the ring is R=1.6 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=0.34 m (on axis) away from the loop's center?

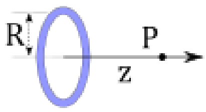
A. 3.672E+09 N/C^2

B. 4.039E+09 N/C^2

C. 4.443E+09 N/C^2

D. 4.887E+09 N/C^2

E. 5.376E+09 N/C^2

7. 

A ring is uniformly charged with a net charge of 2 nC. The radius of the ring is R=1.5 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=0.33 m (on axis) away from the loop's center?

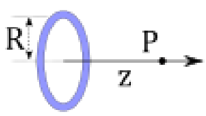
A. 1.353E+09 N/C^2

B. 1.488E+09 N/C^2

C. 1.637E+09 N/C^2

D. 1.801E+09 N/C^2

E. 1.981E+09 N/C^2

8. 

A ring is uniformly charged with a net charge of 2 nC. The radius of the ring is R=1.8 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.3 m (on axis) away from the loop's center?

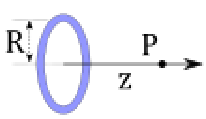
A. 1.764E+09 N/C^2

B. 1.941E+09 N/C^2

C. 2.135E+09 N/C^2

D. 2.348E+09 N/C^2

E. 2.583E+09 N/C^2

9. 

A ring is uniformly charged with a net charge of 5 nC. The radius of the ring is R=1.6 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.1 m (on axis) away from the loop's center?

A. 5.581E+09 N/C^2

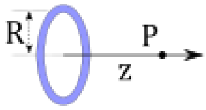
B. 6.139E+09 N/C^2

C. 6.753E+09 N/C^2

D. 7.428E+09 N/C^2

E. 8.171E+09 N/C^2

The next page might contain more answer choices for this question

10. 

A ring is uniformly charged with a net charge of 3 nC. The radius of the ring is R=1.8 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.1 m (on axis) away from the loop's center?

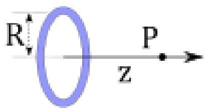
A. 3.159E+09 N/C^2

B. 3.475E+09 N/C^2

C. 3.823E+09 N/C^2

D. 4.205E+09 N/C^2

E. 4.626E+09 N/C^2

11. 

A ring is uniformly charged with a net charge of 4 nC. The radius of the ring is R=1.6 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.0 m (on axis) away from the loop's center?

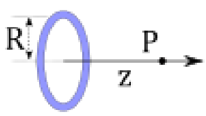
A. 5.352E+09 N/C^2

B. 5.887E+09 N/C^2

C. 6.476E+09 N/C^2

D. 7.124E+09 N/C^2

E. 7.836E+09 N/C^2

12. 

A ring is uniformly charged with a net charge of 2 nC. The radius of the ring is R=1.6 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=0.99 m (on axis) away from the loop's center?

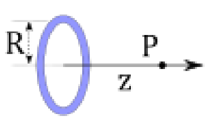
A. 2.429E+09 N/C^2

B. 2.672E+09 N/C^2

C. 2.939E+09 N/C^2

D. 3.233E+09 N/C^2

E. 3.556E+09 N/C^2

13. 

A ring is uniformly charged with a net charge of 7 nC. The radius of the ring is R=1.7 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.2 m (on axis) away from the loop's center?

A. 6.925E+09 N/C^2

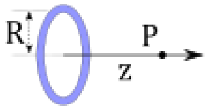
B. 7.617E+09 N/C^2

C. 8.379E+09 N/C^2

D. 9.217E+09 N/C^2

E. 1.014E+10 N/C^2

The next page might contain more answer choices for this question



14. A ring is uniformly charged with a net charge of 3 nC. The radius of the ring is R=1.7 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=0.34 m (on axis) away from the loop's center?

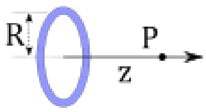
A. 1.202E+09 N/C^2

B. 1.322E+09 N/C^2

C. 1.454E+09 N/C^2

D. 1.599E+09 N/C^2

E. 1.759E+09 N/C^2



15. A ring is uniformly charged with a net charge of 8 nC. The radius of the ring is R=1.7 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=0.32 m (on axis) away from the loop's center?

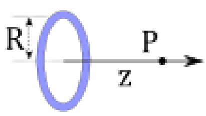
A. 3.339E+09 N/C^2

B. 3.673E+09 N/C^2

C. 4.041E+09 N/C^2

D. 4.445E+09 N/C^2

E. 4.889E+09 N/C^2



16. A ring is uniformly charged with a net charge of 7 nC. The radius of the ring is R=1.6 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=0.35 m (on axis) away from the loop's center?

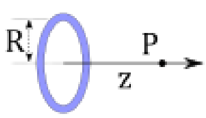
A. 4.142E+09 N/C^2

B. 4.556E+09 N/C^2

C. 5.012E+09 N/C^2

D. 5.513E+09 N/C^2

E. 6.064E+09 N/C^2



17. A ring is uniformly charged with a net charge of 3 nC. The radius of the ring is R=1.8 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.1 m (on axis) away from the loop's center?

A. 3.159E+09 N/C^2

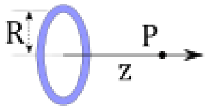
B. 3.475E+09 N/C^2

C. 3.823E+09 N/C^2

D. 4.205E+09 N/C^2

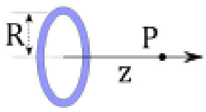
E. 4.626E+09 N/C^2

The next page might contain more answer choices for this question

18. 

A ring is uniformly charged with a net charge of 5 nC. The radius of the ring is R=1.9 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.3 m (on axis) away from the loop's center?

A. 4.788E+09 N/C^2
B. 5.267E+09 N/C^2
C. 5.793E+09 N/C^2
D. 6.373E+09 N/C^2
E. 7.010E+09 N/C^2

19. 

A ring is uniformly charged with a net charge of 7 nC. The radius of the ring is R=1.7 m, with its center at the origin and oriented normal to the z axis as shown. what is the magnitude of the electric field at a distance z=1.1 m (on axis) away from the loop's center?

A. 8.336E+09 N/C^2
B. 9.170E+09 N/C^2
C. 1.009E+10 N/C^2
D. 1.110E+10 N/C^2
E. 1.220E+10 N/C^2

d_cp2.5 Q5

1. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 5.9$ m and the surface charge density is $\sigma = 4$ nC/m^3. Evaluate $f(r', z)$ at $r' = 3.5$ m.

   A. 2.021E+00 V/m^2
   B. 2.224E+00 V/m^2
   C. 2.446E+00 V/m^2
   D. 2.691E+00 V/m^2
   E. 2.960E+00 V/m^2

2. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 6.9$ m and the surface charge density is $\sigma = 9$ nC/m^3. Evaluate $f(r', z)$ at $r' = 4.3$ m.

   A. 8.924E-01 V/m^2
   B. 9.816E-01 V/m^2
   C. 1.080E+00 V/m^2
   D. 1.188E+00 V/m^2
   E. 1.307E+00 V/m^2

3. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 8.7$ m and the surface charge density is $\sigma = 7$ nC/m^3. Evaluate $f(r', z)$ at $r' = 5.8$ m.

The next page might contain more answer choices for this question

A. 3.722E-01 V/m^2
B. 4.094E-01 V/m^2
C. 4.504E-01 V/m^2
D. 4.954E-01 V/m^2
E. 5.450E-01 V/m^2

4. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 4.3$ m and the surface charge density is $\sigma = 2$ nC/m^3. Evaluate $f(r', z)$ at $r' = 2.4$ m.

A. 5.647E+00 V/m^2
B. 6.212E+00 V/m^2
C. 6.833E+00 V/m^2
D. 7.517E+00 V/m^2
E. 8.268E+00 V/m^2

5. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 9.1$ m and the surface charge density is $\sigma = 2$ nC/m^3. Evaluate $f(r', z)$ at $r' = 6.2$ m.

A. 4.961E-01 V/m^2
B. 5.457E-01 V/m^2
C. 6.002E-01 V/m^2
D. 6.603E-01 V/m^2
E. 7.263E-01 V/m^2

6. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 6.8$ m and the surface charge density is $\sigma = 6$ nC/m^3. Evaluate $f(r', z)$ at $r' = 3.6$ m.

A. 1.258E+00 V/m^2
B. 1.384E+00 V/m^2
C. 1.522E+00 V/m^2
D. 1.674E+00 V/m^2
E. 1.842E+00 V/m^2

7. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 1.4$ m and the surface charge density is $\sigma = 6$ nC/m^3. Evaluate $f(r', z)$ at $r' = 0.56$ m.

A. 2.567E+01 V/m^2
B. 2.824E+01 V/m^2
C. 3.106E+01 V/m^2
D. 3.417E+01 V/m^2
E. 3.759E+01 V/m^2

8. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 8.1$ m and the surface charge density is $\sigma = 3$ nC/m^3. Evaluate $f(r', z)$ at $r' = 4.2$ m.

The next page might contain more answer choices for this question

A. 5.134E-01 V/m^2
B. 5.648E-01 V/m^2
C. 6.212E-01 V/m^2
D. 6.834E-01 V/m^2
E. 7.517E-01 V/m^2

9. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 2.0$ m and the surface charge density is $\sigma = 9$ nC/m^3. Evaluate $f(r', z)$ at $r' = 1.2$ m.

A. 8.933E+00 V/m^2
B. 9.826E+00 V/m^2
C. 1.081E+01 V/m^2
D. 1.189E+01 V/m^2
E. 1.308E+01 V/m^2

10. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 8.3$ m and the surface charge density is $\sigma = 5$ nC/m^3. Evaluate $f(r', z)$ at $r' = 5.3$ m.

A. 1.022E+00 V/m^2
B. 1.125E+00 V/m^2
C. 1.237E+00 V/m^2
D. 1.361E+00 V/m^2
E. 1.497E+00 V/m^2

11. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 7.2$ m and the surface charge density is $\sigma = 3$ nC/m^3. Evaluate $f(r', z)$ at $r' = 3.6$ m.

A. 1.606E+00 V/m^2
B. 1.767E+00 V/m^2
C. 1.943E+00 V/m^2
D. 2.138E+00 V/m^2
E. 2.351E+00 V/m^2

12. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 1.8$ m and the surface charge density is $\sigma = 3$ nC/m^3. Evaluate $f(r', z)$ at $r' = 1.1$ m.

A. 7.517E+00 V/m^2
B. 8.269E+00 V/m^2
C. 9.096E+00 V/m^2
D. 1.001E+01 V/m^2
E. 1.101E+01 V/m^2

13. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 7.9$ m and the surface charge density is $\sigma = 2$ nC/m^3. Evaluate $f(r', z)$ at $r' = 5.1$ m.

The next page might contain more answer choices for this question

A. 8.253E-01 V/m^2
B. 9.079E-01 V/m^2
C. 9.987E-01 V/m^2
D. 1.099E+00 V/m^2
E. 1.208E+00 V/m^2

14. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 7.5$ m and the surface charge density is $\sigma = 3$ nC/m^3. Evaluate $f(r', z)$ at $r' = 2.6$ m.

A. 7.820E-01 V/m^2
B. 8.602E-01 V/m^2
C. 9.462E-01 V/m^2
D. 1.041E+00 V/m^2
E. 1.145E+00 V/m^2

15. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 1.8$ m and the surface charge density is $\sigma = 9$ nC/m^3. Evaluate $f(r', z)$ at $r' = 0.83$ m.

A. 2.898E+01 V/m^2
B. 3.188E+01 V/m^2
C. 3.507E+01 V/m^2
D. 3.857E+01 V/m^2
E. 4.243E+01 V/m^2

16. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 3.2$ m and the surface charge density is $\sigma = 2$ nC/m^3. Evaluate $f(r', z)$ at $r' = 2.2$ m.

A. 3.228E+00 V/m^2
B. 3.551E+00 V/m^2
C. 3.906E+00 V/m^2
D. 4.297E+00 V/m^2
E. 4.727E+00 V/m^2

17. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 3.0$ m and the surface charge density is $\sigma = 8$ nC/m^3. Evaluate $f(r', z)$ at $r' = 2.0$ m.

A. 9.459E+00 V/m^2
B. 1.040E+01 V/m^2
C. 1.145E+01 V/m^2
D. 1.259E+01 V/m^2
E. 1.385E+01 V/m^2

18. $E(z) = \int_0^R f(r', z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 2.8$ m and the surface charge density is $\sigma = 3$ nC/m^3. Evaluate $f(r', z)$ at $r' = 1.9$ m.

The next page might contain more answer choices for this question

A. 4.295E+00 V/m^2
B. 4.724E+00 V/m^2
C. 5.196E+00 V/m^2
D. 5.716E+00 V/m^2
E. 6.288E+00 V/m^2

19. $E(z)=\int_0^R f(r',z)dr'$is an integral that calculates the magnitude of the electric field at a distance z fromthe center of a thin circular disk as measured along a line normal to the plane of the disk. The disk's radius is $R = 3.3$ m and the surface charge density is $\sigma = 4$ nC/m^3. Evaluate $f(r',z)$ at $r' = 2.0$ m.

A. 6.877E+00 V/m^2
B. 7.565E+00 V/m^2
C. 8.321E+00 V/m^2
D. 9.153E+00 V/m^2
E. 1.007E+01 V/m^2

d_cp2.5 Q6

1. A large thin isolated square plate has an area of 9 m^2. It is uniformly charged with 8 nC of charge. What is the magnitude of the electric field 3 mm from the center of the plate's surface?

A. 5.020E+01 N/C
B. 5.522E+01 N/C
C. 6.074E+01 N/C
D. 6.681E+01 N/C
E. 7.349E+01 N/C

2. A large thin isolated square plate has an area of 3 m^2. It is uniformly charged with 9 nC of charge. What is the magnitude of the electric field 3 mm from the center of the plate's surface?

A. 1.694E+02 N/C
B. 1.864E+02 N/C
C. 2.050E+02 N/C
D. 2.255E+02 N/C
E. 2.480E+02 N/C

3. A large thin isolated square plate has an area of 3 m^2. It is uniformly charged with 5 nC of charge. What is the magnitude of the electric field 3 mm from the center of the plate's surface?

A. 9.412E+01 N/C
B. 1.035E+02 N/C
C. 1.139E+02 N/C
D. 1.253E+02 N/C
E. 1.378E+02 N/C

4. A large thin isolated square plate has an area of 4 m^2. It is uniformly charged with 9 nC of charge. What is the magnitude of the electric field 2 mm from the center of the plate's surface?

A. 9.546E+01 N/C

The next page might contain more answer choices for this question

B. 1.050E+02 N/C
C. 1.155E+02 N/C
D. 1.271E+02 N/C
E. 1.398E+02 N/C

5. A large thin isolated square plate has an area of 9 m^2. It is uniformly charged with 6 nC of charge. What is the magnitude of the electric field 1 mm from the center of the plate's surface?
   A. 2.571E+01 N/C
   B. 2.828E+01 N/C
   C. 3.111E+01 N/C
   D. 3.422E+01 N/C
   E. 3.765E+01 N/C

6. A large thin isolated square plate has an area of 5 m^2. It is uniformly charged with 7 nC of charge. What is the magnitude of the electric field 1 mm from the center of the plate's surface?
   A. 6.534E+01 N/C
   B. 7.187E+01 N/C
   C. 7.906E+01 N/C
   D. 8.696E+01 N/C
   E. 9.566E+01 N/C

7. A large thin isolated square plate has an area of 4 m^2. It is uniformly charged with 5 nC of charge. What is the magnitude of the electric field 1 mm from the center of the plate's surface?
   A. 4.821E+01 N/C
   B. 5.303E+01 N/C
   C. 5.834E+01 N/C
   D. 6.417E+01 N/C
   E. 7.059E+01 N/C

8. A large thin isolated square plate has an area of 8 m^2. It is uniformly charged with 5 nC of charge. What is the magnitude of the electric field 1 mm from the center of the plate's surface?
   A. 2.652E+01 N/C
   B. 2.917E+01 N/C
   C. 3.209E+01 N/C
   D. 3.529E+01 N/C
   E. 3.882E+01 N/C

9. A large thin isolated square plate has an area of 5 m^2. It is uniformly charged with 8 nC of charge. What is the magnitude of the electric field 3 mm from the center of the plate's surface?
   A. 6.171E+01 N/C
   B. 6.788E+01 N/C
   C. 7.467E+01 N/C
   D. 8.214E+01 N/C
   E. 9.035E+01 N/C

The next page might contain more answer choices for this question

10. A large thin isolated square plate has an area of 9 m^2. It is uniformly charged with 8 nC of charge. What is the magnitude of the electric field 3 mm from the center of the plate's surface?

   A. 3.428E+01 N/C
   B. 3.771E+01 N/C
   C. 4.148E+01 N/C
   D. 4.563E+01 N/C
   E. 5.020E+01 N/C

11. A large thin isolated square plate has an area of 6 m^2. It is uniformly charged with 9 nC of charge. What is the magnitude of the electric field 2 mm from the center of the plate's surface?

   A. 7.000E+01 N/C
   B. 7.701E+01 N/C
   C. 8.471E+01 N/C
   D. 9.318E+01 N/C
   E. 1.025E+02 N/C

12. A large thin isolated square plate has an area of 6 m^2. It is uniformly charged with 5 nC of charge. What is the magnitude of the electric field 2 mm from the center of the plate's surface?

   A. 3.214E+01 N/C
   B. 3.536E+01 N/C
   C. 3.889E+01 N/C
   D. 4.278E+01 N/C
   E. 4.706E+01 N/C

13. A large thin isolated square plate has an area of 8 m^2. It is uniformly charged with 7 nC of charge. What is the magnitude of the electric field 3 mm from the center of the plate's surface?

   A. 4.492E+01 N/C
   B. 4.941E+01 N/C
   C. 5.435E+01 N/C
   D. 5.979E+01 N/C
   E. 6.577E+01 N/C

14. A large thin isolated square plate has an area of 9 m^2. It is uniformly charged with 5 nC of charge. What is the magnitude of the electric field 1 mm from the center of the plate's surface?

   A. 2.357E+01 N/C
   B. 2.593E+01 N/C
   C. 2.852E+01 N/C
   D. 3.137E+01 N/C
   E. 3.451E+01 N/C

15. A large thin isolated square plate has an area of 6 m^2. It is uniformly charged with 5 nC of charge. What is the magnitude of the electric field 1 mm from the center of the plate's surface?

   A. 3.214E+01 N/C
   B. 3.536E+01 N/C

The next page might contain more answer choices for this question

C. 3.889E+01 N/C

D. 4.278E+01 N/C

E. 4.706E+01 N/C

16. A large thin isolated square plate has an area of 6 m^2. It is uniformly charged with 6 nC of charge. What is the magnitude of the electric field 2 mm from the center of the plate's surface?

A. 5.647E+01 N/C

B. 6.212E+01 N/C

C. 6.833E+01 N/C

D. 7.516E+01 N/C

E. 8.268E+01 N/C

17. A large thin isolated square plate has an area of 8 m^2. It is uniformly charged with 6 nC of charge. What is the magnitude of the electric field 1 mm from the center of the plate's surface?

A. 3.500E+01 N/C

B. 3.850E+01 N/C

C. 4.235E+01 N/C

D. 4.659E+01 N/C

E. 5.125E+01 N/C

18. A large thin isolated square plate has an area of 6 m^2. It is uniformly charged with 9 nC of charge. What is the magnitude of the electric field 1 mm from the center of the plate's surface?

A. 7.701E+01 N/C

B. 8.471E+01 N/C

C. 9.318E+01 N/C

D. 1.025E+02 N/C

E. 1.127E+02 N/C

19. A large thin isolated square plate has an area of 6 m^2. It is uniformly charged with 9 nC of charge. What is the magnitude of the electric field 3 mm from the center of the plate's surface?

A. 8.471E+01 N/C

B. 9.318E+01 N/C

C. 1.025E+02 N/C

D. 1.127E+02 N/C

E. 1.240E+02 N/C

4 c18ElectricChargeField_lineCharges

1. A line of charge density λ situated on the y axis extends from y = -3 to y = 2. What is the y component of the electric field at the point (3, 7)?$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) $is:$ $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}}\frac{\mathcal{C}\,\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{B} =^{27}$

A. -7

B. -3

C. -3

The next page might contain more answer choices for this question

D. 3

E. 2

2. A line of charge density λ situated on the y axis extends from y = 4 to y = 6. What is the y component of the electric field at the point (5, 1)?¡br /¿$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}} \frac{\mathcal{C}\,\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{C}$ =:[28]

A. a) 5

B. b) s−4

C. c) 5−s

D. d) 1−s

E. e) s−1

3. A line of charge density λ situated on the y axis extends from y = 4 to y = 6. What is the y component of the electric field at the point (5, 1)?¡br /¿$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}} \frac{\mathcal{C}\,\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{F}$ =:[29]

A. 1/2

B. 2/3

C. 2

D. 3/2

E. 3

4. A line of charge density λ situated on the x axis extends from x = 3 to x = 7. What is the x component of the electric field at the point (7, 8)?¡br /¿$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}} \frac{\mathcal{C}\,\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{C}$ =:[30]

A. s−3

B. 3−s

C. 8

D. s−7

E. 7−s

5. A line of charge density λ situated on the x axis extends from x = 3 to x = 7. What is the x component of the electric field at the point (7, 8)?¡br /¿$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}} \frac{\mathcal{C}\,\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{D}^2 + \mathcal{E}^2$ =:[31]

A. $7^2 + (8-s)^2$

B. $7^2 + 8^2$

C. $(7\text{-}s)^2 + 8^2$

D. $7^2 + (3-s)^2$

E. $3^2 + 8^2$

6. A line of charge density λ situated on the y axis extends from y = -3 to y = 2. What is the y component of the electric field at the point (3, 7)?$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}} \frac{\mathcal{C}\,\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{C}$ =[32]

A. 3−s

B. 3

C. s−7

D. 7−s

E. s−3

The next page might contain more answer choices for this question

7. A line of charge density λ situated on the y axis extends from y = -3 to y = 2. What is the y component of the electric field at the point (3, 7)?$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}}\frac{\mathcal{C}\;\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where$\mathcal{F}$ =[33]

   A. 2
   B. 3
   C. 3/2
   D. 1/2

8. A line of charge density λ situated on the y axis extends from y = 2 to y = 7. What is the y component of the electric field at the point (2, 9)?¡br /¿ $Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}}\frac{\mathcal{C}\;\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{C}$ =:[34]

   A. 2
   B. s − 2
   C. 2 − s
   D. s − 9
   E. 9 − s

9. A line of charge density λ situated on the y axis extends from y = 2 to y = 7. What is the y component of the electric field at the point (2, 9)?¡br /¿ $Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}}\frac{\mathcal{C}\;\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{D}^2 + \mathcal{E}^2$ =:[35]

   A. 9^2 + $(7\text{-s})^2$
   B. 9^2 + $(2\text{-s})^2$
   C. 7^2 + $(2\text{-s})^2$
   D. 2^2 + $(7\text{-s})^2$
   E. 2^2 + $(9\text{-s})^2$

10. A line of charge density λ situated on the x axis extends from x = 4 to x = 8. What is the y component of the electric field at the point (8, 4)?¡br /¿$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}}\frac{\mathcal{C}\;\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{A}$ =:[36]

   A. 1/2
   B. 4
   C. 2
   D. 8

11. A line of charge density λ situated on the x axis extends from x = 4 to x = 8. What is the y component of the electric field at the point (8, 4)?¡br /¿$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}}\frac{\mathcal{C}\;\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{C}$ =:[37]

   A. s−8
   B. 8−s
   C. s−4
   D. 4−s
   E. 4

12. A line of charge density λ situated on the x axis extends from x = 4 to x = 8. What is the x component of the electric field at the point (8, 4)?¡br /¿$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}}\frac{\mathcal{C}\;\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{C}$ =:[38]

   A. s−8
   B. 8−s
   C. s−4

The next page might contain more answer choices for this question

D. 4−s

E. 4

13. A line of charge density λ situated on the y axis extends from y = 4 to y = 6. What is the x component of the electric field at the point (5, 1)?¡br /¿$Answer$ (assuming $\mathcal{B} > \mathcal{A}$) is : $\frac{1}{4\pi\epsilon_0}\int_{\mathcal{A}}^{\mathcal{B}} \frac{\mathcal{C}\,\lambda ds}{[\mathcal{D}^2+\mathcal{E}^2]^{\mathcal{F}}}$, where $\mathcal{C}$ =:[39]

A. 5

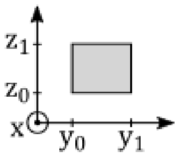
B. s−4

C. 5−s

D. 1−s

E. s−1

5 d_cp2.6



1. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=3 m. The other four surfaces are rectangles in y=y_0=1 m, y=y_1=5 m, z=z_0=1 m, and z=z_1=3 m. The surfaces in the yz plane each have area 8m^2. Those in the xy plane have area 12m^2 ,and those in the zx plane have area 6m^2. An electric field of magnitude 10 N/C has components in the y and z directions and is directed at 30° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?[40]

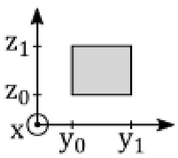
A. 3.549E+01 N· m^2/C

B. 3.904E+01 N· m^2/C

C. 4.294E+01 N· m^2/C

D. 4.724E+01 N· m^2/C

E. 5.196E+01 N· m^2/C



2. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=3 m. The other four surfaces are rectangles in y=y_0=1 m, y=y_1=5 m, z=z_0=1 m, and z=z_1=3 m. The surfaces in the yz plane each have area 8m^2. Those in the xy plane have area 12m^2 ,and those in the zx plane have area 6m^2. An electric field of magnitude 10 N/C has components in the y and z directions and is directed at 60° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?[41]

A. 4.724E+01 N· m^2/C

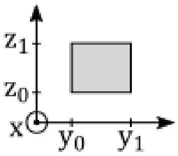
B. 5.196E+01 N· m^2/C

C. 5.716E+01 N· m^2/C

D. 6.287E+01 N· m^2/C

E. 6.916E+01 N· m^2/C

The next page might contain more answer choices for this question

3. 

Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=3 m. The other four surfaces are rectangles in $y=y_0$=1 m, $y=y_1$=5 m, $z=z_0$=1 m, and $z=z_1$=3 m. The surfaces in the yz plane each have area 8m^2. Those in the xy plane have area 12m^2 ,and those in the zx plane have area 6m^2. An electric field has the xyz components $(0, 8.7, 5.0)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?[42]

A. 4.745E+01 N· m^2/C

B. 5.220E+01 N· m^2/C

C. 5.742E+01 N· m^2/C

D. 6.316E+01 N· m^2/C

E. 6.948E+01 N· m^2/C

4. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=3, y=0), (x=0, y=2), and (x=3, y=2), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^1\hat{i} + 2x^3\hat{j} + 3y^2\hat{k}$. [43]

A. 1.983E+01 V· m

B. 2.182E+01 V· m

C. 2.400E+01 V· m

D. 2.640E+01 V· m

E. 2.904E+01 V· m

5. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 5 nano-Coulombs. What is the magnitude of the electric field at a distance of 3.5 m from the center of the shells?[44]

A. 1.102E+01 N/C

B. 1.212E+01 N/C

C. 1.333E+01 N/C

D. 1.467E+01 N/C

E. 1.613E+01 N/C

6. A non-conducting sphere of radius R=2 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar^2 (rxR) where a=1 nC· m^{-1}. What is the magnitude of the electric field at a distance of 1 m from the center? [45]

A. 1.867E+01 N/C

B. 2.053E+01 N/C

C. 2.259E+01 N/C

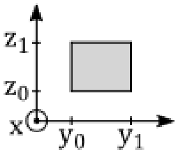
D. 2.485E+01 N/C

E. 2.733E+01 N/C

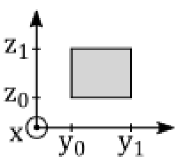
The next page might contain more answer choices for this question

5.1 Renditions

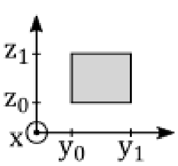
d_cp2.6 Q1



1. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=2.8 m. The other four surfaces are rectangles in $y=y_0$=1.2 m, $y=y_1$=4.4 m, $z=z_0$=1.2 m, and $z=z_1$=4.6 m. The surfaces in the yz plane each have area 11.0m^2. Those in the xy plane have area 9.0m^2 ,and those in the zx plane have area 9.5m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 35° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?
   - A. 6.445E+01 N· m^2/C
   - B. 7.089E+01 N· m^2/C
   - C. 7.798E+01 N· m^2/C
   - **D. 8.578E+01 N· m^2/C**
   - E. 9.436E+01 N· m^2/C



2. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=1.4 m. The other four surfaces are rectangles in $y=y_0$=1.6 m, $y=y_1$=4.2 m, $z=z_0$=1.1 m, and $z=z_1$=5.9 m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 3.6m^2 ,and those in the zx plane have area 6.7m^2. An electric field of magnitude 16 N/C has components in the y and z directions and is directed at 53° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?
   - A. 4.420E+01 N· m^2/C
   - B. 4.862E+01 N· m^2/C
   - C. 5.348E+01 N· m^2/C
   - D. 5.882E+01 N· m^2/C
   - **E. 6.471E+01 N· m^2/C**

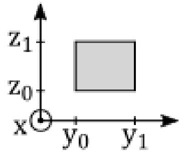


3. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=1.1 m. The other four surfaces are rectangles in $y=y_0$=1.5 m, $y=y_1$=5.0 m, $z=z_0$=1.8 m, and $z=z_1$=5.7 m. The surfaces in the yz plane each have area 14.0m^2. Those in the xy plane have area 3.9m^2 ,and those in the zx plane have area 4.3m^2. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 31° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?
   - A. 4.521E+01 N· m^2/C
   - B. 4.973E+01 N· m^2/C
   - C. 5.470E+01 N· m^2/C

The next page might contain more answer choices for this question

D. 6.017E+01 N· m^2/C

E. 6.619E+01 N· m^2/C



4. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.9$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=5.1$ m, $z=z_0=1.3$ m, and $z=z_1=4.7$ m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 6.6m^2 ,and those in the zx plane have area 6.5m^2. An electric field of magnitude 12 N/C has components in the y and z directions and is directed at 46° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

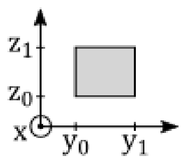
A. 5.385E+01 N· m^2/C

B. 5.923E+01 N· m^2/C

C. 6.516E+01 N· m^2/C

D. 7.167E+01 N· m^2/C

E. 7.884E+01 N· m^2/C



5. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.3$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=5.2$ m, $z=z_0=1.6$ m, and $z=z_1=4.7$ m. The surfaces in the yz plane each have area 11.0m^2. Those in the xy plane have area 4.7m^2 ,and those in the zx plane have area 4.0m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 43° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

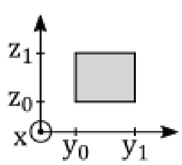
A. 2.214E+01 N· m^2/C

B. 2.436E+01 N· m^2/C

C. 2.679E+01 N· m^2/C

D. 2.947E+01 N· m^2/C

E. 3.242E+01 N· m^2/C



6. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.1$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=5.6$ m, $z=z_0=1.8$ m, and $z=z_1=4.2$ m. The surfaces in the yz plane each have area 9.4m^2. Those in the xy plane have area 8.2m^2 ,and those in the zx plane have area 5.0m^2. An electric field of magnitude 6 N/C has components in the y and z directions and is directed at 29° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 2.186E+01 N· m^2/C

B. 2.404E+01 N· m^2/C

C. 2.645E+01 N· m^2/C

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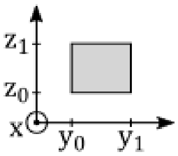
D. 2.909E+01 N· m^2/C

E. 3.200E+01 N· m^2/C



7. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.6 m. The other four surfaces are rectangles in y=y_0=1.2 m, y=y_1=5.6 m, z=z_0=1.2 m, and z=z_1=4.4 m. The surfaces in the yz plane each have area 14.0m^2. Those in the xy plane have area 11.0m^2 ,and those in the zx plane have area 8.3m^2. An electric field of magnitude 9 N/C has components in the y and z directions and is directed at 39° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

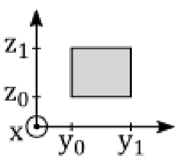
A. 4.809E+01 N· m^2/C

B. 5.290E+01 N· m^2/C

C. 5.819E+01 N· m^2/C

D. 6.401E+01 N· m^2/C

E. 7.041E+01 N· m^2/C



8. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.1 m. The other four surfaces are rectangles in y=y_0=1.1 m, y=y_1=5.3 m, z=z_0=1.1 m, and z=z_1=4.3 m. The surfaces in the yz plane each have area 13.0m^2. Those in the xy plane have area 8.8m^2 ,and those in the zx plane have area 6.7m^2. An electric field of magnitude 10 N/C has components in the y and z directions and is directed at 39° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

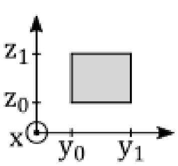
A. 3.924E+01 N· m^2/C

B. 4.316E+01 N· m^2/C

C. 4.748E+01 N· m^2/C

D. 5.222E+01 N· m^2/C

E. 5.745E+01 N· m^2/C



9. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.4 m. The other four surfaces are rectangles in y=y_0=1.2 m, y=y_1=4.2 m, z=z_0=1.2 m, and z=z_1=4.1 m. The surfaces in the yz plane each have area 8.7m^2. Those in the xy plane have area 7.2m^2 ,and those in the zx plane have area 7.0m^2. An electric field of magnitude 12 N/C has components in the y and z directions and is directed at 58° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 4.024E+01 N· m^2/C

B. 4.426E+01 N· m^2/C

C. 4.868E+01 N· m^2/C

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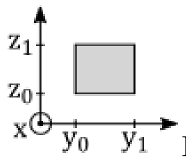
D. 5.355E+01 N· m^2/C

E. 5.891E+01 N· m^2/C



10. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.4$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=5.8$ m, $z=z_0=1.3$ m, and $z=z_1=4.4$ m. The surfaces in the yz plane each have area $13.0m^2$. Those in the xy plane have area $9.8m^2$,and those in the zx plane have area $7.4m^2$. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 46° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

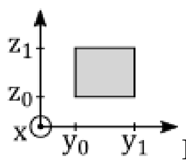
A. 8.457E+01 N· m^2/C

B. 9.303E+01 N· m^2/C

C. 1.023E+02 N· m^2/C

D. 1.126E+02 N· m^2/C

E. 1.238E+02 N· m^2/C



11. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.7$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.7$ m, $z=z_0=1.4$ m, and $z=z_1=4.8$ m. The surfaces in the yz plane each have area $14.0m^2$. Those in the xy plane have area $7.1m^2$,and those in the zx plane have area $5.8m^2$. An electric field of magnitude 19 N/C has components in the y and z directions and is directed at 33° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

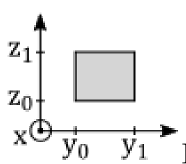
A. 6.920E+01 N· m^2/C

B. 7.612E+01 N· m^2/C

C. 8.373E+01 N· m^2/C

D. 9.210E+01 N· m^2/C

E. 1.013E+02 N· m^2/C



12. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.7$ m. The other four surfaces are rectangles in $y=y_0=1.9$ m, $y=y_1=4.3$ m, $z=z_0=1.7$ m, and $z=z_1=5.7$ m. The surfaces in the yz plane each have area $9.6m^2$. Those in the xy plane have area $4.1m^2$,and those in the zx plane have area $6.8m^2$. An electric field of magnitude 13 N/C has components in the y and z directions and is directed at 27° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 7.876E+01 N· m^2/C

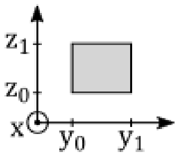
B. 8.664E+01 N· m^2/C

C. 9.531E+01 N· m^2/C

The next page might contain more answer choices for this question

D. 1.048E+02 N· m^2/C

E. 1.153E+02 N· m^2/C



13. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.5 m. The other four surfaces are rectangles in y=y_0=1.4 m, y=y_1=4.9 m, z=z_0=1.1 m, and z=z_1=4.4 m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 5.3m^2 ,and those in the zx plane have area 5.0m^2. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 29° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

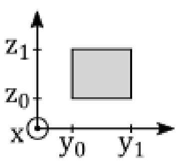
A. 7.793E+01 N· m^2/C

B. 8.572E+01 N· m^2/C

C. 9.429E+01 N· m^2/C

D. 1.037E+02 N· m^2/C

E. 1.141E+02 N· m^2/C



14. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.8 m. The other four surfaces are rectangles in y=y_0=1.5 m, y=y_1=5.8 m, z=z_0=1.1 m, and z=z_1=5.2 m. The surfaces in the yz plane each have area 18.0m^2. Those in the xy plane have area 12.0m^2 ,and those in the zx plane have area 11.0m^2. An electric field of magnitude 13 N/C has components in the y and z directions and is directed at 60° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

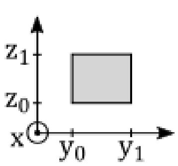
A. 5.606E+01 N· m^2/C

B. 6.167E+01 N· m^2/C

C. 6.784E+01 N· m^2/C

D. 7.462E+01 N· m^2/C

E. 8.208E+01 N· m^2/C



15. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.4 m. The other four surfaces are rectangles in y=y_0=1.2 m, y=y_1=5.8 m, z=z_0=1.2 m, and z=z_1=5.0 m. The surfaces in the yz plane each have area 17.0m^2. Those in the xy plane have area 6.4m^2 ,and those in the zx plane have area 5.3m^2. An electric field of magnitude 5 N/C has components in the y and z directions and is directed at 25° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 1.992E+01 N· m^2/C

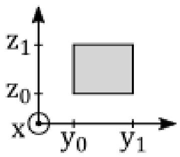
B. 2.192E+01 N· m^2/C

C. 2.411E+01 N· m^2/C

The next page might contain more answer choices for this question

D. 2.652E+01 N· m^2/C

E. 2.917E+01 N· m^2/C



16. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.3 m. The other four surfaces are rectangles in y=y_0=1.2 m, y=y_1=5.5 m, z=z_0=1.7 m, and z=z_1=5.1 m. The surfaces in the yz plane each have area 15.0m^2. Those in the xy plane have area 9.9m^2 ,and those in the zx plane have area 7.8m^2. An electric field of magnitude 6 N/C has components in the y and z directions and is directed at 58° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

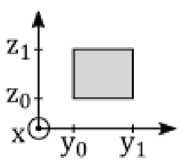
A. 1.698E+01 N· m^2/C

B. 1.868E+01 N· m^2/C

C. 2.055E+01 N· m^2/C

D. 2.260E+01 N· m^2/C

E. 2.486E+01 N· m^2/C



17. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.3 m. The other four surfaces are rectangles in y=y_0=1.5 m, y=y_1=5.8 m, z=z_0=1.7 m, and z=z_1=5.8 m. The surfaces in the yz plane each have area 18.0m^2. Those in the xy plane have area 5.6m^2 ,and those in the zx plane have area 5.3m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 40° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

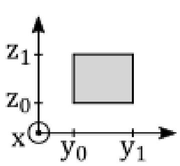
A. 3.712E+01 N· m^2/C

B. 4.083E+01 N· m^2/C

C. 4.491E+01 N· m^2/C

D. 4.940E+01 N· m^2/C

E. 5.434E+01 N· m^2/C



18. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.0 m. The other four surfaces are rectangles in y=y_0=1.3 m, y=y_1=4.4 m, z=z_0=1.3 m, and z=z_1=4.2 m. The surfaces in the yz plane each have area 9.0m^2. Those in the xy plane have area 6.2m^2 ,and those in the zx plane have area 5.8m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 32° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.695E+01 N· m^2/C

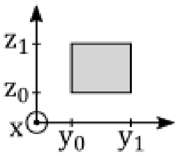
B. 4.065E+01 N· m^2/C

C. 4.472E+01 N· m^2/C

The next page might contain more answer choices for this question

D. 4.919E+01 N· m^2/C

E. 5.411E+01 N· m^2/C



19. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.8$ m. The other four surfaces are rectangles in $y=y_0=1.1$ m, $y=y_1=4.9$ m, $z=z_0=1.3$ m, and $z=z_1=5.6$ m. The surfaces in the yz plane each have area 16.0m^2. Those in the xy plane have area 6.8m^2 ,and those in the zx plane have area 7.7m^2. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 57° above the xy-plane (i.e. above the y axis.) What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 6.898E+01 N· m^2/C

B. 7.588E+01 N· m^2/C

C. 8.347E+01 N· m^2/C

D. 9.181E+01 N· m^2/C

E. 1.010E+02 N· m^2/C

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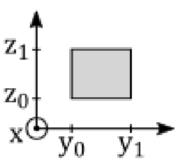


1. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.2$ m. The other four surfaces are rectangles in $y=y_0=1.8$ m, $y=y_1=4.8$ m, $z=z_0=1.8$ m, and $z=z_1=4.3$ m. The surfaces in the yz plane each have area 7.5m^2. Those in the xy plane have area 3.6m^2 ,and those in the zx plane have area 3.0m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 49° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

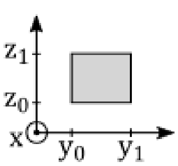
A. 2.058E+01 N· m^2/C

B. 2.264E+01 N· m^2/C

C. 2.491E+01 N· m^2/C

D. 2.740E+01 N· m^2/C

E. 3.014E+01 N· m^2/C



2. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.9$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=5.9$ m, $z=z_0=1.3$ m, and $z=z_1=5.3$ m. The surfaces in the yz plane each have area 17.0m^2. Those in the xy plane have area 12.0m^2 ,and those in the zx plane have area 12.0m^2. An electric field of magnitude 5 N/C has components in the y and z directions and is directed at 26° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 1.737E+01 N· m^2/C

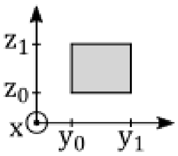
B. 1.910E+01 N· m^2/C

The next page might contain more answer choices for this question

C. 2.101E+01 N· m^2/C

D. 2.311E+01 N· m^2/C

E. 2.543E+01 N· m^2/C



3. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=2.6 m. The other four surfaces are rectangles in $y=y_0$=1.7 m, $y=y_1$=5.4 m, $z=z_0$=1.4 m, and $z=z_1$=5.6 m. The surfaces in the yz plane each have area 16.0m^2. Those in the xy plane have area 9.6m^2 ,and those in the zx plane have area 11.0m^2. An electric field of magnitude 15 N/C has components in the y and z directions and is directed at 33° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

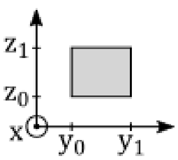
A. 8.921E+01 N· m^2/C

B. 9.813E+01 N· m^2/C

C. 1.079E+02 N· m^2/C

D. 1.187E+02 N· m^2/C

E. 1.306E+02 N· m^2/C



4. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=2.3 m. The other four surfaces are rectangles in $y=y_0$=1.5 m, $y=y_1$=4.6 m, $z=z_0$=1.6 m, and $z=z_1$=5.8 m. The surfaces in the yz plane each have area 13.0m^2. Those in the xy plane have area 7.1m^2 ,and those in the zx plane have area 9.7m^2. An electric field of magnitude 17 N/C has components in the y and z directions and is directed at 43° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

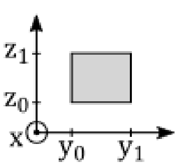
A. 8.415E+01 N· m^2/C

B. 9.256E+01 N· m^2/C

C. 1.018E+02 N· m^2/C

D. 1.120E+02 N· m^2/C

E. 1.232E+02 N· m^2/C



5. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=2.0 m. The other four surfaces are rectangles in $y=y_0$=1.8 m, $y=y_1$=5.8 m, $z=z_0$=1.9 m, and $z=z_1$=5.9 m. The surfaces in the yz plane each have area 16.0m^2. Those in the xy plane have area 8.0m^2 ,and those in the zx plane have area 8.0m^2. An electric field of magnitude 8 N/C has components in the y and z directions and is directed at 39° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.662E+01 N· m^2/C

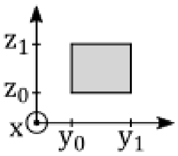
B. 4.028E+01 N· m^2/C

The next page might contain more answer choices for this question

C. 4.430E+01 N· m^2/C

D. 4.873E+01 N· m^2/C

E. 5.361E+01 N· m^2/C



6. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.7$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=4.4$ m, $z=z_0=1.2$ m, and $z=z_1=5.9$ m. The surfaces in the yz plane each have area $13.0m^2$. Those in the xy plane have area $7.6m^2$,and those in the zx plane have area $13.0m^2$. An electric field of magnitude 8 N/C has components in the y and z directions and is directed at 46° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

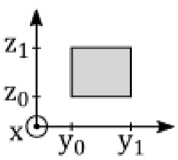
A. 4.988E+01 N· m^2/C

B. 5.487E+01 N· m^2/C

C. 6.035E+01 N· m^2/C

D. 6.639E+01 N· m^2/C

E. 7.303E+01 N· m^2/C



7. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.8$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=4.7$ m, $z=z_0=1.8$ m, and $z=z_1=4.7$ m. The surfaces in the yz plane each have area $9.6m^2$. Those in the xy plane have area $9.2m^2$,and those in the zx plane have area $8.1m^2$. An electric field of magnitude 6 N/C has components in the y and z directions and is directed at 32° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

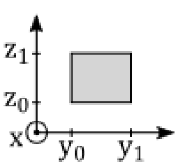
A. 2.134E+01 N· m^2/C

B. 2.347E+01 N· m^2/C

C. 2.582E+01 N· m^2/C

D. 2.840E+01 N· m^2/C

E. 3.124E+01 N· m^2/C



8. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.2$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=4.3$ m, $z=z_0=1.5$ m, and $z=z_1=4.7$ m. The surfaces in the yz plane each have area $8.3m^2$. Those in the xy plane have area $5.7m^2$,and those in the zx plane have area $7.0m^2$. An electric field of magnitude 18 N/C has components in the y and z directions and is directed at 28° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 5.408E+01 N· m^2/C

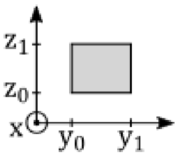
B. 5.949E+01 N· m^2/C

The next page might contain more answer choices for this question

C. 6.544E+01 N· m^2/C

D. 7.198E+01 N· m^2/C

E. 7.918E+01 N· m^2/C



9. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=1.6 m. The other four surfaces are rectangles in $y=y_0$=1.5 m, $y=y_1$=4.4 m, $z=z_0$=1.5 m, and $z=z_1$=5.5 m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 4.6m^2 ,and those in the zx plane have area 6.4m^2. An electric field of magnitude 8 N/C has components in the y and z directions and is directed at 39° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

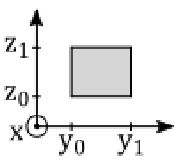
A. 3.222E+01 N· m^2/C

B. 3.544E+01 N· m^2/C

C. 3.899E+01 N· m^2/C

D. 4.289E+01 N· m^2/C

E. 4.718E+01 N· m^2/C



10. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=2.2 m. The other four surfaces are rectangles in $y=y_0$=1.8 m, $y=y_1$=5.3 m, $z=z_0$=1.2 m, and $z=z_1$=5.5 m. The surfaces in the yz plane each have area 15.0m^2. Those in the xy plane have area 7.7m^2 ,and those in the zx plane have area 9.5m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 50° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

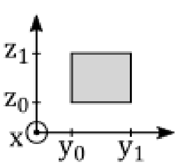
A. 5.989E+01 N· m^2/C

B. 6.588E+01 N· m^2/C

C. 7.247E+01 N· m^2/C

D. 7.971E+01 N· m^2/C

E. 8.769E+01 N· m^2/C



11. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1$=1.5 m. The other four surfaces are rectangles in $y=y_0$=1.4 m, $y=y_1$=4.3 m, $z=z_0$=1.2 m, and $z=z_1$=4.6 m. The surfaces in the yz plane each have area 9.9m^2. Those in the xy plane have area 4.3m^2 ,and those in the zx plane have area 5.1m^2. An electric field of magnitude 19 N/C has components in the y and z directions and is directed at 31° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.750E+01 N· m^2/C

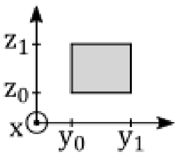
B. 4.125E+01 N· m^2/C

The next page might contain more answer choices for this question

C. 4.537E+01 N· m^2/C

D. 4.991E+01 N· m^2/C

E. 5.490E+01 N· m^2/C



12. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.5$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=4.8$ m, $z=z_0=1.7$ m, and $z=z_1=4.6$ m. The surfaces in the yz plane each have area 9.9m^2. Those in the xy plane have area 8.5m^2 ,and those in the zx plane have area 7.2m^2. An electric field of magnitude 14 N/C has components in the y and z directions and is directed at 55° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

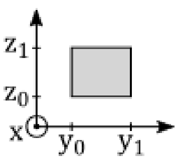
A. 8.314E+01 N· m^2/C

B. 9.146E+01 N· m^2/C

C. 1.006E+02 N· m^2/C

D. 1.107E+02 N· m^2/C

E. 1.217E+02 N· m^2/C



13. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.3$ m. The other four surfaces are rectangles in $y=y_0=1.1$ m, $y=y_1=5.7$ m, $z=z_0=1.8$ m, and $z=z_1=4.5$ m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 6.0m^2 ,and those in the zx plane have area 3.5m^2. An electric field of magnitude 5 N/C has components in the y and z directions and is directed at 38° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

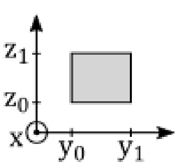
A. 9.823E+00 N· m^2/C

B. 1.080E+01 N· m^2/C

C. 1.189E+01 N· m^2/C

D. 1.307E+01 N· m^2/C

E. 1.438E+01 N· m^2/C



14. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.5$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=4.9$ m, $z=z_0=1.1$ m, and $z=z_1=5.3$ m. The surfaces in the yz plane each have area 15.0m^2. Those in the xy plane have area 8.8m^2 ,and those in the zx plane have area 10.0m^2. An electric field of magnitude 9 N/C has components in the y and z directions and is directed at 50° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 5.439E+01 N· m^2/C

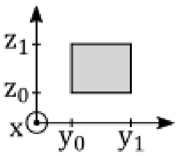
B. 5.983E+01 N· m^2/C

The next page might contain more answer choices for this question

C. 6.581E+01 N· m^2/C

D. 7.239E+01 N· m^2/C

E. 7.963E+01 N· m^2/C



15. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.6$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=4.4$ m, $z=z_0=1.4$ m, and $z=z_1=5.5$ m. The surfaces in the yz plane each have area 13.0m^2. Those in the xy plane have area 5.0m^2 ,and those in the zx plane have area 6.6m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 34° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

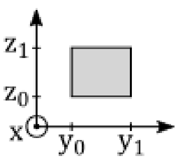
A. 2.756E+01 N· m^2/C

B. 3.032E+01 N· m^2/C

C. 3.335E+01 N· m^2/C

D. 3.668E+01 N· m^2/C

E. 4.035E+01 N· m^2/C



16. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.4$ m. The other four surfaces are rectangles in $y=y_0=1.9$ m, $y=y_1=5.3$ m, $z=z_0=1.4$ m, and $z=z_1=5.5$ m. The surfaces in the yz plane each have area 14.0m^2. Those in the xy plane have area 8.2m^2 ,and those in the zx plane have area 9.8m^2. An electric field of magnitude 11 N/C has components in the y and z directions and is directed at 58° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

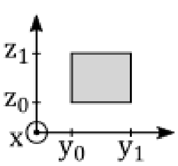
A. 6.270E+01 N· m^2/C

B. 6.897E+01 N· m^2/C

C. 7.586E+01 N· m^2/C

D. 8.345E+01 N· m^2/C

E. 9.179E+01 N· m^2/C



17. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.2$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=4.6$ m, $z=z_0=1.4$ m, and $z=z_1=4.5$ m. The surfaces in the yz plane each have area 9.0m^2. Those in the xy plane have area 6.4m^2 ,and those in the zx plane have area 6.8m^2. An electric field of magnitude 15 N/C has components in the y and z directions and is directed at 31° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

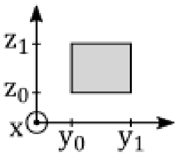
A. 3.959E+01 N· m^2/C

B. 4.354E+01 N· m^2/C

C. 4.790E+01 N· m^2/C

D. 5.269E+01 N· m^2/C

E. 5.796E+01 N· m^2/C



18. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.8$ m. The other four surfaces are rectangles in $y=y_0=1.2$ m, $y=y_1=5.9$ m, $z=z_0=1.3$ m, and $z=z_1=5.2$ m. The surfaces in the yz plane each have area $18.0m^2$. Those in the xy plane have area $8.5m^2$,and those in the zx plane have area $7.0m^2$. An electric field of magnitude 12 N/C has components in the y and z directions and is directed at 49° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

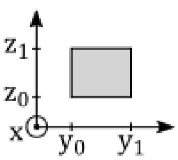
A. 4.777E+01 N· m^2/C

B. 5.254E+01 N· m^2/C

C. 5.780E+01 N· m^2/C

D. 6.358E+01 N· m^2/C

E. 6.993E+01 N· m^2/C



19. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.4$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=5.7$ m, $z=z_0=1.9$ m, and $z=z_1=5.4$ m. The surfaces in the yz plane each have area $15.0m^2$. Those in the xy plane have area $11.0m^2$,and those in the zx plane have area $8.4m^2$. An electric field of magnitude 8 N/C has components in the y and z directions and is directed at 26° from the z-axis. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 2.012E+01 N· m^2/C

B. 2.213E+01 N· m^2/C

C. 2.435E+01 N· m^2/C

D. 2.678E+01 N· m^2/C

E. 2.946E+01 N· m^2/C

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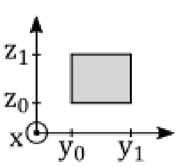
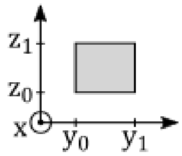


1. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.3$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.0$ m, $z=z_0=1.6$ m, and $z=z_1=4.8$ m. The surfaces in the yz plane each have area $11.0m^2$. Those in the xy plane have area $4.5m^2$,and those in the zx plane have area $4.2m^2$. An electric field has the xyz components $(0, 6.4, 6.8)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 2.662E+01 N· m^2/C

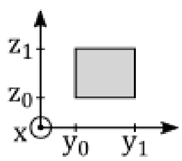
The next page might contain more answer choices for this question

B. 2.929E+01 N· m^2/C
C. 3.222E+01 N· m^2/C
D. 3.544E+01 N· m^2/C
E. 3.898E+01 N· m^2/C



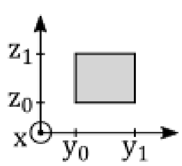
2. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.7 m. The other four surfaces are rectangles in y=y_0=1.7 m, y=y_1=4.3 m, z=z_0=1.8 m, and z=z_1=4.9 m. The surfaces in the yz plane each have area 8.1m^2. Those in the xy plane have area 7.0m^2 ,and those in the zx plane have area 8.4m^2. An electric field has the xyz components $(0, 9.2, 7.1)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 6.364E+01 N· m^2/C
B. 7.000E+01 N· m^2/C
C. 7.700E+01 N· m^2/C
D. 8.470E+01 N· m^2/C
E. 9.317E+01 N· m^2/C



3. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.6 m. The other four surfaces are rectangles in y=y_0=1.2 m, y=y_1=5.9 m, z=z_0=1.9 m, and z=z_1=5.0 m. The surfaces in the yz plane each have area 15.0m^2. Those in the xy plane have area 12.0m^2 ,and those in the zx plane have area 8.1m^2. An electric field has the xyz components $(0, 8.1, 6.8)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 6.529E+01 N· m^2/C
B. 7.181E+01 N· m^2/C
C. 7.900E+01 N· m^2/C
D. 8.690E+01 N· m^2/C
E. 9.559E+01 N· m^2/C



4. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.3 m. The other four surfaces are rectangles in y=y_0=1.6 m, y=y_1=5.3 m, z=z_0=1.3 m, and z=z_1=5.6 m. The surfaces in the yz plane each have area 16.0m^2. Those in the xy plane have area 4.8m^2 ,and those in the zx plane have area 5.6m^2. An electric field has the xyz components $(0, 5.5, 9.1)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.074E+01 N· m^2/C

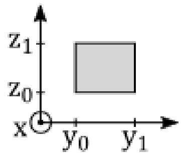
The next page might contain more answer choices for this question

B. 3.382E+01 N· m^2/C

C. 3.720E+01 N· m^2/C

D. 4.092E+01 N· m^2/C

E. 4.501E+01 N· m^2/C



5. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.3$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.2$ m, $z=z_0=1.8$ m, and $z=z_1=4.4$ m. The surfaces in the yz plane each have area $9.6m^2$. Those in the xy plane have area $8.5m^2$,and those in the zx plane have area $6.0m^2$. An electric field has the xyz components $(0, 8.7, 8.4)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

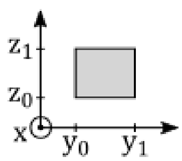
A. 4.730E+01 N· m^2/C

B. 5.203E+01 N· m^2/C

C. 5.723E+01 N· m^2/C

D. 6.295E+01 N· m^2/C

E. 6.925E+01 N· m^2/C



6. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.8$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=4.2$ m, $z=z_0=1.9$ m, and $z=z_1=5.5$ m. The surfaces in the yz plane each have area $10.0m^2$. Those in the xy plane have area $8.1m^2$,and those in the zx plane have area $10.0m^2$. An electric field has the xyz components $(0, 8.5, 6.4)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

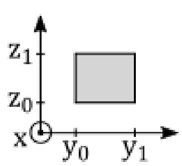
A. 7.081E+01 N· m^2/C

B. 7.789E+01 N· m^2/C

C. 8.568E+01 N· m^2/C

D. 9.425E+01 N· m^2/C

E. 1.037E+02 N· m^2/C



7. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.8$ m. The other four surfaces are rectangles in $y=y_0=1.4$ m, $y=y_1=5.0$ m, $z=z_0=1.6$ m, and $z=z_1=5.9$ m. The surfaces in the yz plane each have area $15.0m^2$. Those in the xy plane have area $6.5m^2$,and those in the zx plane have area $7.7m^2$. An electric field has the xyz components $(0, 8.0, 9.4)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 6.192E+01 N· m^2/C

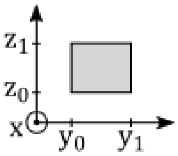
The next page might contain more answer choices for this question

B. 6.811E+01 N· m^2/C

C. 7.492E+01 N· m^2/C

D. 8.242E+01 N· m^2/C

E. 9.066E+01 N· m^2/C



8. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.2 m. The other four surfaces are rectangles in y=y_0=1.7 m, y=y_1=5.0 m, z=z_0=1.9 m, and z=z_1=4.3 m. The surfaces in the yz plane each have area 7.9m^2. Those in the xy plane have area 4.0m^2 ,and those in the zx plane have area 2.9m^2. An electric field has the xyz components $(0, 5.3, 9.1)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

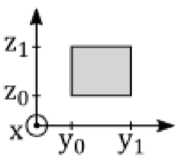
A. 1.388E+01 N· m^2/C

B. 1.526E+01 N· m^2/C

C. 1.679E+01 N· m^2/C

D. 1.847E+01 N· m^2/C

E. 2.032E+01 N· m^2/C



9. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=1.4 m. The other four surfaces are rectangles in y=y_0=1.3 m, y=y_1=5.6 m, z=z_0=1.7 m, and z=z_1=4.5 m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 6.0m^2 ,and those in the zx plane have area 3.9m^2. An electric field has the xyz components $(0, 6.5, 9.8)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

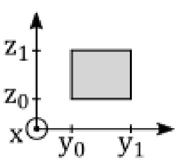
A. 1.740E+01 N· m^2/C

B. 1.914E+01 N· m^2/C

C. 2.106E+01 N· m^2/C

D. 2.316E+01 N· m^2/C

E. 2.548E+01 N· m^2/C



10. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and x=x_1=2.0 m. The other four surfaces are rectangles in y=y_0=1.4 m, y=y_1=4.7 m, z=z_0=1.2 m, and z=z_1=4.1 m. The surfaces in the yz plane each have area 9.6m^2. Those in the xy plane have area 6.6m^2 ,and those in the zx plane have area 5.8m^2. An electric field has the xyz components $(0, 8.4, 5.8)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 3.328E+01 N· m^2/C

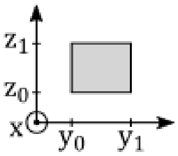
The next page might contain more answer choices for this question

B. 3.660E+01 N· m^2/C

C. 4.026E+01 N· m^2/C

D. 4.429E+01 N· m^2/C

E. 4.872E+01 N· m^2/C



11. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.0$ m. The other four surfaces are rectangles in $y=y_0=1.8$ m, $y=y_1=4.2$ m, $z=z_0=1.3$ m, and $z=z_1=5.8$ m. The surfaces in the yz plane each have area $11.0m^2$. Those in the xy plane have area $4.8m^2$,and those in the zx plane have area $9.0m^2$. An electric field has the xyz components $(0, 6.1, 5.6)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

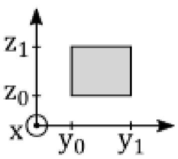
A. 4.125E+01 N· m^2/C

B. 4.537E+01 N· m^2/C

C. 4.991E+01 N· m^2/C

D. 5.490E+01 N· m^2/C

E. 6.039E+01 N· m^2/C



12. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.4$ m. The other four surfaces are rectangles in $y=y_0=1.1$ m, $y=y_1=4.8$ m, $z=z_0=1.8$ m, and $z=z_1=4.8$ m. The surfaces in the yz plane each have area $11.0m^2$. Those in the xy plane have area $8.9m^2$,and those in the zx plane have area $7.2m^2$. An electric field has the xyz components $(0, 5.9, 8.9)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

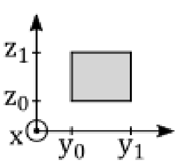
A. 2.901E+01 N· m^2/C

B. 3.192E+01 N· m^2/C

C. 3.511E+01 N· m^2/C

D. 3.862E+01 N· m^2/C

E. 4.248E+01 N· m^2/C



13. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.6$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=5.6$ m, $z=z_0=1.8$ m, and $z=z_1=4.4$ m. The surfaces in the yz plane each have area $10.0m^2$. Those in the xy plane have area $6.4m^2$,and those in the zx plane have area $4.2m^2$. An electric field has the xyz components $(0, 5.5, 7.3)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 1.891E+01 N· m^2/C

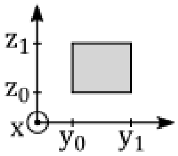
The next page might contain more answer choices for this question

B. 2.080E+01 N· m^2/C

C. 2.288E+01 N· m^2/C

D. 2.517E+01 N· m^2/C

E. 2.768E+01 N· m^2/C



14. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.1$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=4.2$ m, $z=z_0=1.1$ m, and $z=z_1=4.5$ m. The surfaces in the yz plane each have area 8.5m^2. Those in the xy plane have area 2.8m^2 ,and those in the zx plane have area 3.7m^2. An electric field has the xyz components $(0, 7.4, 8.9)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

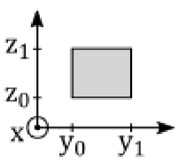
A. 2.079E+01 N· m^2/C

B. 2.287E+01 N· m^2/C

C. 2.516E+01 N· m^2/C

D. 2.768E+01 N· m^2/C

E. 3.044E+01 N· m^2/C



15. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.5$ m. The other four surfaces are rectangles in $y=y_0=1.3$ m, $y=y_1=5.3$ m, $z=z_0=1.3$ m, and $z=z_1=4.3$ m. The surfaces in the yz plane each have area 12.0m^2. Those in the xy plane have area 10.0m^2 ,and those in the zx plane have area 7.5m^2. An electric field has the xyz components $(0, 9.7, 9.3)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

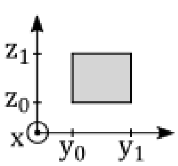
A. 6.614E+01 N· m^2/C

B. 7.275E+01 N· m^2/C

C. 8.003E+01 N· m^2/C

D. 8.803E+01 N· m^2/C

E. 9.683E+01 N· m^2/C



16. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.8$ m. The other four surfaces are rectangles in $y=y_0=1.1$ m, $y=y_1=5.6$ m, $z=z_0=1.8$ m, and $z=z_1=5.5$ m. The surfaces in the yz plane each have area 17.0m^2. Those in the xy plane have area 13.0m^2 ,and those in the zx plane have area 10.0m^2. An electric field has the xyz components $(0, 7.0, 5.7)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 4.953E+01 N· m^2/C

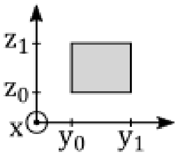
The next page might contain more answer choices for this question

B. 5.449E+01 $N\cdot m^2/C$

C. 5.993E+01 $N\cdot m^2/C$

D. 6.593E+01 $N\cdot m^2/C$

E. 7.252E+01 $N\cdot m^2/C$



17. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.7$ m. The other four surfaces are rectangles in $y=y_0=1.5$ m, $y=y_1=5.6$ m, $z=z_0=1.3$ m, and $z=z_1=4.2$ m. The surfaces in the yz plane each have area $12.0m^2$. Those in the xy plane have area $11.0m^2$,and those in the zx plane have area $7.8m^2$. An electric field has the xyz components $(0, 8.5, 7.3)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

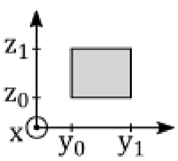
A. 5.000E+01 $N\cdot m^2/C$

B. 5.500E+01 $N\cdot m^2/C$

C. 6.050E+01 $N\cdot m^2/C$

D. 6.656E+01 $N\cdot m^2/C$

E. 7.321E+01 $N\cdot m^2/C$



18. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=1.5$ m. The other four surfaces are rectangles in $y=y_0=1.6$ m, $y=y_1=4.3$ m, $z=z_0=1.3$ m, and $z=z_1=5.1$ m. The surfaces in the yz plane each have area $10.0m^2$. Those in the xy plane have area $4.0m^2$,and those in the zx plane have area $5.7m^2$. An electric field has the xyz components $(0, 5.7, 7.5)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

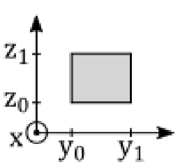
A. 3.249E+01 $N\cdot m^2/C$

B. 3.574E+01 $N\cdot m^2/C$

C. 3.931E+01 $N\cdot m^2/C$

D. 4.324E+01 $N\cdot m^2/C$

E. 4.757E+01 $N\cdot m^2/C$



19. Each surface of the rectangular box shown is aligned with the xyz coordinate system. Two surfaces occupy identical rectangles in the planes x=0 and $x=x_1=2.8$ m. The other four surfaces are rectangles in $y=y_0=1.7$ m, $y=y_1=4.5$ m, $z=z_0=1.5$ m, and $z=z_1=5.0$ m. The surfaces in the yz plane each have area $9.8m^2$. Those in the xy plane have area $7.8m^2$,and those in the zx plane have area $9.8m^2$. An electric field has the xyz components $(0, 6.1, 9.3)$ N/C. What is the magnitude (absolute value) of the electric flux through a surface aligned parallel to the xz plane?

A. 5.978E+01 $N\cdot m^2/C$

The next page might contain more answer choices for this question

B. 6.576E+01 N· m^2/C
C. 7.233E+01 N· m^2/C
D. 7.957E+01 N· m^2/C
E. 8.752E+01 N· m^2/C

d_cp2.6 Q4

1. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=4, y=0), (x=0, y=6), and (x=4, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{1.9}\hat{\imath} + 3x^{1.5}\hat{\jmath} + 3y^{1.6}\hat{k}$.
   A. 3.658E+02 V· m
   B. 4.024E+02 V· m
   C. 4.426E+02 V· m
   D. 4.869E+02 V· m
   E. 5.355E+02 V· m
2. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=4, y=0), (x=0, y=4), and (x=4, y=4), where x and y are measured in meters. The electric field is, $\vec{E} = 4y^{2.2}\hat{\imath} + 1x^{3.0}\hat{\jmath} + 2y^{1.7}\hat{k}$.
   A. 8.545E+01 V· m
   B. 9.400E+01 V· m
   C. 1.034E+02 V· m
   D. 1.137E+02 V· m
   E. 1.251E+02 V· m
3. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=7, y=0), (x=0, y=7), and (x=7, y=7), where x and y are measured in meters. The electric field is, $\vec{E} = 4y^{2.3}\hat{\imath} + 3x^{2.4}\hat{\jmath} + 2y^{1.8}\hat{k}$.
   A. 8.731E+02 V· m
   B. 9.604E+02 V· m
   C. 1.056E+03 V· m
   D. 1.162E+03 V· m
   E. 1.278E+03 V· m
4. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=5, y=0), (x=0, y=7), and (x=5, y=7), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{2.7}\hat{\imath} + 1x^{2.5}\hat{\jmath} + 3y^{3.3}\hat{k}$.
   A. 1.128E+04 V· m
   B. 1.241E+04 V· m
   C. 1.365E+04 V· m
   D. 1.502E+04 V· m
   E. 1.652E+04 V· m
5. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=5, y=0), (x=0, y=7), and (x=5, y=7), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{2.9}\hat{\imath} + 3x^{1.6}\hat{\jmath} + 4y^{2.5}\hat{k}$.

The next page might contain more answer choices for this question

A. 4.286E+03 V· m
B. 4.714E+03 V· m
C. 5.186E+03 V· m
D. 5.704E+03 V· m
E. 6.275E+03 V· m

6. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=8, y=0), (x=0, y=8), and (x=8, y=8), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^{2.8}\hat{\imath} + 5x^{2.7}\hat{\jmath} + 5y^{1.6}\hat{k}$.

A. 3.429E+03 V· m
B. 3.771E+03 V· m
C. 4.149E+03 V· m
D. 4.564E+03 V· m
E. 5.020E+03 V· m

7. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=7, y=0), (x=0, y=5), and (x=7, y=5), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^{2.4}\hat{\imath} + 4x^{1.7}\hat{\jmath} + 4y^{2.1}\hat{k}$.

A. 1.206E+03 V· m
B. 1.326E+03 V· m
C. 1.459E+03 V· m
D. 1.605E+03 V· m
E. 1.765E+03 V· m

8. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=7, y=0), (x=0, y=6), and (x=7, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.5}\hat{\imath} + 3x^{1.8}\hat{\jmath} + 2y^{2.8}\hat{k}$.

A. 3.337E+03 V· m
B. 3.670E+03 V· m
C. 4.037E+03 V· m
D. 4.441E+03 V· m
E. 4.885E+03 V· m

9. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=9, y=0), (x=0, y=9), and (x=9, y=9), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{2.8}\hat{\imath} + 1x^{2.3}\hat{\jmath} + 2y^{2.9}\hat{k}$.

A. 2.210E+04 V· m
B. 2.431E+04 V· m
C. 2.674E+04 V· m
D. 2.941E+04 V· m
E. 3.235E+04 V· m

10. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=7, y=0), (x=0, y=4), and (x=7, y=4), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.2}\hat{\imath} + 3x^{2.1}\hat{\jmath} + 5y^{3.3}\hat{k}$.

The next page might contain more answer choices for this question

A. 2.610E+03 V· m

B. 2.871E+03 V· m

C. 3.158E+03 V· m

D. 3.474E+03 V· m

E. 3.822E+03 V· m

11. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=5, y=0), (x=0, y=7), and (x=5, y=7), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.8}\hat{\imath} + 3x^{2.8}\hat{\jmath} + 2y^{2.4}\hat{k}$.

A. 1.997E+03 V· m

B. 2.197E+03 V· m

C. 2.417E+03 V· m

D. 2.659E+03 V· m

E. 2.924E+03 V· m

12. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=8, y=0), (x=0, y=6), and (x=8, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 4y^{1.4}\hat{\imath} + 2x^{2.3}\hat{\jmath} + 4y^{2.3}\hat{k}$.

A. 2.694E+03 V· m

B. 2.963E+03 V· m

C. 3.259E+03 V· m

D. 3.585E+03 V· m

E. 3.944E+03 V· m

13. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=6, y=0), (x=0, y=5), and (x=6, y=5), where x and y are measured in meters. The electric field is, $\vec{E} = 3y^{1.7}\hat{\imath} + 3x^{1.6}\hat{\jmath} + 4y^{2.7}\hat{k}$.

A. 2.067E+03 V· m

B. 2.274E+03 V· m

C. 2.501E+03 V· m

D. 2.752E+03 V· m

E. 3.027E+03 V· m

14. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=6, y=0), (x=0, y=6), and (x=6, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{1.8}\hat{\imath} + 3x^{1.9}\hat{\jmath} + 5y^{3.2}\hat{k}$.

A. 9.952E+03 V· m

B. 1.095E+04 V· m

C. 1.204E+04 V· m

D. 1.325E+04 V· m

E. 1.457E+04 V· m

15. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=6, y=0), (x=0, y=6), and (x=6, y=6), where x and y are measured in meters. The electric field is, $\vec{E} = 4y^{2.0}\hat{\imath} + 3x^{2.0}\hat{\jmath} + 3y^{3.0}\hat{k}$.

The next page might contain more answer choices for this question

A. 4.820E+03 V· m

C. 5.832E+03 V· m

B. 5.302E+03 V· m

D. 6.415E+03 V· m

E. 7.057E+03 V· m

16. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=6, y=0), (x=0, y=3), and (x=6, y=3), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^{1.6}\hat{\imath} + 3x^{2.6}\hat{\jmath} + 2y^{3.2}\hat{k}$.

    A. 1.969E+02 V· m

    B. 2.166E+02 V· m

    C. 2.383E+02 V· m

    D. 2.621E+02 V· m

    E. 2.883E+02 V· m

17. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=4, y=0), (x=0, y=3), and (x=4, y=3), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.7}\hat{\imath} + 2x^{2.9}\hat{\jmath} + 2y^{2.0}\hat{k}$.

    A. 7.200E+01 V· m

    B. 7.920E+01 V· m

    C. 8.712E+01 V· m

    D. 9.583E+01 V· m

    E. 1.054E+02 V· m

18. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=4, y=0), (x=0, y=9), and (x=4, y=9), where x and y are measured in meters. The electric field is, $\vec{E} = 1y^{2.2}\hat{\imath} + 1x^{3.3}\hat{\jmath} + 5y^{2.4}\hat{k}$.

    A. 7.054E+03 V· m

    B. 7.759E+03 V· m

    C. 8.535E+03 V· m

    D. 9.388E+03 V· m

    E. 1.033E+04 V· m

19. What is the magnetude (absolute value) of the electric flux through a rectangle that occupies the z=0 plane with corners at (x,y)= (x=0, y=0), (x=8, y=0), (x=0, y=8), and (x=8, y=8), where x and y are measured in meters. The electric field is, $\vec{E} = 2y^{2.0}\hat{\imath} + 2x^{2.1}\hat{\jmath} + 3y^{2.5}\hat{k}$.

    A. 9.027E+03 V· m

    B. 9.930E+03 V· m

    C. 1.092E+04 V· m

    D. 1.202E+04 V· m

    E. 1.322E+04 V· m

The next page might contain more answer choices for this question

d_cp2.6 Q5

1. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 2.8 nano-Coulombs. What is the magnitude of the electric field at a distance of 3.5 m from the center of the shells?

    A. 6.171E+00 N/C
    B. 6.789E+00 N/C
    C. 7.467E+00 N/C
    D. 8.214E+00 N/C
    E. 9.036E+00 N/C

2. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 5.6 nano-Coulombs. What is the magnitude of the electric field at a distance of 3.6 m from the center of the shells?

    A. 9.642E+00 N/C
    B. 1.061E+01 N/C
    C. 1.167E+01 N/C
    D. 1.283E+01 N/C
    E. 1.412E+01 N/C

3. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.6 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.8 m from the center of the shells?

    A. 1.017E+01 N/C
    B. 1.118E+01 N/C
    C. 1.230E+01 N/C
    D. 1.353E+01 N/C
    E. 1.488E+01 N/C

4. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 3.4 nano-Coulombs. What is the magnitude of the electric field at a distance of 2.8 m from the center of the shells?

    A. 5.865E+00 N/C
    B. 6.451E+00 N/C
    C. 7.096E+00 N/C
    D. 7.806E+00 N/C
    E. 8.587E+00 N/C

5. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 9.7 nano-Coulombs. What is the magnitude of the electric field at a distance of 4.4 m from the center of the shells?

    A. 1.491E+01 N/C
    B. 1.640E+01 N/C
    C. 1.804E+01 N/C
    D. 1.984E+01 N/C

The next page might contain more answer choices for this question

E. 2.182E+01 N/C

6. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 6.5 nano-Coulombs. What is the magnitude of the electric field at a distance of 1.3 m from the center of the shells?

   A. 2.601E+01 N/C
   B. 2.861E+01 N/C
   C. 3.147E+01 N/C
   D. 3.462E+01 N/C
   E. 3.808E+01 N/C

7. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 2.8 nano-Coulombs. What is the magnitude of the electric field at a distance of 4.8 m from the center of the shells?

   A. 2.988E+00 N/C
   B. 3.287E+00 N/C
   C. 3.616E+00 N/C
   D. 3.977E+00 N/C
   E. 4.375E+00 N/C

8. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.8 nano-Coulombs. What is the magnitude of the electric field at a distance of 1.3 m from the center of the shells?

   A. 2.837E+01 N/C
   B. 3.121E+01 N/C
   C. 3.433E+01 N/C
   D. 3.776E+01 N/C
   E. 4.154E+01 N/C

9. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 5.6 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.6 m from the center of the shells?

   A. 6.641E+00 N/C
   B. 7.305E+00 N/C
   C. 8.036E+00 N/C
   D. 8.839E+00 N/C
   E. 9.723E+00 N/C

10. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.4 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.4 m from the center of the shells?

   A. 8.580E+00 N/C
   B. 9.438E+00 N/C
   C. 1.038E+01 N/C
   D. 1.142E+01 N/C

The next page might contain more answer choices for this question

E. 1.256E+01 N/C

11. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 3.4 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.5 m from the center of the shells?

A. 5.058E+00 N/C

B. 5.564E+00 N/C

C. 6.120E+00 N/C

D. 6.732E+00 N/C

E. 7.405E+00 N/C

12. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 1.2 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.8 m from the center of the shells?

A. 1.096E+00 N/C

B. 1.206E+00 N/C

C. 1.327E+00 N/C

D. 1.459E+00 N/C

E. 1.605E+00 N/C

13. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 2.0 nano-Coulombs. What is the magnitude of the electric field at a distance of 3.7 m from the center of the shells?

A. 2.964E+00 N/C

B. 3.260E+00 N/C

C. 3.586E+00 N/C

D. 3.944E+00 N/C

E. 4.339E+00 N/C

14. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 6.4 nano-Coulombs. What is the magnitude of the electric field at a distance of 1.1 m from the center of the shells?

A. 3.251E+01 N/C

B. 3.577E+01 N/C

C. 3.934E+01 N/C

D. 4.328E+01 N/C

E. 4.760E+01 N/C

15. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.2 nano-Coulombs. What is the magnitude of the electric field at a distance of 4.6 m from the center of the shells?

A. 1.114E+01 N/C

B. 1.225E+01 N/C

C. 1.347E+01 N/C

D. 1.482E+01 N/C

The next page might contain more answer choices for this question

E. 1.630E+01 N/C

16. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 4.7 nano-Coulombs. What is the magnitude of the electric field at a distance of 4.2 m from the center of the shells?

A. 9.592E+00 N/C

B. 1.055E+01 N/C

C. 1.161E+01 N/C

D. 1.277E+01 N/C

E. 1.404E+01 N/C

17. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 1.9 nano-Coulombs. What is the magnitude of the electric field at a distance of 2.1 m from the center of the shells?

A. 5.297E+00 N/C

B. 5.827E+00 N/C

C. 6.409E+00 N/C

D. 7.050E+00 N/C

E. 7.755E+00 N/C

18. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 9.0 nano-Coulombs. What is the magnitude of the electric field at a distance of 5.5 m from the center of the shells?

A. 9.144E+00 N/C

B. 1.006E+01 N/C

C. 1.106E+01 N/C

D. 1.217E+01 N/C

E. 1.339E+01 N/C

19. Five concentric spherical shells have radius of exactly (1m, 2m, 3m, 4m, 5m).Each is uniformly charged with 7.3 nano-Coulombs. What is the magnitude of the electric field at a distance of 1.5 m from the center of the shells?

A. 1.994E+01 N/C

B. 2.194E+01 N/C

C. 2.413E+01 N/C

D. 2.655E+01 N/C

E. 2.920E+01 N/C

d_cp2.6 Q6

1. A non-conducting sphere of radius R=1.7 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.6}$ (rxR) where a=3 nC$\cdot$ m$^{-1.4}$. What is the magnitude of the electric field at a distance of 1.4 m from the center?

A. 1.327E+02 N/C

B. 1.460E+02 N/C

The next page might contain more answer choices for this question

C. 1.606E+02 N/C

D. 1.767E+02 N/C

E. 1.943E+02 N/C

2. A non-conducting sphere of radius R=2.2 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.4}$ (rxR) where a=3 nC· m$^{-1.6}$. What is the magnitude of the electric field at a distance of 0.86 m from the center?

A. 4.874E+01 N/C

B. 5.362E+01 N/C

C. 5.898E+01 N/C

D. 6.488E+01 N/C

E. 7.137E+01 N/C

3. A non-conducting sphere of radius R=3.5 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=2 nC· m$^{-1.5}$. What is the magnitude of the electric field at a distance of 2.2 m from the center?

A. 3.604E+02 N/C

B. 3.964E+02 N/C

C. 4.360E+02 N/C

D. 4.796E+02 N/C

E. 5.276E+02 N/C

4. A non-conducting sphere of radius R=3.5 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.2}$ (rxR) where a=2 nC· m$^{-1.8}$. What is the magnitude of the electric field at a distance of 2.3 m from the center?

A. 2.777E+02 N/C

B. 3.055E+02 N/C

C. 3.361E+02 N/C

D. 3.697E+02 N/C

E. 4.066E+02 N/C

5. A non-conducting sphere of radius R=2.9 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=2 nC· m$^{-1.5}$. What is the magnitude of the electric field at a distance of 1.5 m from the center?

A. 1.383E+02 N/C

B. 1.522E+02 N/C

C. 1.674E+02 N/C

D. 1.841E+02 N/C

E. 2.025E+02 N/C

6. A non-conducting sphere of radius R=3.8 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=2 nC· m$^{-1.5}$. What is the magnitude of the electric field at a distance of 3.0 m from the center?

A. 7.825E+02 N/C

B. 8.607E+02 N/C

The next page might contain more answer choices for this question

C. 9.468E+02 N/C
D. 1.041E+03 N/C
E. 1.146E+03 N/C

7. A non-conducting sphere of radius R=3.3 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.4}$ (rxR) where a=2 nC· $m^{-1.6}$. What is the magnitude of the electric field at a distance of 1.5 m from the center?
A. 1.123E+02 N/C
B. 1.235E+02 N/C
C. 1.358E+02 N/C
D. 1.494E+02 N/C
E. 1.644E+02 N/C

8. A non-conducting sphere of radius R=3.1 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.2}$ (rxR) where a=2 nC· $m^{-1.8}$. What is the magnitude of the electric field at a distance of 2.7 m from the center?
A. 4.782E+02 N/C
B. 5.260E+02 N/C
C. 5.787E+02 N/C
D. 6.365E+02 N/C
E. 7.002E+02 N/C

9. A non-conducting sphere of radius R=1.7 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.2}$ (rxR) where a=3 nC· $m^{-1.8}$. What is the magnitude of the electric field at a distance of 0.71 m from the center?
A. 3.797E+01 N/C
B. 4.177E+01 N/C
C. 4.595E+01 N/C
D. 5.054E+01 N/C
E. 5.560E+01 N/C

10. A non-conducting sphere of radius R=1.4 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.6}$ (rxR) where a=3 nC· $m^{-1.4}$. What is the magnitude of the electric field at a distance of 1.3 m from the center?
A. 1.457E+02 N/C
B. 1.603E+02 N/C
C. 1.763E+02 N/C
D. 1.939E+02 N/C
E. 2.133E+02 N/C

11. A non-conducting sphere of radius R=3.9 m has a non-uniform charge density that varies with the distnce from its center as given by $\rho(r)=ar^{1.4}$ (rxR) where a=2 nC· $m^{-1.6}$. What is the magnitude of the electric field at a distance of 2.6 m from the center?
A. 3.821E+02 N/C
B. 4.203E+02 N/C

The next page might contain more answer choices for this question

C. 4.624E+02 N/C

D. 5.086E+02 N/C

E. 5.594E+02 N/C

12. A non-conducting sphere of radius R=1.5 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=2 nC· m$^{-1.5}$. What is the magnitude of the electric field at a distance of 0.73 m from the center?

A. 2.285E+01 N/C

B. 2.514E+01 N/C

C. 2.765E+01 N/C

D. 3.042E+01 N/C

E. 3.346E+01 N/C

13. A non-conducting sphere of radius R=3.7 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.4}$ (rxR) where a=2 nC· m$^{-1.6}$. What is the magnitude of the electric field at a distance of 3.1 m from the center?

A. 6.411E+02 N/C

B. 7.052E+02 N/C

C. 7.757E+02 N/C

D. 8.533E+02 N/C

E. 9.386E+02 N/C

14. A non-conducting sphere of radius R=3.8 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.7}$ (rxR) where a=3 nC· m$^{-1.3}$. What is the magnitude of the electric field at a distance of 3.1 m from the center?

A. 1.390E+03 N/C

B. 1.530E+03 N/C

C. 1.682E+03 N/C

D. 1.851E+03 N/C

E. 2.036E+03 N/C

15. A non-conducting sphere of radius R=1.7 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=3 nC· m$^{-1.5}$. What is the magnitude of the electric field at a distance of 0.64 m from the center?

A. 2.039E+01 N/C

B. 2.243E+01 N/C

C. 2.467E+01 N/C

D. 2.714E+01 N/C

E. 2.985E+01 N/C

16. A non-conducting sphere of radius R=1.2 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.6}$ (rxR) where a=2 nC· m$^{-1.4}$. What is the magnitude of the electric field at a distance of 0.76 m from the center?

A. 2.406E+01 N/C

B. 2.646E+01 N/C

The next page might contain more answer choices for this question

C. 2.911E+01 N/C
D. 3.202E+01 N/C
E. 3.522E+01 N/C

17. A non-conducting sphere of radius R=2.5 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.8}$ (rxR) where a=2 nC· m$^{-1.2}$. What is the magnitude of the electric field at a distance of 1.7 m from the center?
    A. 2.079E+02 N/C
    B. 2.287E+02 N/C
    C. 2.516E+02 N/C
    D. 2.767E+02 N/C
    E. 3.044E+02 N/C

18. A non-conducting sphere of radius R=2.9 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.5}$ (rxR) where a=3 nC· m$^{-1.5}$. What is the magnitude of the electric field at a distance of 1.7 m from the center?
    A. 2.579E+02 N/C
    B. 2.837E+02 N/C
    C. 3.121E+02 N/C
    D. 3.433E+02 N/C
    E. 3.776E+02 N/C

19. A non-conducting sphere of radius R=3.0 m has a non-uniform charge density that varies with the distnce from its center as given by ρ(r)=ar$^{1.2}$ (rxR) where a=2 nC· m$^{-1.8}$. What is the magnitude of the electric field at a distance of 2.1 m from the center?
    A. 2.274E+02 N/C
    B. 2.501E+02 N/C
    C. 2.751E+02 N/C
    D. 3.026E+02 N/C
    E. 3.329E+02 N/C

6 c19ElectricPotentialField_GaussLaw

1. A cylinder of radius, R, and height H has a uniform charge density of ρ. The height is much less than the radius: $H << R$. The electric field at the center vanishes. What formula describes the electric field at a distance, z, on axis from the center if $z > H/2$?[46]
    A. answer: $\varepsilon_0 E = \rho z$
    B. answer: $\varepsilon_0 E = H\rho$
    C. answer: $\varepsilon_0 E = H\rho z$
    D. answer: $\varepsilon_0 E = H\rho/2$
    E. answer: $\varepsilon_0 E = r\rho$

2. A cylinder of radius, R, and height H has a uniform charge density of ρ. The height is much less than the radius: $H << R$. The electric field at the center vanishes. What formula describes the electric field at a distance, z, on axis from the center if $z < H/2$?[47]

The next page might contain more answer choices for this question

A. answer: $\varepsilon_0 E = H\rho/2$

B. answer: $\varepsilon_0 E = \rho z/2$

C. answer: $\varepsilon_0 E = \rho z$

D. answer: $\varepsilon_0 E = H\rho$

E. answer: $\varepsilon_0 E = H\rho z$

3. A sphere has a uniform charge density of ρ, and a radius or R. What formula describes the electric field at a distance $r > R$?[48]

   A. answer: $r^2\varepsilon_0 E = rR^2\rho/2$

   B. answer: $r^2\varepsilon_0 E = R^3\rho/2$

   C. answer: $r^2\varepsilon_0 E = r^3\rho/3$

   D. answer: $r^2\varepsilon_0 E = r^3\rho/2$

   E. answer: $r^2\varepsilon_0 E = R^3\rho/3$

4. A sphere has a uniform charge density of ρ, and a radius equal to R. What formula describes the electric field at a distance $r < R$?[49]

   A. answer: $r^2\varepsilon_0 E = r^3\rho/2$

   B. answer: $r^2\varepsilon_0 E = R^3\rho/3$

   C. answer: $r^2\varepsilon_0 E = Rr^2\rho/3$

   D. answer: $r^2\varepsilon_0 E = r^3\rho/3$

   E. answer: $r^2\varepsilon_0 E = R^3\rho/2$

5. A cylinder of radius, R, and height H has a uniform charge density of ρ. The height is much greater than the radius: $H >> R$?. The electric field at the center vanishes. What formula describes the electric field at a distance, r, radially from the center if $r < R$? [50]

   A. answer: $2R\varepsilon_0 E = r^2\rho$

   B. answer: $2r\varepsilon_0 E = R^2\rho$

   C. answer: $2\varepsilon_0 E = r\rho$

   D. answer: $2\varepsilon_0 E = R\rho$

   E. answer: $2r^2\varepsilon_0 E = R^3\rho$

6. A cylinder of radius, R, and height H has a uniform charge density of ρ. The height is much greater than the radius: $H >>$. The electric field at the center vanishes. What formula describes the electric field at a distance, r, radially from the center if $r > R$?[51]

   A. answer: $2R\varepsilon_0 E = r^2\rho$

   B. answer: $2\varepsilon_0 E = r\rho$

   C. answer: $2r\varepsilon_0 E = R^2\rho$

   D. answer: $2r\varepsilon_0 E = 2R^2\rho$

   E. answer: $2r^2\varepsilon_0 E = R^3\rho$

The next page might contain more answer choices for this question

7 c19ElectricPotentialField_SurfaceIntegral

1. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.35 + 2.57z)\rho^3\hat{\rho} + 7.45z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.[52]

   A. 1.148E+03

   B. 1.391E+03

   C. 1.685E+03

   D. 2.042E+03

   E. 2.473E+03

2. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.35 + 2.57z)\rho^3\hat{\rho} + 7.45z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.[53]

   A. 2.221E+03

   B. 2.690E+03

   C. 3.259E+03

   D. 3.949E+03

   E. 4.784E+03

3. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.35 + 2.57z)\rho^3\hat{\rho} + 7.45z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.[54]

   A. 4.59E+03

   B. 5.56E+03

   C. 6.73E+03

   D. 8.15E+03

   E. 9.88E+03

7.1 Renditions

c19ElectricPotentialField_SurfaceIntegral Q1

1. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.05 + 2.59z)\rho^2\hat{\rho} + 7.4z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

   A. 6.908E+02

   B. 8.369E+02

   C. 1.014E+03

   D. 1.228E+03

   E. 1.488E+03

2. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.12 + 1.85z)\rho^3\hat{\rho} + 8.88z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

The next page might contain more answer choices for this question

- A. 3.041E+02
- B. 3.684E+02
- **C. 4.464E+02**
- D. 5.408E+02
- E. 6.552E+02

3. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2 + 1.45z)\rho^2\hat{\rho} + 8.02z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.
   - A. 3.742E+02
   - B. 4.534E+02
   - C. 5.493E+02
   - D. 6.655E+02
   - **E. 8.063E+02**

4. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.14 + 2.8z)\rho^2\hat{\rho} + 9.94z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.
   - A. 2.810E+02
   - B. 3.404E+02
   - C. 4.124E+02
   - **D. 4.996E+02**
   - E. 6.053E+02

5. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.85 + 1.33z)\rho^3\hat{\rho} + 7.52z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.
   - A. 1.304E+03
   - B. 1.579E+03
   - **C. 1.914E+03**
   - D. 2.318E+03
   - E. 2.809E+03

6. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.07 + 2.87z)\rho^2\hat{\rho} + 9.56z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.
   - A. 7.933E+02
   - **B. 9.611E+02**
   - C. 1.164E+03
   - D. 1.411E+03
   - E. 1.709E+03

The next page might contain more answer choices for this question

7. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.17 + 1.5z)\rho^2\hat{\rho} + 8.75z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

   A. 3.630E+02
   B. 4.398E+02
   C. 5.329E+02
   D. 6.456E+02
   E. 7.821E+02

8. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.28 + 1.72z)\rho^3\hat{\rho} + 7.33z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

   A. 2.597E+03
   B. 3.147E+03
   C. 3.812E+03
   D. 4.619E+03
   E. 5.596E+03

9. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.04 + 1.66z)\rho^2\hat{\rho} + 7.54z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

   A. 8.528E+02
   B. 1.033E+03
   C. 1.252E+03
   D. 1.516E+03
   E. 1.837E+03

10. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.21 + 1.16z)\rho^2\hat{\rho} + 7.96z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

    A. 3.417E+03
    B. 4.140E+03
    C. 5.016E+03
    D. 6.077E+03
    E. 7.362E+03

11. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.12 + 1.68z)\rho^2\hat{\rho} + 8.83z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

    A. 4.593E+03
    B. 5.564E+03
    C. 6.741E+03
    D. 8.167E+03

The next page might contain more answer choices for this question

E. 9.894E+03

12. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.05 + 2.05z)\rho^2\hat{\rho} + 9.62z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

    A. 4.489E+02
    B. 5.438E+02
    C. 6.589E+02
    D. 7.983E+02
    E. 9.671E+02

13. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.93 + 2.31z)\rho^3\hat{\rho} + 7.21z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

    A. 6.731E+02
    B. 8.154E+02
    C. 9.879E+02
    D. 1.197E+03
    E. 1.450E+03

14. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.24 + 1.11z)\rho^3\hat{\rho} + 8.16z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

    A. 2.769E+03
    B. 3.354E+03
    C. 4.064E+03
    D. 4.923E+03
    E. 5.965E+03

15. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.96 + 2.52z)\rho^2\hat{\rho} + 7.11z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

    A. 4.522E+02
    B. 5.478E+02
    C. 6.637E+02
    D. 8.041E+02
    E. 9.742E+02

16. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.86 + 2.43z)\rho^2\hat{\rho} + 9.75z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

    A. 6.201E+02
    B. 7.513E+02

The next page might contain more answer choices for this question

C. 9.102E+02

D. 1.103E+03

E. 1.336E+03

17. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.24 + 2.08z)\rho^2\hat{\rho} + 8.93z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

A. 1.704E+03

B. 2.064E+03

C. 2.501E+03

D. 3.030E+03

E. 3.671E+03

18. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.89 + 1.31z)\rho^3\hat{\rho} + 8.35z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

A. 5.311E+02

B. 6.434E+02

C. 7.795E+02

D. 9.444E+02

E. 1.144E+03

19. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.37 + 2.6z)\rho^2\hat{\rho} + 8.84z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

A. 1.362E+03

B. 1.650E+03

C. 2.000E+03

D. 2.423E+03

E. 2.935E+03

20. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.45 + 2.26z)\rho^2\hat{\rho} + 8.92z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

A. 5.043E+02

B. 6.109E+02

C. 7.402E+02

D. 8.967E+02

E. 1.086E+03

21. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.88 + 1.29z)\rho^2\hat{\rho} + 7.2z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

The next page might contain more answer choices for this question

A. 1.248E+03
B. 1.512E+03
C. 1.832E+03
D. 2.220E+03
E. 2.689E+03

22. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.44 + 2.86z)\rho^2\hat{\rho} + 7.42z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{top} \vec{F} \cdot \hat{n} dA\right|$ over the top surface of the cylinder.

A. 5.664E+03
B. 6.863E+03
C. 8.314E+03
D. 1.007E+04
E. 1.220E+04

c19ElectricPotentialField_SurfaceIntegral Q2

1. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.05 + 2.59z)\rho^2\hat{\rho} + 7.4z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

A. 6.457E+02
B. 7.823E+02
C. 9.477E+02
D. 1.148E+03
E. 1.391E+03

2. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.12 + 1.85z)\rho^3\hat{\rho} + 8.88z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

A. 8.525E+02
B. 1.033E+03
C. 1.251E+03
D. 1.516E+03
E. 1.837E+03

3. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2 + 1.45z)\rho^2\hat{\rho} + 8.02z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

A. 4.021E+02
B. 4.872E+02
C. 5.902E+02
D. 7.151E+02
E. 8.663E+02

The next page might contain more answer choices for this question

4. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.14 + 2.8z)\rho^2\hat{\rho} + 9.94z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

   A. 2.420E+02
   B. 2.931E+02
   C. 3.551E+02
   D. 4.303E+02
   E. 5.213E+02

5. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.85 + 1.33z)\rho^3\hat{\rho} + 7.52z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

   A. 2.622E+03
   B. 3.177E+03
   C. 3.849E+03
   D. 4.663E+03
   E. 5.649E+03

6. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.07 + 2.87z)\rho^2\hat{\rho} + 9.56z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

   A. 4.162E+02
   B. 5.042E+02
   C. 6.109E+02
   D. 7.401E+02
   E. 8.967E+02

7. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.17 + 1.5z)\rho^2\hat{\rho} + 8.75z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

   A. 2.454E+02
   B. 2.973E+02
   C. 3.601E+02
   D. 4.363E+02
   E. 5.286E+02

8. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.28 + 1.72z)\rho^3\hat{\rho} + 7.33z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

   A. 3.232E+03
   B. 3.915E+03
   C. 4.743E+03
   D. 5.747E+03

The next page might contain more answer choices for this question

E. 6.962E+03

9. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.04 + 1.66z)\rho^2\hat{\rho} + 7.54z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

   A. 9.431E+02
   B. 1.143E+03
   C. 1.384E+03
   D. 1.677E+03
   E. 2.032E+03

10. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.21 + 1.16z)\rho^2\hat{\rho} + 7.96z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

    A. 1.533E+03
    B. 1.857E+03
    C. 2.250E+03
    D. 2.725E+03
    E. 3.302E+03

11. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.12 + 1.68z)\rho^2\hat{\rho} + 8.83z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

    A. 2.158E+03
    B. 2.614E+03
    C. 3.167E+03
    D. 3.837E+03
    E. 4.649E+03

12. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.05 + 2.05z)\rho^2\hat{\rho} + 9.62z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

    A. 2.318E+02
    B. 2.808E+02
    C. 3.402E+02
    D. 4.122E+02
    E. 4.994E+02

13. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.93 + 2.31z)\rho^3\hat{\rho} + 7.21z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

    A. 6.546E+02
    B. 7.931E+02

The next page might contain more answer choices for this question

C. 9.609E+02

D. 1.164E+03

E. 1.410E+03

14. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.24 + 1.11z)\rho^3\hat{\rho} + 8.16z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F}\cdot\hat{n}dA\right|$ over the curved side surface of the cylinder.

A. 9.205E+02

B. 1.115E+03

C. 1.351E+03

D. 1.637E+03

E. 1.983E+03

15. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.96 + 2.52z)\rho^2\hat{\rho} + 7.11z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F}\cdot\hat{n}dA\right|$ over the curved side surface of the cylinder.

A. 4.027E+02

B. 4.879E+02

C. 5.911E+02

D. 7.162E+02

E. 8.676E+02

16. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.86 + 2.43z)\rho^2\hat{\rho} + 9.75z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F}\cdot\hat{n}dA\right|$ over the curved side surface of the cylinder.

A. 5.610E+02

B. 6.796E+02

C. 8.234E+02

D. 9.975E+02

E. 1.209E+03

17. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.24 + 2.08z)\rho^2\hat{\rho} + 8.93z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F}\cdot\hat{n}dA\right|$ over the curved side surface of the cylinder.

A. 3.799E+02

B. 4.603E+02

C. 5.576E+02

D. 6.756E+02

E. 8.185E+02

18. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.89 + 1.31z)\rho^3\hat{\rho} + 8.35z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F}\cdot\hat{n}dA\right|$ over the curved side surface of the cylinder.

The next page might contain more answer choices for this question

A. 6.411E+02

B. 7.767E+02

C. 9.410E+02

D. 1.140E+03

E. 1.381E+03

19. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.37 + 2.6z)\rho^2\hat{\rho} + 8.84z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

A. 7.465E+02

B. 9.044E+02

C. 1.096E+03

D. 1.327E+03

E. 1.608E+03

20. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.45 + 2.26z)\rho^2\hat{\rho} + 8.92z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

A. 3.356E+02

B. 4.066E+02

C. 4.926E+02

D. 5.968E+02

E. 7.230E+02

21. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.88 + 1.29z)\rho^2\hat{\rho} + 7.2z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

A. 1.579E+03

B. 1.914E+03

C. 2.318E+03

D. 2.809E+03

E. 3.403E+03

22. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.44 + 2.86z)\rho^2\hat{\rho} + 7.42z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\int_{side} \vec{F} \cdot \hat{n} dA\right|$ over the curved side surface of the cylinder.

A. 1.692E+03

B. 2.050E+03

C. 2.484E+03

D. 3.009E+03

E. 3.645E+03

The next page might contain more answer choices for this question

c19ElectricPotentialField_SurfaceIntegral Q3

1. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.05 + 2.59z)\rho^2\hat{\rho} + 7.4z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F}\cdot\hat{n}dA\right|$ over the entire surface of the cylinder.
   - A. 6.46E+02
   - B. 7.82E+02
   - C. 9.48E+02
   - D. 1.15E+03
   - **E. 1.39E+03**

2. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.12 + 1.85z)\rho^3\hat{\rho} + 8.88z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F}\cdot\hat{n}dA\right|$ over the entire surface of the cylinder.
   - A. 3.96E+02
   - B. 4.79E+02
   - C. 5.81E+02
   - D. 7.04E+02
   - **E. 8.53E+02**

3. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2 + 1.45z)\rho^2\hat{\rho} + 8.02z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F}\cdot\hat{n}dA\right|$ over the entire surface of the cylinder.
   - A. 1.13E+03
   - B. 1.37E+03
   - C. 1.66E+03
   - **D. 2.01E+03**
   - E. 2.44E+03

4. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.14 + 2.8z)\rho^2\hat{\rho} + 9.94z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F}\cdot\hat{n}dA\right|$ over the entire surface of the cylinder.
   - A. 2.93E+02
   - B. 3.55E+02
   - **C. 4.30E+02**
   - D. 5.21E+02
   - E. 6.32E+02

5. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.85 + 1.33z)\rho^3\hat{\rho} + 7.52z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F}\cdot\hat{n}dA\right|$ over the entire surface of the cylinder.
   - A. 3.18E+03
   - B. 3.85E+03

The next page might contain more answer choices for this question

C. 4.66E+03

D. 5.65E+03

E. 6.84E+03

6. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.07 + 2.87z)\rho^2\hat{\rho} + 9.56z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

A. 1.59E+03

B. 1.93E+03

C. 2.34E+03

D. 2.83E+03

E. 3.43E+03

7. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.17 + 1.5z)\rho^2\hat{\rho} + 8.75z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

A. 3.60E+02

B. 4.36E+02

C. 5.29E+02

D. 6.40E+02

E. 7.76E+02

8. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.28 + 1.72z)\rho^3\hat{\rho} + 7.33z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

A. 1.50E+04

B. 1.82E+04

C. 2.20E+04

D. 2.66E+04

E. 3.23E+04

9. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.04 + 1.66z)\rho^2\hat{\rho} + 7.54z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

A. 9.43E+02

B. 1.14E+03

C. 1.38E+03

D. 1.68E+03

E. 2.03E+03

10. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.21 + 1.16z)\rho^2\hat{\rho} + 7.96z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

The next page might contain more answer choices for this question

A. 6.69E+03

B. 8.10E+03

C. 9.81E+03

D. 1.19E+04

E. 1.44E+04

11. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.12 + 1.68z)\rho^2\hat{\rho} + 8.83z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

A. 1.29E+04

B. 1.56E+04

C. 1.89E+04

D. 2.30E+04

E. 2.78E+04

12. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.05 + 2.05z)\rho^2\hat{\rho} + 9.62z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

A. 1.09E+03

B. 1.32E+03

C. 1.60E+03

D. 1.94E+03

E. 2.35E+03

13. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.93 + 2.31z)\rho^3\hat{\rho} + 7.21z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

A. 5.40E+02

B. 6.55E+02

C. 7.93E+02

D. 9.61E+02

E. 1.16E+03

14. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.24 + 1.11z)\rho^3\hat{\rho} + 8.16z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

A. 4.69E+03

B. 5.69E+03

C. 6.89E+03

D. 8.35E+03

E. 1.01E+04

The next page might contain more answer choices for this question

15. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.96 + 2.52z)\rho^2\hat{\rho} + 7.11z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

   A. 5.91E+02
   B. 7.16E+02
   C. 8.68E+02
   D. 1.05E+03
   E. 1.27E+03

16. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.86 + 2.43z)\rho^2\hat{\rho} + 9.75z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

   A. 4.63E+02
   B. 5.61E+02
   C. 6.80E+02
   D. 8.23E+02
   E. 9.98E+02

17. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.24 + 2.08z)\rho^2\hat{\rho} + 8.93z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

   A. 3.13E+03
   B. 3.79E+03
   C. 4.59E+03
   D. 5.56E+03
   E. 6.74E+03

18. A cylinder of radius, r=2, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.89 + 1.31z)\rho^3\hat{\rho} + 8.35z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

   A. 9.41E+02
   B. 1.14E+03
   C. 1.38E+03
   D. 1.67E+03
   E. 2.03E+03

19. A cylinder of radius, r=3, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.37 + 2.6z)\rho^2\hat{\rho} + 8.84z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

   A. 4.63E+03
   B. 5.61E+03
   C. 6.79E+03
   D. 8.23E+03

The next page might contain more answer choices for this question

E. 9.97E+03

20. A cylinder of radius, r=2, and height, h=4, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.45 + 2.26z)\rho^2\hat{\rho} + 8.92z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

    A. 1.29E+03
    B. 1.56E+03
    C. 1.89E+03
    D. 2.29E+03
    E. 2.77E+03

21. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (1.88 + 1.29z)\rho^2\hat{\rho} + 7.2z^2\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

    A. 1.08E+03
    B. 1.30E+03
    C. 1.58E+03
    D. 1.91E+03
    E. 2.32E+03

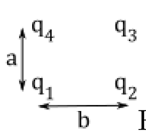
22. A cylinder of radius, r=3, and height, h=6, is centered at the origin and oriented along the z axis. A vector field can be expressed in cylindrical coordinates as, $\vec{F} = (2.44 + 2.86z)\rho^2\hat{\rho} + 7.42z^3\hat{z}$. Let $\hat{n}$ be the outward unit normal to this cylinder and evaluate $\left|\oint \vec{F} \cdot \hat{n} dA\right|$ over the entire surface of the cylinder.

    A. 9.41E+03
    B. 1.14E+04
    C. 1.38E+04
    D. 1.67E+04
    E. 2.03E+04

8 d_cp2.7

1. A 3 C charge is separated from a 5 C charge by distance of 10 cm. What is the work done by increasing this separation to 15 cm?[55]

    A. 4.494E-07 J
    B. 4.943E-07 J
    C. 5.437E-07 J
    D. 5.981E-07 J
    E. 6.579E-07 J

2. 

Four charges lie at the corners of a 1 cm by 1 cm square as shown (i.e., "a"="b"=1 cm.) The charges are q_1=2 µ C, q_2=3 µ C, q_3=4 µ C, and q_4=5 µ C. How much work was required to assemble these four charges from infinity?[56]

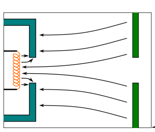
The next page might contain more answer choices for this question

A. 3.945E+01 J
B. 4.339E+01 J
C. 4.773E+01 J
D. 5.251E+01 J
E. 5.776E+01 J

3. A 12.0 V battery can move 5,000 C of charge. How many Joules does it deliver?[57]
A. 6.000E+04 J
B. 6.600E+04 J
C. 7.260E+04 J
D. 7.986E+04 J
E. 8.785E+04 J

4. When a 12 V battery operates a 30 W bulb, how many electrons pass through it each second?[58]
A. 1.560E+19 electrons
B. 1.716E+19 electrons
C. 1.888E+19 electrons
D. 2.077E+19 electrons
E. 2.285E+19 electrons

5. Calculate the final speed of a free electron accelerated from rest through a potential difference of 100 V.[59]
A. 4.902E+06 m/s
B. 5.392E+06 m/s
C. 5.931E+06 m/s
D. 6.524E+06 m/s
E. 7.176E+06 m/s

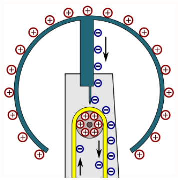
6. An electron gun has parallel plates separated by 4 cm and gives electrons 25 keV of energy. What force would the field between the plates exert on a 0.5 μ C charge that gets between the plates?[60]
A. 3.125E-01 N
B. 3.437E-01 N
C. 3.781E-01 N
D. 4.159E-01 N
E. 4.575E-01 N

7. Assume that a 2 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are $(4\,\text{cm}, 0°)$ and P_2 is at $(12\,\text{cm}, 24°)$.[61]
A. 2.046E+02 V
B. 2.251E+02 V
C. 2.476E+02 V

The next page might contain more answer choices for this question

D. 2.723E+02 V

E. 2.996E+02 V

8. 
A Van de Graff generator has a 25 cm diameter metal sphere that produces 100 kV near its surface. What is the excess charge on the sphere?[62]

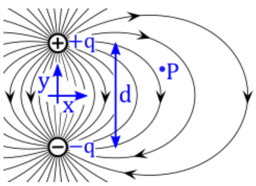
A. 1.149E+00 μ C

B. 1.264E+00 μ C

C. 1.391E+00 μ C

D. 1.530E+00 μ C

E. 1.683E+00 μ C

9. 

A diploe has a charge magnitude of q=3 nC and a separation distance of d=4 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3 cm, y=2 cm)? Note that following the textbook's example, the y-value of the field point at 2 cm matches the disance of the positive charge above the x-axis.[63]

A. 3.268E+02 V

B. 3.595E+02 V

C. 3.955E+02 V

D. 4.350E+02 V

E. 4.785E+02 V

10. If a 10 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=100 V is $x^2 + y^2 + z^2 = R^2$, where R= [64]

A. 8.988E-01 m

B. 9.886E-01 m

C. 1.087E+00 m

D. 1.196E+00 m

E. 1.316E+00 m

11. Two large parallel conducting plates are separated by 6.5 mm. Equal and opposite surface charges of 6.810E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 100 V?[65]

A. 8.549E-01 mm

B. 9.831E-01 mm

C. 1.131E+00 mm

D. 1.300E+00 mm

E. 1.495E+00 mm

The next page might contain more answer choices for this question

8.1 Renditions

d_cp2.7 Q1

1. A 5 C charge is separated from a 9 C charge by distance of 15 cm. What is the work done by increasing this separation to 21 cm?
   - A. 7.003E-07 J
   - **B. 7.704E-07 J**
   - C. 8.474E-07 J
   - D. 9.321E-07 J
   - E. 1.025E-06 J
2. A 7 C charge is separated from a 15 C charge by distance of 14 cm. What is the work done by increasing this separation to 20 cm?
   - A. 1.519E-06 J
   - B. 1.671E-06 J
   - C. 1.838E-06 J
   - **D. 2.022E-06 J**
   - E. 2.224E-06 J
3. A 6 C charge is separated from a 13 C charge by distance of 8 cm. What is the work done by increasing this separation to 16 cm?
   - A. 3.292E-06 J
   - B. 3.621E-06 J
   - C. 3.983E-06 J
   - **D. 4.381E-06 J**
   - E. 4.820E-06 J
4. A 7 C charge is separated from a 12 C charge by distance of 9 cm. What is the work done by increasing this separation to 15 cm?
   - A. 2.292E-06 J
   - B. 2.521E-06 J
   - C. 2.773E-06 J
   - D. 3.050E-06 J
   - **E. 3.355E-06 J**
5. A 7 C charge is separated from a 11 C charge by distance of 11 cm. What is the work done by increasing this separation to 19 cm?
   - A. 2.408E-06 J
   - **B. 2.649E-06 J**
   - C. 2.914E-06 J
   - D. 3.205E-06 J
   - E. 3.526E-06 J
6. A 2 C charge is separated from a 6 C charge by distance of 13 cm. What is the work done by increasing this separation to 16 cm?

The next page might contain more answer choices for this question

- **A. 1.556E-07 J**
- B. 1.711E-07 J
- C. 1.882E-07 J
- D. 2.070E-07 J
- E. 2.277E-07 J

7. A 2 C charge is separated from a 10 C charge by distance of 8 cm. What is the work done by increasing this separation to 14 cm?
   - A. 8.754E-07 J
   - **B. 9.630E-07 J**
   - C. 1.059E-06 J
   - D. 1.165E-06 J
   - E. 1.282E-06 J

8. A 7 C charge is separated from a 12 C charge by distance of 11 cm. What is the work done by increasing this separation to 19 cm?
   - **A. 2.890E-06 J**
   - B. 3.179E-06 J
   - C. 3.497E-06 J
   - D. 3.846E-06 J
   - E. 4.231E-06 J

9. A 3 C charge is separated from a 9 C charge by distance of 13 cm. What is the work done by increasing this separation to 21 cm?
   - A. 6.465E-07 J
   - **B. 7.111E-07 J**
   - C. 7.822E-07 J
   - D. 8.604E-07 J
   - E. 9.465E-07 J

10. A 2 C charge is separated from a 10 C charge by distance of 10 cm. What is the work done by increasing this separation to 16 cm?
    - A. 6.128E-07 J
    - **B. 6.741E-07 J**
    - C. 7.415E-07 J
    - D. 8.156E-07 J
    - E. 8.972E-07 J

11. A 3 C charge is separated from a 7 C charge by distance of 10 cm. What is the work done by increasing this separation to 15 cm?
    - A. 5.199E-07 J
    - B. 5.719E-07 J
    - **C. 6.291E-07 J**
    - D. 6.920E-07 J

The next page might contain more answer choices for this question

E. 7.612E-07 J

12. A 5 C charge is separated from a 9 C charge by distance of 14 cm. What is the work done by increasing this separation to 18 cm?

    A. 4.385E-07 J
    B. 4.823E-07 J
    C. 5.306E-07 J
    D. 5.836E-07 J
    E. 6.420E-07 J

13. A 3 C charge is separated from a 11 C charge by distance of 12 cm. What is the work done by increasing this separation to 19 cm?

    A. 8.278E-07 J
    B. 9.106E-07 J
    C. 1.002E-06 J
    D. 1.102E-06 J
    E. 1.212E-06 J

14. A 4 C charge is separated from a 9 C charge by distance of 9 cm. What is the work done by increasing this separation to 14 cm?

    A. 8.769E-07 J
    B. 9.646E-07 J
    C. 1.061E-06 J
    D. 1.167E-06 J
    E. 1.284E-06 J

15. A 8 C charge is separated from a 13 C charge by distance of 7 cm. What is the work done by increasing this separation to 13 cm?

    A. 4.209E-06 J
    B. 4.630E-06 J
    C. 5.093E-06 J
    D. 5.603E-06 J
    E. 6.163E-06 J

16. A 9 C charge is separated from a 16 C charge by distance of 10 cm. What is the work done by increasing this separation to 16 cm?

    A. 4.853E-06 J
    B. 5.339E-06 J
    C. 5.872E-06 J
    D. 6.460E-06 J
    E. 7.106E-06 J

17. A 8 C charge is separated from a 12 C charge by distance of 9 cm. What is the work done by increasing this separation to 18 cm?

    A. 3.274E-06 J

The next page might contain more answer choices for this question

B. 3.601E-06 J

C. 3.961E-06 J

D. 4.358E-06 J

E. 4.793E-06 J

18. A 5 C charge is separated from a 12 C charge by distance of 10 cm. What is the work done by increasing this separation to 16 cm?

A. 1.381E-06 J

B. 1.519E-06 J

C. 1.671E-06 J

D. 1.838E-06 J

E. 2.022E-06 J

19. A 4 C charge is separated from a 10 C charge by distance of 10 cm. What is the work done by increasing this separation to 19 cm?

A. 1.548E-06 J

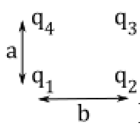
B. 1.703E-06 J

C. 1.873E-06 J

D. 2.061E-06 J

E. 2.267E-06 J

d_cp2.7 Q2



1. Four charges lie at the corners of a 5 cm by 5 cm square as shown (i.e., "a"="b"=5 cm.) The charges are q_1=3 µ C, q_2=4 µ C, q_3=7 µ C, and q_4=8 µ C. How much work was required to assemble these four charges from infinity?

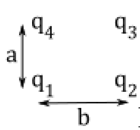
A. 2.573E+01 J

B. 2.831E+01 J

C. 3.114E+01 J

D. 3.425E+01 J

E. 3.768E+01 J



2. Four charges lie at the corners of a 2 cm by 2 cm square as shown (i.e., "a"="b"=2 cm.) The charges are q_1=4 µ C, q_2=7 µ C, q_3=8 µ C, and q_4=10 µ C. How much work was required to assemble these four charges from infinity?

A. 1.241E+02 J

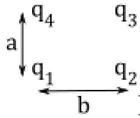
B. 1.365E+02 J

C. 1.501E+02 J

D. 1.652E+02 J

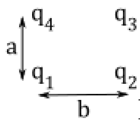
E. 1.817E+02 J

The next page might contain more answer choices for this question

3. 

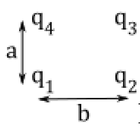
Four charges lie at the corners of a 4 cm by 4 cm square as shown (i.e., "a"="b"=4 cm.) The charges are q_1=3 μ C, q_2=6 μ C, q_3=9 μ C, and q_4=11 μ C. How much work was required to assemble these four charges from infinity?

- A. 4.554E+01 J
- B. 5.009E+01 J
- C. 5.510E+01 J
- **D. 6.061E+01 J**
- E. 6.667E+01 J

4. 

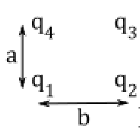
Four charges lie at the corners of a 3 cm by 3 cm square as shown (i.e., "a"="b"=3 cm.) The charges are q_1=3 μ C, q_2=6 μ C, q_3=9 μ C, and q_4=12 μ C. How much work was required to assemble these four charges from infinity?

- A. 7.789E+01 J
- **B. 8.568E+01 J**
- C. 9.425E+01 J
- D. 1.037E+02 J
- E. 1.140E+02 J

5. 

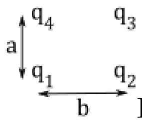
Four charges lie at the corners of a 2 cm by 2 cm square as shown (i.e., "a"="b"=2 cm.) The charges are q_1=4 μ C, q_2=7 μ C, q_3=10 μ C, and q_4=12 μ C. How much work was required to assemble these four charges from infinity?

- A. 1.194E+02 J
- B. 1.314E+02 J
- C. 1.445E+02 J
- **D. 1.589E+02 J**
- E. 1.748E+02 J

6. 

Four charges lie at the corners of a 3 cm by 3 cm square as shown (i.e., "a"="b"=3 cm.) The charges are q_1=3 μ C, q_2=5 μ C, q_3=7 μ C, and q_4=10 μ C. How much work was required to assemble these four charges from infinity?

- **A. 5.998E+01 J**
- B. 6.598E+01 J
- C. 7.257E+01 J
- D. 7.983E+01 J
- E. 8.781E+01 J

7. 

Four charges lie at the corners of a 5 cm by 5 cm square as shown (i.e., "a"="b"=5 cm.) The charges are q_1=3 μ C, q_2=4 μ C, q_3=6 μ C, and q_4=8 μ C. How much work was required to assemble these four charges from infinity?

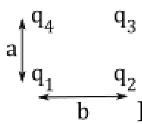
A. 2.343E+01 J

B. 2.577E+01 J

C. 2.835E+01 J

D. 3.118E+01 J

E. 3.430E+01 J

8. 

Four charges lie at the corners of a 5 cm by 5 cm square as shown (i.e., "a"="b"=5 cm.) The charges are q_1=3 μ C, q_2=5 μ C, q_3=8 μ C, and q_4=11 μ C. How much work was required to assemble these four charges from infinity?

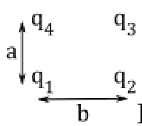
A. 3.444E+01 J

B. 3.789E+01 J

C. 4.168E+01 J

D. 4.585E+01 J

E. 5.043E+01 J

9. 

Four charges lie at the corners of a 4 cm by 4 cm square as shown (i.e., "a"="b"=4 cm.) The charges are q_1=3 μ C, q_2=6 μ C, q_3=7 μ C, and q_4=10 μ C. How much work was required to assemble these four charges from infinity?

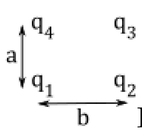
A. 4.438E+01 J

B. 4.882E+01 J

C. 5.370E+01 J

D. 5.907E+01 J

E. 6.498E+01 J

10. 

Four charges lie at the corners of a 5 cm by 5 cm square as shown (i.e., "a"="b"=5 cm.) The charges are q_1=3 μ C, q_2=4 μ C, q_3=7 μ C, and q_4=9 μ C. How much work was required to assemble these four charges from infinity?

A. 2.300E+01 J

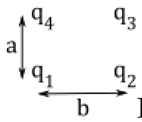
B. 2.530E+01 J

C. 2.783E+01 J

D. 3.061E+01 J

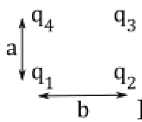
E. 3.367E+01 J

The next page might contain more answer choices for this question



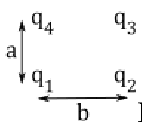
11. Four charges lie at the corners of a 3 cm by 3 cm square as shown (i.e., "a"="b"=3 cm.) The charges are q_1=4 μ C, q_2=7 μ C, q_3=8 μ C, and q_4=10 μ C. How much work was required to assemble these four charges from infinity?

 A. 5.650E+01 J
 B. 6.215E+01 J
 C. 6.837E+01 J
 D. 7.520E+01 J
 E. 8.272E+01 J



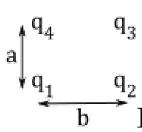
12. Four charges lie at the corners of a 3 cm by 3 cm square as shown (i.e., "a"="b"=3 cm.) The charges are q_1=4 μ C, q_2=7 μ C, q_3=8 μ C, and q_4=11 μ C. How much work was required to assemble these four charges from infinity?

 A. 7.982E+01 J
 B. 8.780E+01 J
 C. 9.658E+01 J
 D. 1.062E+02 J
 E. 1.169E+02 J



13. Four charges lie at the corners of a 4 cm by 4 cm square as shown (i.e., "a"="b"=4 cm.) The charges are q_1=3 μ C, q_2=6 μ C, q_3=9 μ C, and q_4=10 μ C. How much work was required to assemble these four charges from infinity?

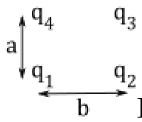
 A. 5.178E+01 J
 B. 5.696E+01 J
 C. 6.266E+01 J
 D. 6.892E+01 J
 E. 7.582E+01 J



14. Four charges lie at the corners of a 5 cm by 5 cm square as shown (i.e., "a"="b"=5 cm.) The charges are q_1=4 μ C, q_2=6 μ C, q_3=8 μ C, and q_4=10 μ C. How much work was required to assemble these four charges from infinity?

 A. 3.819E+01 J
 B. 4.201E+01 J
 C. 4.621E+01 J
 D. 5.083E+01 J
 E. 5.591E+01 J

The next page might contain more answer choices for this question

15. 

Four charges lie at the corners of a 3 cm by 3 cm square as shown (i.e., "a"="b"=3 cm.) The charges are q_1=4 μ C, q_2=6 μ C, q_3=9 μ C, and q_4=11 μ C. How much work was required to assemble these four charges from infinity?

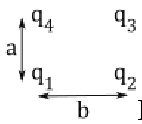
A. 6.598E+01 J

B. 7.258E+01 J

C. 7.983E+01 J

D. 8.782E+01 J

E. 9.660E+01 J

16. 

Four charges lie at the corners of a 4 cm by 4 cm square as shown (i.e., "a"="b"=4 cm.) The charges are q_1=3 μ C, q_2=6 μ C, q_3=7 μ C, and q_4=9 μ C. How much work was required to assemble these four charges from infinity?

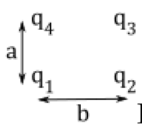
A. 3.116E+01 J

B. 3.427E+01 J

C. 3.770E+01 J

D. 4.147E+01 J

E. 4.562E+01 J

17. 

Four charges lie at the corners of a 4 cm by 4 cm square as shown (i.e., "a"="b"=4 cm.) The charges are q_1=3 μ C, q_2=5 μ C, q_3=6 μ C, and q_4=9 μ C. How much work was required to assemble these four charges from infinity?

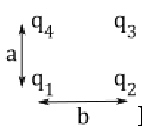
A. 2.617E+01 J

B. 2.879E+01 J

C. 3.167E+01 J

D. 3.484E+01 J

E. 3.832E+01 J

18. 

Four charges lie at the corners of a 3 cm by 3 cm square as shown (i.e., "a"="b"=3 cm.) The charges are q_1=4 μ C, q_2=5 μ C, q_3=7 μ C, and q_4=8 μ C. How much work was required to assemble these four charges from infinity?

A. 3.910E+01 J

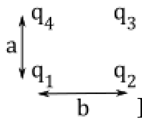
B. 4.301E+01 J

C. 4.731E+01 J

D. 5.204E+01 J

E. 5.725E+01 J

The next page might contain more answer choices for this question

19. 

Four charges lie at the corners of a 5 cm by 5 cm square as shown (i.e., "a"="b"=5 cm.) The charges are q_1=4 µ C, q_2=7 µ C, q_3=8 µ C, and q_4=9 µ C. How much work was required to assemble these four charges from infinity?

A. 4.235E+01 J
B. 4.659E+01 J
C. 5.125E+01 J
D. 5.637E+01 J
E. 6.201E+01 J

d_cp2.7 Q3

1. A 12.0 V battery can move 9,000 C of charge. How many Joules does it deliver?
   A. 8.114E+04 J
   B. 8.926E+04 J
   C. 9.818E+04 J
   D. 1.080E+05 J
   E. 1.188E+05 J
2. A 12.0 V battery can move 44,000 C of charge. How many Joules does it deliver?
   A. 4.800E+05 J
   B. 5.280E+05 J
   C. 5.808E+05 J
   D. 6.389E+05 J
   E. 7.028E+05 J
3. A 12.0 V battery can move 27,000 C of charge. How many Joules does it deliver?
   A. 2.213E+05 J
   B. 2.434E+05 J
   C. 2.678E+05 J
   D. 2.945E+05 J
   E. 3.240E+05 J
4. A 12.0 V battery can move 41,000 C of charge. How many Joules does it deliver?
   A. 3.696E+05 J
   B. 4.066E+05 J
   C. 4.473E+05 J
   D. 4.920E+05 J
   E. 5.412E+05 J
5. A 12.0 V battery can move 19,000 C of charge. How many Joules does it deliver?
   A. 1.713E+05 J
   B. 1.884E+05 J

The next page might contain more answer choices for this question

C. 2.073E+05 J

D. 2.280E+05 J

E. 2.508E+05 J

6. A 12.0 V battery can move 38,000 C of charge. How many Joules does it deliver?

A. 3.115E+05 J

B. 3.426E+05 J

C. 3.769E+05 J

D. 4.145E+05 J

E. 4.560E+05 J

7. A 12.0 V battery can move 29,000 C of charge. How many Joules does it deliver?

A. 2.615E+05 J

B. 2.876E+05 J

C. 3.164E+05 J

D. 3.480E+05 J

E. 3.828E+05 J

8. A 12.0 V battery can move 11,000 C of charge. How many Joules does it deliver?

A. 1.200E+05 J

B. 1.320E+05 J

C. 1.452E+05 J

D. 1.597E+05 J

E. 1.757E+05 J

9. A 12.0 V battery can move 12,000 C of charge. How many Joules does it deliver?

A. 1.190E+05 J

B. 1.309E+05 J

C. 1.440E+05 J

D. 1.584E+05 J

E. 1.742E+05 J

10. A 12.0 V battery can move 24,000 C of charge. How many Joules does it deliver?

A. 1.967E+05 J

B. 2.164E+05 J

C. 2.380E+05 J

D. 2.618E+05 J

E. 2.880E+05 J

11. A 12.0 V battery can move 36,000 C of charge. How many Joules does it deliver?

A. 3.570E+05 J

B. 3.927E+05 J

C. 4.320E+05 J

The next page might contain more answer choices for this question

D. 4.752E+05 J

E. 5.227E+05 J

12. A 12.0 V battery can move 11,000 C of charge. How many Joules does it deliver?

A. 9.016E+04 J

B. 9.917E+04 J

C. 1.091E+05 J

D. 1.200E+05 J

E. 1.320E+05 J

13. A 12.0 V battery can move 49,000 C of charge. How many Joules does it deliver?

A. 5.880E+05 J

B. 6.468E+05 J

C. 7.115E+05 J

D. 7.826E+05 J

E. 8.609E+05 J

14. A 12.0 V battery can move 30,000 C of charge. How many Joules does it deliver?

A. 3.273E+05 J

B. 3.600E+05 J

C. 3.960E+05 J

D. 4.356E+05 J

E. 4.792E+05 J

15. A 12.0 V battery can move 32,000 C of charge. How many Joules does it deliver?

A. 2.885E+05 J

B. 3.174E+05 J

C. 3.491E+05 J

D. 3.840E+05 J

E. 4.224E+05 J

16. A 12.0 V battery can move 31,000 C of charge. How many Joules does it deliver?

A. 2.541E+05 J

B. 2.795E+05 J

C. 3.074E+05 J

D. 3.382E+05 J

E. 3.720E+05 J

17. A 12.0 V battery can move 35,000 C of charge. How many Joules does it deliver?

A. 4.200E+05 J

B. 4.620E+05 J

C. 5.082E+05 J

D. 5.590E+05 J

The next page might contain more answer choices for this question

E. 6.149E+05 J

18. A 12.0 V battery can move 40,000 C of charge. How many Joules does it deliver?
    A. 3.278E+05 J
    B. 3.606E+05 J
    C. 3.967E+05 J
    D. 4.364E+05 J
    E. 4.800E+05 J

19. A 12.0 V battery can move 26,000 C of charge. How many Joules does it deliver?
    A. 2.836E+05 J
    B. 3.120E+05 J
    C. 3.432E+05 J
    D. 3.775E+05 J
    E. 4.153E+05 J

d_cp2.7 Q4

1. When a 7.85 V battery operates a 1.82 W bulb, how many electrons pass through it each second?
    A. 1.087E+18 electrons
    B. 1.196E+18 electrons
    C. 1.316E+18 electrons
    D. 1.447E+18 electrons
    E. 1.592E+18 electrons

2. When a 6.97 V battery operates a 2.6 W bulb, how many electrons pass through it each second?
    A. 1.749E+18 electrons
    B. 1.924E+18 electrons
    C. 2.117E+18 electrons
    D. 2.328E+18 electrons
    E. 2.561E+18 electrons

3. When a 7.78 V battery operates a 1.35 W bulb, how many electrons pass through it each second?
    A. 7.397E+17 electrons
    B. 8.137E+17 electrons
    C. 8.951E+17 electrons
    D. 9.846E+17 electrons
    E. 1.083E+18 electrons

4. When a 8.6 V battery operates a 2.76 W bulb, how many electrons pass through it each second?
    A. 1.655E+18 electrons
    B. 1.821E+18 electrons
    C. 2.003E+18 electrons
    D. 2.203E+18 electrons

The next page might contain more answer choices for this question

E. 2.424E+18 electrons

5. When a 4.91 V battery operates a 1.43 W bulb, how many electrons pass through it each second?
   A. 1.242E+18 electrons
   B. 1.366E+18 electrons
   C. 1.502E+18 electrons
   D. 1.653E+18 electrons
   E. 1.818E+18 electrons

6. When a 2.59 V battery operates a 2.89 W bulb, how many electrons pass through it each second?
   A. 5.756E+18 electrons
   B. 6.331E+18 electrons
   C. 6.964E+18 electrons
   D. 7.661E+18 electrons
   E. 8.427E+18 electrons

7. When a 6.32 V battery operates a 1.94 W bulb, how many electrons pass through it each second?
   A. 1.439E+18 electrons
   B. 1.583E+18 electrons
   C. 1.742E+18 electrons
   D. 1.916E+18 electrons
   E. 2.107E+18 electrons

8. When a 6.03 V battery operates a 1.56 W bulb, how many electrons pass through it each second?
   A. 1.615E+18 electrons
   B. 1.776E+18 electrons
   C. 1.954E+18 electrons
   D. 2.149E+18 electrons
   E. 2.364E+18 electrons

9. When a 5.65 V battery operates a 2.73 W bulb, how many electrons pass through it each second?
   A. 3.016E+18 electrons
   B. 3.317E+18 electrons
   C. 3.649E+18 electrons
   D. 4.014E+18 electrons
   E. 4.415E+18 electrons

10. When a 2.76 V battery operates a 2.71 W bulb, how many electrons pass through it each second?
   A. 5.571E+18 electrons
   B. 6.128E+18 electrons
   C. 6.741E+18 electrons
   D. 7.415E+18 electrons
   E. 8.157E+18 electrons

The next page might contain more answer choices for this question

11. When a 7.1 V battery operates a 1.8 W bulb, how many electrons pass through it each second?
    - A. 1.439E+18 electrons
    - **B. 1.582E+18 electrons**
    - C. 1.741E+18 electrons
    - D. 1.915E+18 electrons
    - E. 2.106E+18 electrons

12. When a 6.24 V battery operates a 2.1 W bulb, how many electrons pass through it each second?
    - A. 1.435E+18 electrons
    - B. 1.578E+18 electrons
    - C. 1.736E+18 electrons
    - D. 1.910E+18 electrons
    - **E. 2.101E+18 electrons**

13. When a 4.63 V battery operates a 2.26 W bulb, how many electrons pass through it each second?
    - A. 2.770E+18 electrons
    - **B. 3.047E+18 electrons**
    - C. 3.351E+18 electrons
    - D. 3.686E+18 electrons
    - E. 4.055E+18 electrons

14. When a 1.95 V battery operates a 2.8 W bulb, how many electrons pass through it each second?
    - A. 7.407E+18 electrons
    - B. 8.147E+18 electrons
    - **C. 8.962E+18 electrons**
    - D. 9.858E+18 electrons
    - E. 1.084E+19 electrons

15. When a 3.8 V battery operates a 1.67 W bulb, how many electrons pass through it each second?
    - A. 1.873E+18 electrons
    - B. 2.061E+18 electrons
    - C. 2.267E+18 electrons
    - D. 2.494E+18 electrons
    - **E. 2.743E+18 electrons**

16. When a 3.63 V battery operates a 1.34 W bulb, how many electrons pass through it each second?
    - A. 2.095E+18 electrons
    - **B. 2.304E+18 electrons**
    - C. 2.534E+18 electrons
    - D. 2.788E+18 electrons
    - E. 3.067E+18 electrons

17. When a 4.21 V battery operates a 2.17 W bulb, how many electrons pass through it each second?

The next page might contain more answer choices for this question

- A. 2.659E+18 electrons
- B. 2.925E+18 electrons
- **C. 3.217E+18 electrons**
- D. 3.539E+18 electrons
- E. 3.893E+18 electrons

18. When a 3.21 V battery operates a 2.38 W bulb, how many electrons pass through it each second?
    - A. 3.161E+18 electrons
    - B. 3.477E+18 electrons
    - C. 3.825E+18 electrons
    - D. 4.207E+18 electrons
    - **E. 4.628E+18 electrons**

19. When a 4.89 V battery operates a 1.44 W bulb, how many electrons pass through it each second?
    - **A. 1.838E+18 electrons**
    - B. 2.022E+18 electrons
    - C. 2.224E+18 electrons
    - D. 2.446E+18 electrons
    - E. 2.691E+18 electrons

d_cp2.7 Q5

1. Calculate the final speed of a free electron accelerated from rest through a potential difference of 3 V.
    - A. 9.339E+05 m/s
    - **B. 1.027E+06 m/s**
    - C. 1.130E+06 m/s
    - D. 1.243E+06 m/s
    - E. 1.367E+06 m/s

2. Calculate the final speed of a free electron accelerated from rest through a potential difference of 74 V.
    - A. 4.638E+06 m/s
    - **B. 5.102E+06 m/s**
    - C. 5.612E+06 m/s
    - D. 6.173E+06 m/s
    - E. 6.791E+06 m/s

3. Calculate the final speed of a free electron accelerated from rest through a potential difference of 74 V.
    - **A. 5.102E+06 m/s**
    - B. 5.612E+06 m/s
    - C. 6.173E+06 m/s
    - D. 6.791E+06 m/s
    - E. 7.470E+06 m/s

4. Calculate the final speed of a free electron accelerated from rest through a potential difference of 6 V.

The next page might contain more answer choices for this question

A. 1.091E+06 m/s
B. 1.201E+06 m/s
C. 1.321E+06 m/s
D. 1.453E+06 m/s
E. 1.598E+06 m/s

5. Calculate the final speed of a free electron accelerated from rest through a potential difference of 27 V.
A. 2.802E+06 m/s
B. 3.082E+06 m/s
C. 3.390E+06 m/s
D. 3.729E+06 m/s
E. 4.102E+06 m/s

6. Calculate the final speed of a free electron accelerated from rest through a potential difference of 46 V.
A. 3.022E+06 m/s
B. 3.324E+06 m/s
C. 3.657E+06 m/s
D. 4.023E+06 m/s
E. 4.425E+06 m/s

7. Calculate the final speed of a free electron accelerated from rest through a potential difference of 16 V.
A. 2.157E+06 m/s
B. 2.372E+06 m/s
C. 2.610E+06 m/s
D. 2.871E+06 m/s
E. 3.158E+06 m/s

8. Calculate the final speed of a free electron accelerated from rest through a potential difference of 30 V.
A. 2.441E+06 m/s
B. 2.685E+06 m/s
C. 2.953E+06 m/s
D. 3.249E+06 m/s
E. 3.573E+06 m/s

9. Calculate the final speed of a free electron accelerated from rest through a potential difference of 12 V.
A. 1.544E+06 m/s
B. 1.698E+06 m/s
C. 1.868E+06 m/s
D. 2.055E+06 m/s
E. 2.260E+06 m/s

10. Calculate the final speed of a free electron accelerated from rest through a potential difference of 83 V.
A. 4.466E+06 m/s

The next page might contain more answer choices for this question

B. 4.912E+06 m/s
C. 5.403E+06 m/s
D. 5.944E+06 m/s
E. 6.538E+06 m/s

11. Calculate the final speed of a free electron accelerated from rest through a potential difference of 45 V.
A. 3.288E+06 m/s
B. 3.617E+06 m/s
C. 3.979E+06 m/s
D. 4.376E+06 m/s
E. 4.814E+06 m/s

12. Calculate the final speed of a free electron accelerated from rest through a potential difference of 45 V.
A. 3.617E+06 m/s
B. 3.979E+06 m/s
C. 4.376E+06 m/s
D. 4.814E+06 m/s
E. 5.296E+06 m/s

13. Calculate the final speed of a free electron accelerated from rest through a potential difference of 19 V.
A. 1.942E+06 m/s
B. 2.137E+06 m/s
C. 2.350E+06 m/s
D. 2.585E+06 m/s
E. 2.844E+06 m/s

14. Calculate the final speed of a free electron accelerated from rest through a potential difference of 12 V.
A. 1.698E+06 m/s
B. 1.868E+06 m/s
C. 2.055E+06 m/s
D. 2.260E+06 m/s
E. 2.486E+06 m/s

15. Calculate the final speed of a free electron accelerated from rest through a potential difference of 56 V.
A. 3.031E+06 m/s
B. 3.335E+06 m/s
C. 3.668E+06 m/s
D. 4.035E+06 m/s
E. 4.438E+06 m/s

16. Calculate the final speed of a free electron accelerated from rest through a potential difference of 53 V.
A. 3.244E+06 m/s
B. 3.568E+06 m/s

The next page might contain more answer choices for this question

C. 3.925E+06 m/s

D. 4.318E+06 m/s

E. 4.750E+06 m/s

17. Calculate the final speed of a free electron accelerated from rest through a potential difference of 69 V.

A. 3.365E+06 m/s

B. 3.701E+06 m/s

C. 4.072E+06 m/s

D. 4.479E+06 m/s

E. 4.927E+06 m/s

18. Calculate the final speed of a free electron accelerated from rest through a potential difference of 11 V.

A. 1.626E+06 m/s

B. 1.788E+06 m/s

C. 1.967E+06 m/s

D. 2.164E+06 m/s

E. 2.380E+06 m/s

19. Calculate the final speed of a free electron accelerated from rest through a potential difference of 81 V.

A. 4.411E+06 m/s

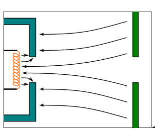
B. 4.853E+06 m/s

C. 5.338E+06 m/s

D. 5.872E+06 m/s

E. 6.459E+06 m/s

d_cp2.7 Q6

1. An electron gun has parallel plates separated by 2.57 cm and gives electrons 53 keV of energy. What force would the field between the plates exert on a 0.58 μ C charge that gets between the plates?

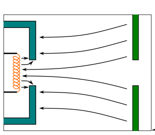
A. 9.885E-01 N

B. 1.087E+00 N

C. 1.196E+00 N

D. 1.316E+00 N

E. 1.447E+00 N

2. An electron gun has parallel plates separated by 4.95 cm and gives electrons 13 keV of energy. What force would the field between the plates exert on a 0.516 μ C charge that gets between the plates?

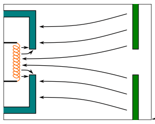
A. 1.355E-01 N

B. 1.491E-01 N

C. 1.640E-01 N

D. 1.804E-01 N

E. 1.984E-01 N

3. An electron gun has parallel plates separated by 4.25 cm and gives electrons 15 keV of energy. What force would the field between the plates exert on a 0.518 μ C charge that gets between the plates?

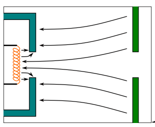
A. 1.374E-01 N

B. 1.511E-01 N

C. 1.662E-01 N

D. 1.828E-01 N

E. 2.011E-01 N

4. An electron gun has parallel plates separated by 5.31 cm and gives electrons 41 keV of energy. What force would the field between the plates exert on a 0.368 μ C charge that gets between the plates?

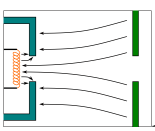
A. 2.348E-01 N

B. 2.583E-01 N

C. 2.841E-01 N

D. 3.126E-01 N

E. 3.438E-01 N

5. An electron gun has parallel plates separated by 2.85 cm and gives electrons 26 keV of energy. What force would the field between the plates exert on a 0.302 μ C charge that gets between the plates?

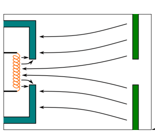
A. 2.505E-01 N

B. 2.755E-01 N

C. 3.031E-01 N

D. 3.334E-01 N

E. 3.667E-01 N

6. An electron gun has parallel plates separated by 2.36 cm and gives electrons 54 keV of energy. What force would the field between the plates exert on a 0.45 μ C charge that gets between the plates?

A. 7.033E-01 N

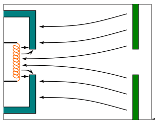
B. 7.736E-01 N

C. 8.510E-01 N

D. 9.361E-01 N

E. 1.030E+00 N

The next page might contain more answer choices for this question

7. An electron gun has parallel plates separated by 4.24 cm and gives electrons 48 keV of energy. What force would the field between the plates exert on a 0.48 μ C charge that gets between the plates?

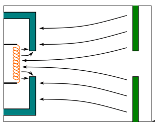
A. 5.434E-01 N

B. 5.977E-01 N

C. 6.575E-01 N

D. 7.233E-01 N

E. 7.956E-01 N

8. An electron gun has parallel plates separated by 5.02 cm and gives electrons 16 keV of energy. What force would the field between the plates exert on a 0.609 μ C charge that gets between the plates?

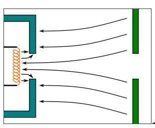
A. 1.604E-01 N

B. 1.765E-01 N

C. 1.941E-01 N

D. 2.135E-01 N

E. 2.349E-01 N

9. An electron gun has parallel plates separated by 3.39 cm and gives electrons 57 keV of energy. What force would the field between the plates exert on a 0.218 μ C charge that gets between the plates?

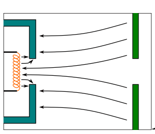
A. 3.029E-01 N

B. 3.332E-01 N

C. 3.665E-01 N

D. 4.032E-01 N

E. 4.435E-01 N

10. An electron gun has parallel plates separated by 4.2 cm and gives electrons 51 keV of energy. What force would the field between the plates exert on a 0.84 μ C charge that gets between the plates?

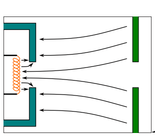
A. 8.430E-01 N

B. 9.273E-01 N

C. 1.020E+00 N

D. 1.122E+00 N

E. 1.234E+00 N

11. An electron gun has parallel plates separated by 3.68 cm and gives electrons 54 keV of energy. What force would the field between the plates exert on a 0.181 μ C charge that gets between the plates?

The next page might contain more answer choices for this question

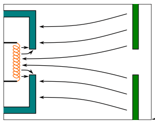
A. 2.656E-01 N

B. 2.922E-01 N

C. 3.214E-01 N

D. 3.535E-01 N

E. 3.889E-01 N

12. An electron gun has parallel plates separated by 3.35 cm and gives electrons 26 keV of energy. What force would the field between the plates exert on a 0.682 µ C charge that gets between the plates?

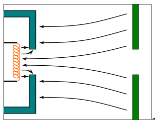
A. 3.977E-01 N

B. 4.374E-01 N

C. 4.812E-01 N

D. 5.293E-01 N

E. 5.822E-01 N

13. An electron gun has parallel plates separated by 5.38 cm and gives electrons 54 keV of energy. What force would the field between the plates exert on a 0.427 µ C charge that gets between the plates?

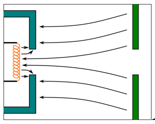
A. 3.542E-01 N

B. 3.896E-01 N

C. 4.286E-01 N

D. 4.714E-01 N

E. 5.186E-01 N

14. An electron gun has parallel plates separated by 2.68 cm and gives electrons 29 keV of energy. What force would the field between the plates exert on a 0.496 µ C charge that gets between the plates?

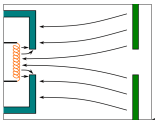
A. 5.367E-01 N

B. 5.904E-01 N

C. 6.494E-01 N

D. 7.144E-01 N

E. 7.858E-01 N

15. An electron gun has parallel plates separated by 4.36 cm and gives electrons 13 keV of energy. What force would the field between the plates exert on a 0.816 µ C charge that gets between the plates?

A. 2.212E-01 N

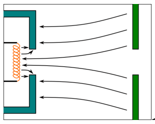
B. 2.433E-01 N

C. 2.676E-01 N

D. 2.944E-01 N

The next page might contain more answer choices for this question

E. 3.238E-01 N

16. An electron gun has parallel plates separated by 3.02 cm and gives electrons 39 keV of energy. What force would the field between the plates exert on a 0.699 μ C charge that gets between the plates?

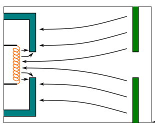
A. 8.206E-01 N

B. 9.027E-01 N

C. 9.930E-01 N

D. 1.092E+00 N

E. 1.201E+00 N

17. An electron gun has parallel plates separated by 4.85 cm and gives electrons 36 keV of energy. What force would the field between the plates exert on a 0.663 μ C charge that gets between the plates?

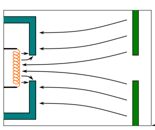
A. 3.697E-01 N

B. 4.067E-01 N

C. 4.474E-01 N

D. 4.921E-01 N

E. 5.413E-01 N

18. An electron gun has parallel plates separated by 5.04 cm and gives electrons 53 keV of energy. What force would the field between the plates exert on a 0.246 μ C charge that gets between the plates?

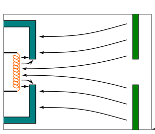
A. 1.767E-01 N

B. 1.944E-01 N

C. 2.138E-01 N

D. 2.352E-01 N

E. 2.587E-01 N

19. An electron gun has parallel plates separated by 2.98 cm and gives electrons 11 keV of energy. What force would the field between the plates exert on a 0.685 μ C charge that gets between the plates?

A. 1.900E-01 N

B. 2.090E-01 N

C. 2.299E-01 N

D. 2.529E-01 N

E. 2.781E-01 N

The next page might contain more answer choices for this question

d_cp2.7 Q7

1. Assume that a 21 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (5 cm, 0°) and P_2 is at (16 cm, 51°).
   - A. 2.145E+03 V
   - B. 2.359E+03 V
   - **C. 2.595E+03 V**
   - D. 2.855E+03 V
   - E. 3.140E+03 V
2. Assume that a 6 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (9 cm, 0°) and P_2 is at (16 cm, 71°).
   - A. 1.969E+02 V
   - B. 2.166E+02 V
   - C. 2.383E+02 V
   - **D. 2.621E+02 V**
   - E. 2.884E+02 V
3. Assume that a 23 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (7 cm, 0°) and P_2 is at (13 cm, 18°).
   - A. 1.024E+03 V
   - B. 1.126E+03 V
   - C. 1.239E+03 V
   - **D. 1.363E+03 V**
   - E. 1.499E+03 V
4. Assume that a 11 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (9 cm, 0°) and P_2 is at (12 cm, 14°).
   - A. 1.876E+02 V
   - B. 2.063E+02 V
   - C. 2.270E+02 V
   - D. 2.497E+02 V
   - **E. 2.746E+02 V**
5. Assume that a 15 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (5 cm, 0°) and P_2 is at (14 cm, 77°).
   - A. 1.184E+03 V
   - B. 1.302E+03 V
   - C. 1.432E+03 V
   - D. 1.576E+03 V

The next page might contain more answer choices for this question

E. 1.733E+03 V

6. Assume that a 26 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (9 cm, 0°) and P_2 is at (13 cm, 42°).

   A. 7.263E+02 V

   B. 7.989E+02 V

   C. 8.788E+02 V

   D. 9.667E+02 V

   E. 1.063E+03 V

7. Assume that a 16 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (6 cm, 0°) and P_2 is at (14 cm, 27°).

   A. 9.354E+02 V

   B. 1.029E+03 V

   C. 1.132E+03 V

   D. 1.245E+03 V

   E. 1.370E+03 V

8. Assume that a 17 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (6 cm, 0°) and P_2 is at (15 cm, 48°).

   A. 1.528E+03 V

   B. 1.681E+03 V

   C. 1.849E+03 V

   D. 2.034E+03 V

   E. 2.237E+03 V

9. Assume that a 29 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (6 cm, 0°) and P_2 is at (12 cm, 77°).

   A. 1.483E+03 V

   B. 1.632E+03 V

   C. 1.795E+03 V

   D. 1.975E+03 V

   E. 2.172E+03 V

10. Assume that a 22 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (9 cm, 0°) and P_2 is at (12 cm, 53°).

   A. 5.492E+02 V

   B. 6.042E+02 V

   C. 6.646E+02 V

   D. 7.310E+02 V

The next page might contain more answer choices for this question

E. 8.041E+02 V

11. Assume that a 6 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (7 cm, 0°) and P_2 is at (16 cm, 11°).

A. 3.581E+02 V

B. 3.939E+02 V

C. 4.333E+02 V

D. 4.767E+02 V

E. 5.243E+02 V

12. Assume that a 14 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (9 cm, 0°) and P_2 is at (15 cm, 22°).

A. 5.592E+02 V

B. 6.151E+02 V

C. 6.767E+02 V

D. 7.443E+02 V

E. 8.188E+02 V

13. Assume that a 3 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (6 cm, 0°) and P_2 is at (12 cm, 32°).

A. 1.857E+02 V

B. 2.043E+02 V

C. 2.247E+02 V

D. 2.472E+02 V

E. 2.719E+02 V

14. Assume that a 5 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (9 cm, 0°) and P_2 is at (13 cm, 31°).

A. 1.397E+02 V

B. 1.536E+02 V

C. 1.690E+02 V

D. 1.859E+02 V

E. 2.045E+02 V

15. Assume that a 17 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (9 cm, 0°) and P_2 is at (12 cm, 15°).

A. 4.244E+02 V

B. 4.669E+02 V

C. 5.135E+02 V

D. 5.649E+02 V

The next page might contain more answer choices for this question

E. 6.214E+02 V

16. Assume that a 25 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (5 cm, 0°) and P_2 is at (13 cm, 70°).

    A. 2.285E+03 V

    B. 2.514E+03 V

    C. 2.765E+03 V

    D. 3.042E+03 V

    E. 3.346E+03 V

17. Assume that a 24 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (9 cm, 0°) and P_2 is at (13 cm, 27°).

    A. 5.540E+02 V

    B. 6.095E+02 V

    C. 6.704E+02 V

    D. 7.374E+02 V

    E. 8.112E+02 V

18. Assume that a 6 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (8 cm, 0°) and P_2 is at (14 cm, 34°).

    A. 2.626E+02 V

    B. 2.889E+02 V

    C. 3.178E+02 V

    D. 3.496E+02 V

    E. 3.845E+02 V

19. Assume that a 4 nC charge is situated at the origin. Calculate the the magnitude (absolute value) of the potential difference between points P_1 and P_2 where the polar coordinates (r,φ) of P_1 are (5 cm, 0°) and P_2 is at (15 cm, 59°).

    A. 3.961E+02 V

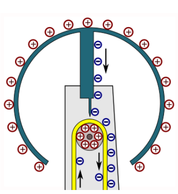
    B. 4.358E+02 V

    C. 4.793E+02 V

    D. 5.273E+02 V

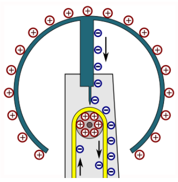
    E. 5.800E+02 V

d_cp2.7 Q8

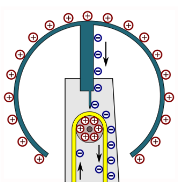
1.  A Van de Graff generator has a 81 cm diameter metal sphere that produces 235 kV near its surface. What is the excess charge on the sphere?

The next page might contain more answer choices for this question

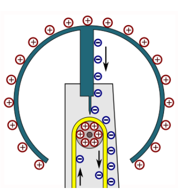
A. 9.627E+00 µ C
B. 1.059E+01 µ C
C. 1.165E+01 µ C
D. 1.281E+01 µ C
E. 1.409E+01 µ C

2.  A Van de Graff generator has a 85 cm diameter metal sphere that produces 235 kV near its surface. What is the excess charge on the sphere?

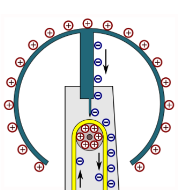
A. 9.184E+00 µ C
B. 1.010E+01 µ C
C. 1.111E+01 µ C
D. 1.222E+01 µ C
E. 1.345E+01 µ C

3.  A Van de Graff generator has a 124 cm diameter metal sphere that produces 270 kV near its surface. What is the excess charge on the sphere?

A. 1.539E+01 µ C
B. 1.693E+01 µ C
C. 1.863E+01 µ C
D. 2.049E+01 µ C
E. 2.254E+01 µ C

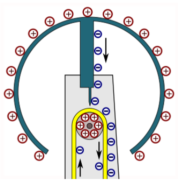
4.  A Van de Graff generator has a 116 cm diameter metal sphere that produces 246 kV near its surface. What is the excess charge on the sphere?

A. 1.193E+01 µ C
B. 1.312E+01 µ C
C. 1.443E+01 µ C
D. 1.588E+01 µ C
E. 1.746E+01 µ C

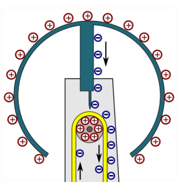
5.  A Van de Graff generator has a 140 cm diameter metal sphere that produces 244 kV near its surface. What is the excess charge on the sphere?

The next page might contain more answer choices for this question

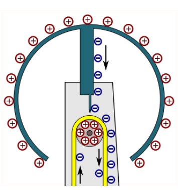
A. 1.900E+01 µ C
B. 2.090E+01 µ C
C. 2.299E+01 µ C
D. 2.529E+01 µ C
E. 2.782E+01 µ C

6.  A Van de Graff generator has a 114 cm diameter metal sphere that produces 289 kV near its surface. What is the excess charge on the sphere?

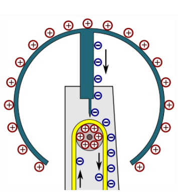
A. 1.833E+01 µ C
B. 2.016E+01 µ C
C. 2.218E+01 µ C
D. 2.440E+01 µ C
E. 2.684E+01 µ C

7.  A Van de Graff generator has a 105 cm diameter metal sphere that produces 227 kV near its surface. What is the excess charge on the sphere?

A. 1.205E+01 µ C
B. 1.326E+01 µ C
C. 1.459E+01 µ C
D. 1.604E+01 µ C
E. 1.765E+01 µ C

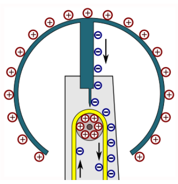
8.  A Van de Graff generator has a 114 cm diameter metal sphere that produces 275 kV near its surface. What is the excess charge on the sphere?

A. 1.744E+01 µ C
B. 1.918E+01 µ C
C. 2.110E+01 µ C
D. 2.321E+01 µ C
E. 2.554E+01 µ C

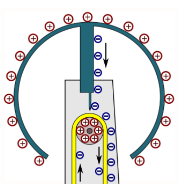
9.  A Van de Graff generator has a 76 cm diameter metal sphere that produces 193 kV near its surface. What is the excess charge on the sphere?

The next page might contain more answer choices for this question

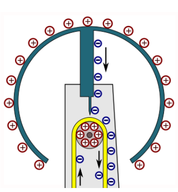
A. 7.418E+00 µ C
B. 8.160E+00 µ C
C. 8.976E+00 µ C
D. 9.874E+00 µ C
E. 1.086E+01 µ C

10.  A Van de Graff generator has a 149 cm diameter metal sphere that produces 172 kV near its surface. What is the excess charge on the sphere?

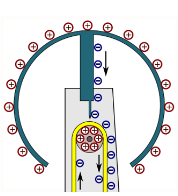
A. 1.071E+01 µ C
B. 1.178E+01 µ C
C. 1.296E+01 µ C
D. 1.426E+01 µ C
E. 1.568E+01 µ C

11.  A Van de Graff generator has a 107 cm diameter metal sphere that produces 219 kV near its surface. What is the excess charge on the sphere?

A. 1.304E+01 µ C
B. 1.434E+01 µ C
C. 1.577E+01 µ C
D. 1.735E+01 µ C
E. 1.909E+01 µ C

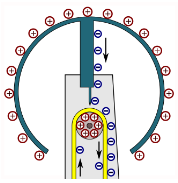
12.  A Van de Graff generator has a 95 cm diameter metal sphere that produces 187 kV near its surface. What is the excess charge on the sphere?

A. 9.883E+00 µ C
B. 1.087E+01 µ C
C. 1.196E+01 µ C
D. 1.315E+01 µ C
E. 1.447E+01 µ C

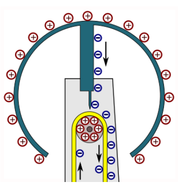
13.  A Van de Graff generator has a 105 cm diameter metal sphere that produces 210 kV near its surface. What is the excess charge on the sphere?

The next page might contain more answer choices for this question

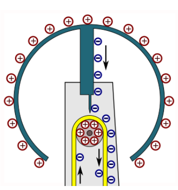
A. 9.216E+00 μ C
B. 1.014E+01 μ C
C. 1.115E+01 μ C
D. 1.227E+01 μ C
E. 1.349E+01 μ C

14.  A Van de Graff generator has a 129 cm diameter metal sphere that produces 174 kV near its surface. What is the excess charge on the sphere?

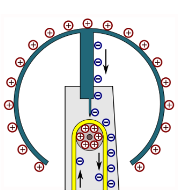
A. 1.032E+01 μ C
B. 1.135E+01 μ C
C. 1.249E+01 μ C
D. 1.374E+01 μ C
E. 1.511E+01 μ C

15.  A Van de Graff generator has a 95 cm diameter metal sphere that produces 190 kV near its surface. What is the excess charge on the sphere?

A. 9.129E+00 μ C
B. 1.004E+01 μ C
C. 1.105E+01 μ C
D. 1.215E+01 μ C
E. 1.337E+01 μ C

16.  A Van de Graff generator has a 126 cm diameter metal sphere that produces 290 kV near its surface. What is the excess charge on the sphere?

A. 1.388E+01 μ C
B. 1.527E+01 μ C
C. 1.680E+01 μ C
D. 1.848E+01 μ C
E. 2.033E+01 μ C

17.  A Van de Graff generator has a 72 cm diameter metal sphere that produces 285 kV near its surface. What is the excess charge on the sphere?

The next page might contain more answer choices for this question

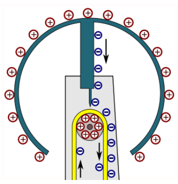
A. 1.038E+01 µ C

B. 1.142E+01 µ C

C. 1.256E+01 µ C

D. 1.381E+01 µ C

E. 1.519E+01 µ C

18.  A Van de Graff generator has a 141 cm diameter metal sphere that produces 280 kV near its surface. What is the excess charge on the sphere?

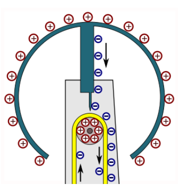
A. 1.500E+01 µ C

B. 1.650E+01 µ C

C. 1.815E+01 µ C

D. 1.997E+01 µ C

E. 2.196E+01 µ C

19.  A Van de Graff generator has a 119 cm diameter metal sphere that produces 248 kV near its surface. What is the excess charge on the sphere?

A. 1.234E+01 µ C

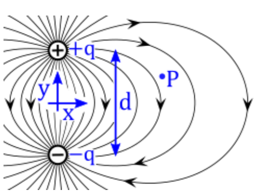
B. 1.357E+01 µ C

C. 1.493E+01 µ C

D. 1.642E+01 µ C

E. 1.806E+01 µ C

d_cp2.7 Q9

1. 

A diploe has a charge magnitude of q=9 nC and a separation distance of d=4.25 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.51 cm, y=2.12 cm)? Note that following the textbook's example, the y-value of the field point at 2.12 cm matches the disance of the positive charge above the x-axis.

A. 6.901E+02 V

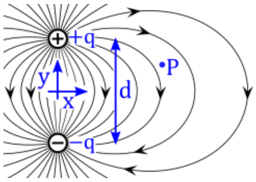
B. 7.591E+02 V

C. 8.350E+02 V

D. 9.185E+02 V

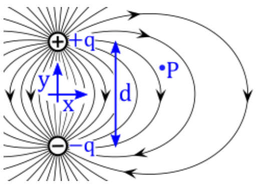
E. 1.010E+03 V

The next page might contain more answer choices for this question

2. 

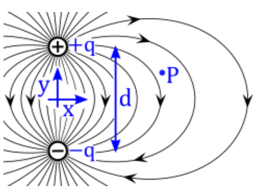
A diploe has a charge magnitude of q=6 nC and a separation distance of d=3.89 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.24 cm, y=1.95 cm)? Note that following the textbook's example, the y-value of the field point at 1.95 cm matches the disance of the positive charge above the x-axis.

   A. 4.104E+02 V
   B. 4.514E+02 V
   C. 4.965E+02 V
   D. 5.462E+02 V
   E. 6.008E+02 V

3. 

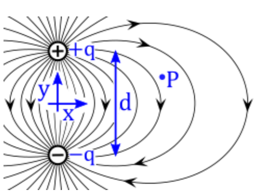
A diploe has a charge magnitude of q=4 nC and a separation distance of d=4.16 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.16 cm, y=2.08 cm)? Note that following the textbook's example, the y-value of the field point at 2.08 cm matches the disance of the positive charge above the x-axis.

   A. 3.070E+02 V
   B. 3.377E+02 V
   C. 3.715E+02 V
   D. 4.086E+02 V
   E. 4.495E+02 V

4. 

A diploe has a charge magnitude of q=7 nC and a separation distance of d=4.08 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.16 cm, y=2.04 cm)? Note that following the textbook's example, the y-value of the field point at 2.04 cm matches the disance of the positive charge above the x-axis.

   A. 7.017E+02 V
   B. 7.718E+02 V
   C. 8.490E+02 V
   D. 9.339E+02 V
   E. 1.027E+03 V

5. 

A diploe has a charge magnitude of q=5 nC and a separation distance of d=3.51 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.85 cm, y=1.75 cm)? Note that following the textbook's example, the y-value of the field point at 1.75 cm matches the disance of the positive charge above the x-axis.

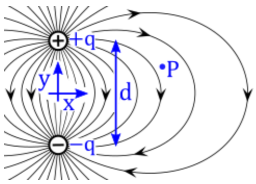
A. 2.073E+02 V

B. 2.281E+02 V

C. 2.509E+02 V

D. 2.760E+02 V

E. 3.035E+02 V



6. A diploe has a charge magnitude of q=9 nC and a separation distance of d=4.48 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.8 cm, y=2.24 cm)? Note that following the textbook's example, the y-value of the field point at 2.24 cm matches the disance of the positive charge above the x-axis.

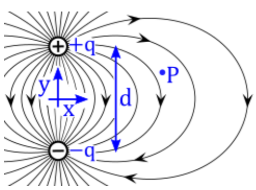
A. 5.134E+02 V

B. 5.648E+02 V

C. 6.212E+02 V

D. 6.834E+02 V

E. 7.517E+02 V



7. A diploe has a charge magnitude of q=4 nC and a separation distance of d=4.07 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.88 cm, y=2.04 cm)? Note that following the textbook's example, the y-value of the field point at 2.04 cm matches the disance of the positive charge above the x-axis.

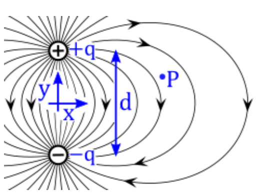
A. 2.164E+02 V

B. 2.381E+02 V

C. 2.619E+02 V

D. 2.880E+02 V

E. 3.168E+02 V



8. A diploe has a charge magnitude of q=5 nC and a separation distance of d=4.39 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.56 cm, y=2.19 cm)? Note that following the textbook's example, the y-value of the field point at 2.19 cm matches the disance of the positive charge above the x-axis.

A. 3.852E+02 V

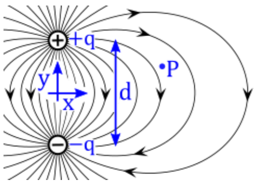
B. 4.238E+02 V

The next page might contain more answer choices for this question

C. 4.661E+02 V

D. 5.127E+02 V

E. 5.640E+02 V

9. 

A diploe has a charge magnitude of q=5 nC and a separation distance of d=4.29 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.33 cm, y=2.15 cm)? Note that following the textbook's example, the y-value of the field point at 2.15 cm matches the disance of the positive charge above the x-axis.

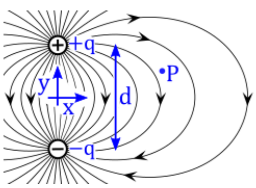
A. 4.324E+02 V

B. 4.757E+02 V

C. 5.232E+02 V

D. 5.755E+02 V

E. 6.331E+02 V

10. 

A diploe has a charge magnitude of q=5 nC and a separation distance of d=4.09 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.45 cm, y=2.04 cm)? Note that following the textbook's example, the y-value of the field point at 2.04 cm matches the disance of the positive charge above the x-axis.

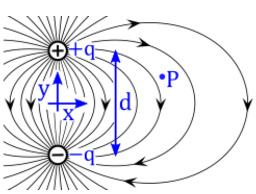
A. 3.814E+02 V

B. 4.195E+02 V

C. 4.615E+02 V

D. 5.077E+02 V

E. 5.584E+02 V

11. 

A diploe has a charge magnitude of q=5 nC and a separation distance of d=3.85 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.18 cm, y=1.93 cm)? Note that following the textbook's example, the y-value of the field point at 1.93 cm matches the disance of the positive charge above the x-axis.

A. 3.866E+02 V

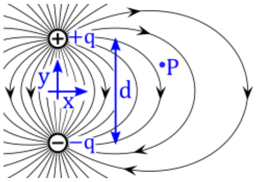
B. 4.253E+02 V

C. 4.678E+02 V

D. 5.146E+02 V

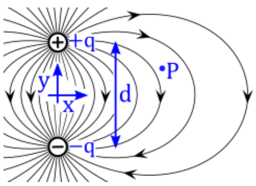
E. 5.661E+02 V

The next page might contain more answer choices for this question

12. 

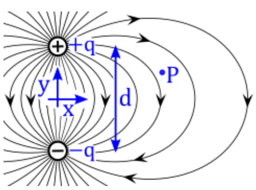
A diploe has a charge magnitude of q=4 nC and a separation distance of d=3.79 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.2 cm, y=1.9 cm)? Note that following the textbook's example, the y-value of the field point at 1.9 cm matches the disance of the positive charge above the x-axis.

A. 2.731E+02 V
B. 3.004E+02 V
C. 3.304E+02 V
D. 3.634E+02 V
E. 3.998E+02 V

13. 

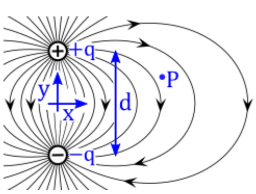
A diploe has a charge magnitude of q=6 nC and a separation distance of d=4.06 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.28 cm, y=2.03 cm)? Note that following the textbook's example, the y-value of the field point at 2.03 cm matches the disance of the positive charge above the x-axis.

A. 4.590E+02 V
B. 5.049E+02 V
C. 5.554E+02 V
D. 6.109E+02 V
E. 6.720E+02 V

14. 

A diploe has a charge magnitude of q=8 nC and a separation distance of d=3.55 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.43 cm, y=1.77 cm)? Note that following the textbook's example, the y-value of the field point at 1.77 cm matches the disance of the positive charge above the x-axis.

A. 5.796E+02 V
B. 6.375E+02 V
C. 7.013E+02 V
D. 7.714E+02 V
E. 8.486E+02 V

15. 

A diploe has a charge magnitude of q=7 nC and a separation distance of d=4.48 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.69 cm, y=2.24 cm)? Note that following the textbook's example, the y-value of the field point at 2.24 cm matches the disance of the positive charge above the x-axis.

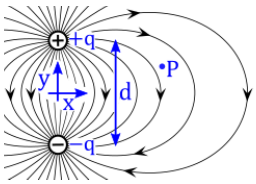
A. 5.645E+02 V

B. 6.210E+02 V

C. 6.831E+02 V

D. 7.514E+02 V

E. 8.266E+02 V

16. 

A diploe has a charge magnitude of q=9 nC and a separation distance of d=4.31 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.47 cm, y=2.15 cm)? Note that following the textbook's example, the y-value of the field point at 2.15 cm matches the disance of the positive charge above the x-axis.

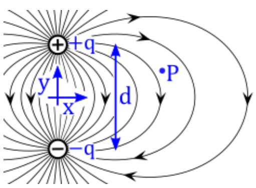
A. 8.672E+02 V

B. 9.539E+02 V

C. 1.049E+03 V

D. 1.154E+03 V

E. 1.270E+03 V

17. 

A diploe has a charge magnitude of q=7 nC and a separation distance of d=4.17 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.51 cm, y=2.08 cm)? Note that following the textbook's example, the y-value of the field point at 2.08 cm matches the disance of the positive charge above the x-axis.

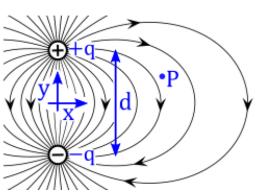
A. 5.261E+02 V

B. 5.787E+02 V

C. 6.365E+02 V

D. 7.002E+02 V

E. 7.702E+02 V

18. 

A diploe has a charge magnitude of q=5 nC and a separation distance of d=3.57 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.59 cm, y=1.78 cm)? Note that following the textbook's example, the y-value of the field point at 1.78 cm matches the disance of the positive charge above the x-axis.

A. 2.727E+02 V

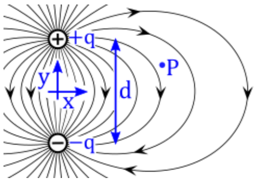
B. 2.999E+02 V

The next page might contain more answer choices for this question

C. 3.299E+02 V

D. 3.629E+02 V

E. 3.992E+02 V

19. 

A diploe has a charge magnitude of q=9 nC and a separation distance of d=4.3 cm. The dipole is centered at the origin and points in the y-direction as shown. What is the electric potential at the point (x=3.86 cm, y=2.15 cm)? Note that following the textbook's example, the y-value of the field point at 2.15 cm matches the disance of the positive charge above the x-axis.

A. 6.325E+02 V

B. 6.957E+02 V

C. 7.653E+02 V

D. 8.418E+02 V

E. 9.260E+02 V

d_cp2.7 Q10

1. If a 22 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=16 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 8.441E+00 m

B. 9.285E+00 m

C. 1.021E+01 m

D. 1.123E+01 m

E. 1.236E+01 m

2. If a 14 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=83 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 1.378E+00 m

B. 1.516E+00 m

C. 1.668E+00 m

D. 1.834E+00 m

E. 2.018E+00 m

3. If a 20 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=70 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 1.754E+00 m

B. 1.929E+00 m

C. 2.122E+00 m

D. 2.334E+00 m

E. 2.568E+00 m

4. If a 28 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=77 V is $x^2 + y^2 + z^2 = R^2$, where R=

The next page might contain more answer choices for this question

A. 2.701E+00 m
B. 2.971E+00 m
C. 3.268E+00 m
D. 3.595E+00 m
E. 3.955E+00 m

5. If a 16 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=76 V is $x^2 + y^2 + z^2 = R^2$, where R=
   A. 1.422E+00 m
   B. 1.564E+00 m
   C. 1.720E+00 m
   D. 1.892E+00 m
   E. 2.081E+00 m

6. If a 23 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=62 V is $x^2 + y^2 + z^2 = R^2$, where R=
   A. 2.277E+00 m
   B. 2.505E+00 m
   C. 2.755E+00 m
   D. 3.031E+00 m
   E. 3.334E+00 m

7. If a 11 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=61 V is $x^2 + y^2 + z^2 = R^2$, where R=
   A. 1.107E+00 m
   B. 1.218E+00 m
   C. 1.339E+00 m
   D. 1.473E+00 m
   E. 1.621E+00 m

8. If a 29 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=81 V is $x^2 + y^2 + z^2 = R^2$, where R=
   A. 3.218E+00 m
   B. 3.540E+00 m
   C. 3.893E+00 m
   D. 4.283E+00 m
   E. 4.711E+00 m

9. If a 24 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=97 V is $x^2 + y^2 + z^2 = R^2$, where R=
   A. 1.838E+00 m
   B. 2.022E+00 m
   C. 2.224E+00 m
   D. 2.446E+00 m

The next page might contain more answer choices for this question

E. 2.691E+00 m

10. If a 14 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=26 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 3.636E+00 m

B. 4.000E+00 m

C. 4.399E+00 m

D. 4.839E+00 m

E. 5.323E+00 m

11. If a 11 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=43 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 2.299E+00 m

B. 2.529E+00 m

C. 2.782E+00 m

D. 3.060E+00 m

E. 3.366E+00 m

12. If a 16 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=19 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 5.169E+00 m

B. 5.686E+00 m

C. 6.255E+00 m

D. 6.880E+00 m

E. 7.568E+00 m

13. If a 13 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=84 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 1.391E+00 m

B. 1.530E+00 m

C. 1.683E+00 m

D. 1.851E+00 m

E. 2.036E+00 m

14. If a 26 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=21 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 8.360E+00 m

B. 9.196E+00 m

C. 1.012E+01 m

D. 1.113E+01 m

E. 1.224E+01 m

15. If a 21 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=94 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 1.371E+00 m

The next page might contain more answer choices for this question

B. 1.509E+00 m

C. 1.659E+00 m

D. 1.825E+00 m

E. 2.008E+00 m

16. If a 18 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=12 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 1.114E+01 m

B. 1.226E+01 m

C. 1.348E+01 m

D. 1.483E+01 m

E. 1.631E+01 m

17. If a 19 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=73 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 1.598E+00 m

B. 1.757E+00 m

C. 1.933E+00 m

D. 2.127E+00 m

E. 2.339E+00 m

18. If a 23 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=66 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 2.139E+00 m

B. 2.353E+00 m

C. 2.588E+00 m

D. 2.847E+00 m

E. 3.132E+00 m

19. If a 14 nC charge is situated at the origin, the equipotential surface for V(x,y,z)=52 V is $x^2 + y^2 + z^2 = R^2$, where R=

A. 2.420E+00 m

B. 2.662E+00 m

C. 2.928E+00 m

D. 3.221E+00 m

E. 3.543E+00 m

d_cp2.7 Q11

1. Two large parallel conducting plates are separated by 7.57 mm. Equal and opposite surface charges of 7.830E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 57 V?

A. 6.446E-01 mm

B. 7.412E-01 mm

The next page might contain more answer choices for this question

- C. 8.524E-01 mm
- D. 9.803E-01 mm
- E. 1.127E+00 mm

2. Two large parallel conducting plates are separated by 8.7 mm. Equal and opposite surface charges of 7.220E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 67 V?
   - A. 4.698E-01 mm
   - B. 5.402E-01 mm
   - C. 6.213E-01 mm
   - D. 7.145E-01 mm
   - **E. 8.216E-01 mm**

3. Two large parallel conducting plates are separated by 7.93 mm. Equal and opposite surface charges of 7.720E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 77 V?
   - A. 6.678E-01 mm
   - B. 7.679E-01 mm
   - **C. 8.831E-01 mm**
   - D. 1.016E+00 mm
   - E. 1.168E+00 mm

4. Two large parallel conducting plates are separated by 7.81 mm. Equal and opposite surface charges of 7.440E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 80 V?
   - **A. 9.521E-01 mm**
   - B. 1.095E+00 mm
   - C. 1.259E+00 mm
   - D. 1.448E+00 mm
   - E. 1.665E+00 mm

5. Two large parallel conducting plates are separated by 6.86 mm. Equal and opposite surface charges of 7.540E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 79 V?
   - A. 6.100E-01 mm
   - B. 7.015E-01 mm
   - C. 8.067E-01 mm
   - **D. 9.277E-01 mm**
   - E. 1.067E+00 mm

6. Two large parallel conducting plates are separated by 8.0 mm. Equal and opposite surface charges of 7.520E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 61 V?
   - A. 5.431E-01 mm
   - B. 6.245E-01 mm

The next page might contain more answer choices for this question

C. 7.182E-01 mm

D. 8.260E-01 mm

E. 9.499E-01 mm

7. Two large parallel conducting plates are separated by 7.01 mm. Equal and opposite surface charges of 7.330E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 55 V?

    A. 3.799E-01 mm

    B. 4.368E-01 mm

    C. 5.024E-01 mm

    D. 5.777E-01 mm

    E. 6.644E-01 mm

8. Two large parallel conducting plates are separated by 6.95 mm. Equal and opposite surface charges of 7.360E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 83 V?

    A. 6.565E-01 mm

    B. 7.550E-01 mm

    C. 8.683E-01 mm

    D. 9.985E-01 mm

    E. 1.148E+00 mm

9. Two large parallel conducting plates are separated by 9.71 mm. Equal and opposite surface charges of 7.550E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 73 V?

    A. 7.444E-01 mm

    B. 8.561E-01 mm

    C. 9.845E-01 mm

    D. 1.132E+00 mm

    E. 1.302E+00 mm

10. Two large parallel conducting plates are separated by 6.67 mm. Equal and opposite surface charges of 7.080E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 60 V?

    A. 6.525E-01 mm

    B. 7.504E-01 mm

    C. 8.629E-01 mm

    D. 9.923E-01 mm

    E. 1.141E+00 mm

11. Two large parallel conducting plates are separated by 7.14 mm. Equal and opposite surface charges of 7.660E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 61 V?

    A. 4.031E-01 mm

    B. 4.636E-01 mm

The next page might contain more answer choices for this question

C. 5.332E-01 mm

D. 6.131E-01 mm

E. 7.051E-01 mm

12. Two large parallel conducting plates are separated by 9.58 mm. Equal and opposite surface charges of 7.360E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 84 V?

A. 6.644E-01 mm

B. 7.641E-01 mm

C. 8.787E-01 mm

D. 1.011E+00 mm

E. 1.162E+00 mm

13. Two large parallel conducting plates are separated by 7.42 mm. Equal and opposite surface charges of 7.760E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 61 V?

A. 3.979E-01 mm

B. 4.576E-01 mm

C. 5.263E-01 mm

D. 6.052E-01 mm

E. 6.960E-01 mm

14. Two large parallel conducting plates are separated by 7.83 mm. Equal and opposite surface charges of 7.530E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 86 V?

A. 8.793E-01 mm

B. 1.011E+00 mm

C. 1.163E+00 mm

D. 1.337E+00 mm

E. 1.538E+00 mm

15. Two large parallel conducting plates are separated by 7.77 mm. Equal and opposite surface charges of 7.280E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 70 V?

A. 8.514E-01 mm

B. 9.791E-01 mm

C. 1.126E+00 mm

D. 1.295E+00 mm

E. 1.489E+00 mm

16. Two large parallel conducting plates are separated by 7.77 mm. Equal and opposite surface charges of 7.310E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 73 V?

A. 5.814E-01 mm

B. 6.686E-01 mm

The next page might contain more answer choices for this question

C. 7.689E-01 mm

D. 8.842E-01 mm

E. 1.017E+00 mm

17. Two large parallel conducting plates are separated by 8.13 mm. Equal and opposite surface charges of 7.540E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 92 V?

A. 9.394E-01 mm

B. 1.080E+00 mm

C. 1.242E+00 mm

D. 1.429E+00 mm

E. 1.643E+00 mm

18. Two large parallel conducting plates are separated by 9.87 mm. Equal and opposite surface charges of 7.610E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 66 V?

A. 4.391E-01 mm

B. 5.049E-01 mm

C. 5.806E-01 mm

D. 6.677E-01 mm

E. 7.679E-01 mm

19. Two large parallel conducting plates are separated by 9.6 mm. Equal and opposite surface charges of 7.610E-07 C/m^2 exist on the surfaces between the plates. What is the distance between equipotential planes which differ by 71 V?

A. 4.723E-01 mm

B. 5.432E-01 mm

C. 6.246E-01 mm

D. 7.183E-01 mm

E. 8.261E-01 mm

9 a19ElectricPotentialField_KE_PE

1. How fast is a 2642 eV electron moving?[66]

A. 3 x 10^7 m/s.

B. 4.6 x 10^7 m/s.

C. 6.9 x 10^7 m/s.

D. 1 x 10^8 m/s.

E. 1.5 x 10^8 m/s.

2. A proton is accelerated (at rest) from a plate held at 45.3 volts to a plate at zero volts. What is the final speed?[67]

A. 2.8 x 10^4 m/s.

B. 4.1 x 10^4 m/s.

C. 6.2 x 10^4 m/s.

The next page might contain more answer choices for this question

D. 9.3 x 10^4 m/s.

E. 1.4 x 10^5 m/s.

3. What voltage is required accelerate an electron at rest to a speed of 9.4 x 10^6 m/s?[68]

A. 7.4 x 10^1 volts

B. 1.1 x 10^2 volts

C. 1.7 x 10^2 volts

D. 2.5 x 10^2 volts

E. 3.8 x 10^2 volts

4. What voltage is required to stop a proton moving at a speed of 8.5 x 10^4 m/s?[69]

A. 7.4 x 10^0 volts

B. 1.1 x 10^1 volts

C. 1.7 x 10^1 volts

D. 2.5 x 10^1 volts

E. 3.8 x 10^1 volts

9.1 Renditions

a19ElectricPotentialField_KE_PE Q1

1. How fast is a 2212 eV electron moving?

A. 8.3 x 10^6 m/s.

B. 1.2 x 10^7 m/s.

C. 1.9 x 10^7 m/s.

D. 2.8 x 10^7 m/s.

E. 4.2 x 10^7 m/s.

2. How fast is a 2928 eV electron moving?

A. 6.3 x 10^6 m/s.

B. 9.5 x 10^6 m/s.

C. 1.4 x 10^7 m/s.

D. 2.1 x 10^7 m/s.

E. 3.2 x 10^7 m/s.

3. How fast is a 2952 eV electron moving?

A. 6.4 x 10^6 m/s.

B. 9.5 x 10^6 m/s.

C. 1.4 x 10^7 m/s.

D. 2.1 x 10^7 m/s.

E. 3.2 x 10^7 m/s.

4. How fast is a 2355 eV electron moving?

A. 1.9 x 10^7 m/s.

The next page might contain more answer choices for this question

B. 2.9 x 10^7 m/s.

C. 4.3 x 10^7 m/s.

D. 6.5 x 10^7 m/s.

E. 9.7 x 10^7 m/s.

5. How fast is a 2672 eV electron moving?

A. 6.1 x 10^6 m/s.

B. 9.1 x 10^6 m/s.

C. 1.4 x 10^7 m/s.

D. 2 x 10^7 m/s.

E. 3.1 x 10^7 m/s.

6. How fast is a 2663 eV electron moving?

A. 3.1 x 10^7 m/s.

B. 4.6 x 10^7 m/s.

C. 6.9 x 10^7 m/s.

D. 1 x 10^8 m/s.

E. 1.5 x 10^8 m/s.

7. How fast is a 2493 eV electron moving?

A. 1.3 x 10^7 m/s.

B. 2 x 10^7 m/s.

C. 3 x 10^7 m/s.

D. 4.4 x 10^7 m/s.

E. 6.7 x 10^7 m/s.

8. How fast is a 2648 eV electron moving?

A. 3.1 x 10^7 m/s.

B. 4.6 x 10^7 m/s.

C. 6.9 x 10^7 m/s.

D. 1 x 10^8 m/s.

E. 1.5 x 10^8 m/s.

9. How fast is a 2758 eV electron moving?

A. 9.2 x 10^6 m/s.

B. 1.4 x 10^7 m/s.

C. 2.1 x 10^7 m/s.

D. 3.1 x 10^7 m/s.

E. 4.7 x 10^7 m/s.

The next page might contain more answer choices for this question

a19ElectricPotentialField_KE_PE Q2

1. A proton is accelerated (at rest) from a plate held at 552.1 volts to a plate at zero volts. What is the final speed?
   A. 3.3 x 10^5 m/s.
   B. 4.9 x 10^5 m/s.
   C. 7.3 x 10^5 m/s.
   D. 1.1 x 10^6 m/s.
   E. 1.6 x 10^6 m/s.

2. A proton is accelerated (at rest) from a plate held at 333.6 volts to a plate at zero volts. What is the final speed?
   A. 1.1 x 10^5 m/s.
   B. 1.7 x 10^5 m/s.
   C. 2.5 x 10^5 m/s.
   D. 3.8 x 10^5 m/s.
   E. 5.7 x 10^5 m/s.

3. A proton is accellerated (at rest) from a plate held at 767.8 volts to a plate at zero volts. What is the final speed?
   A. 1.1 x 10^5 m/s.
   B. 1.7 x 10^5 m/s.
   C. 2.6 x 10^5 m/s.
   D. 3.8 x 10^5 m/s.
   E. 5.8 x 10^5 m/s.

4. A proton is accellerated (at rest) from a plate held at 4.7 volts to a plate at zero volts. What is the final speed?
   A. 5.9 x 10^3 m/s.
   B. 8.9 x 10^3 m/s.
   C. 1.3 x 10^4 m/s.
   D. 2 x 10^4 m/s.
   E. 3 x 10^4 m/s.

5. A proton is accellerated (at rest) from a plate held at 318.6 volts to a plate at zero volts. What is the final speed?
   A. 1.6 x 10^5 m/s.
   B. 2.5 x 10^5 m/s.
   C. 3.7 x 10^5 m/s.
   D. 5.6 x 10^5 m/s.
   E. 8.3 x 10^5 m/s.

6. A proton is accellerated (at rest) from a plate held at 775.8 volts to a plate at zero volts. What is the final speed?
   A. 7.6 x 10^4 m/s.
   B. 1.1 x 10^5 m/s.
   C. 1.7 x 10^5 m/s.
   D. 2.6 x 10^5 m/s.
   E. 3.9 x 10^5 m/s.

The next page might contain more answer choices for this question

7. A proton is accellerated (at rest) from a plate held at 39.7 volts to a plate at zero volts. What is the final speed?
   - A. 3.9 x 10^4 m/s.
   - B. 5.8 x 10^4 m/s.
   - **C. 8.7 x 10^4 m/s.**
   - D. 1.3 x 10^5 m/s.
   - E. 2 x 10^5 m/s.
8. A proton is accellerated (at rest) from a plate held at 588.2 volts to a plate at zero volts. What is the final speed?
   - A. 6.6 x 10^4 m/s.
   - B. 10 x 10^4 m/s.
   - C. 1.5 x 10^5 m/s.
   - D. 2.2 x 10^5 m/s.
   - **E. 3.4 x 10^5 m/s.**
9. A proton is accellerated (at rest) from a plate held at 729.8 volts to a plate at zero volts. What is the final speed?
   - A. 1.7 x 10^5 m/s.
   - B. 2.5 x 10^5 m/s.
   - **C. 3.7 x 10^5 m/s.**
   - D. 5.6 x 10^5 m/s.
   - E. 8.4 x 10^5 m/s.

a19ElectricPotentialField_KE_PE Q3

1. What voltage is required accelerate an electron at rest to a speed of 9.7 x 10^4 m/s?
   - A. 1.8 x 10^{-2} volts
   - **B. 2.7 x 10^{-2} volts**
   - C. 4 x 10^{-2} volts
   - D. 6 x 10^{-2} volts
   - E. 9 x 10^{-2} volts
2. What voltage is required accelerate an electron at rest to a speed of 1.7 x 10^5 m/s?
   - A. 1.6 x 10^{-2} volts
   - B. 2.4 x 10^{-2} volts
   - C. 3.7 x 10^{-2} volts
   - D. 5.5 x 10^{-2} volts
   - **E. 8.2 x 10^{-2} volts**
3. What voltage is required accelerate an electron at rest to a speed of 3 x 10^5 m/s?
   - A. 1.7 x 10^{-1} volts
   - **B. 2.6 x 10^{-1} volts**
   - C. 3.8 x 10^{-1} volts
   - D. 5.8 x 10^{-1} volts
   - E. 8.6 x 10^{-1} volts

The next page might contain more answer choices for this question

4. What voltage is required accelerate an electron at rest to a speed of 2.8 x 10^3 m/s?
   A. 4.4 x 10^{-6} volts
   B. 6.6 x 10^{-6} volts
   C. 9.9 x 10^{-6} volts
   D. 1.5 x 10^{-5} volts
   E. 2.2 x 10^{-5} volts

5. What voltage is required accelerate an electron at rest to a speed of 9.5 x 10^6 m/s?
   A. 1.1 x 10^2 volts
   B. 1.7 x 10^2 volts
   C. 2.6 x 10^2 volts
   D. 3.8 x 10^2 volts
   E. 5.8 x 10^2 volts

6. What voltage is required accelerate an electron at rest to a speed of 5.6 x 10^4 m/s?
   A. 5.9 x 10^{-3} volts
   B. 8.9 x 10^{-3} volts
   C. 1.3 x 10^{-2} volts
   D. 2 x 10^{-2} volts
   E. 3 x 10^{-2} volts

7. What voltage is required accelerate an electron at rest to a speed of 7.6 x 10^7 m/s?
   A. 3.2 x 10^3 volts
   B. 4.9 x 10^3 volts
   C. 7.3 x 10^3 volts
   D. 1.1 x 10^4 volts
   E. 1.6 x 10^4 volts

8. What voltage is required accelerate an electron at rest to a speed of 5.5 x 10^5 m/s?
   A. 2.5 x 10^{-1} volts
   B. 3.8 x 10^{-1} volts
   C. 5.7 x 10^{-1} volts
   D. 8.6 x 10^{-1} volts
   E. 1.3 x 10^0 volts

9. What voltage is required accelerate an electron at rest to a speed of 1.5 x 10^3 m/s?
   A. 1.9 x 10^{-6} volts
   B. 2.8 x 10^{-6} volts
   C. 4.3 x 10^{-6} volts
   D. 6.4 x 10^{-6} volts
   E. 9.6 x 10^{-6} volts

The next page might contain more answer choices for this question

a19ElectricPotentialField_KE_PE Q4

1. What voltage is required to stop a proton moving at a speed of 3 x 10^4 m/s?
   - A. 1.4 x 10^0 volts
   - B. 2.1 x 10^0 volts
   - C. 3.1 x 10^0 volts
   - **D. 4.7 x 10^0 volts**
   - E. 7 x 10^0 volts
2. What voltage is required to stop a proton moving at a speed of 8.1 x 10^6 m/s?
   - A. 2.3 x 10^5 volts
   - **B. 3.4 x 10^5 volts**
   - C. 5.1 x 10^5 volts
   - D. 7.7 x 10^5 volts
   - E. 1.2 x 10^6 volts
3. What voltage is required to stop a proton moving at a speed of 3.9 x 10^3 m/s?
   - A. 3.5 x 10^{-2} volts
   - B. 5.3 x 10^{-2} volts
   - **C. 7.9 x 10^{-2} volts**
   - D. 1.2 x 10^{-1} volts
   - E. 1.8 x 10^{-1} volts
4. What voltage is required to stop a proton moving at a speed of 7.6 x 10^6 m/s?
   - **A. 3 x 10^5 volts**
   - B. 4.5 x 10^5 volts
   - C. 6.8 x 10^5 volts
   - D. 1 x 10^6 volts
   - E. 1.5 x 10^6 volts
5. What voltage is required to stop a proton moving at a speed of 4.2 x 10^3 m/s?
   - A. 6.1 x 10^{-2} volts
   - **B. 9.2 x 10^{-2} volts**
   - C. 1.4 x 10^{-1} volts
   - D. 2.1 x 10^{-1} volts
   - E. 3.1 x 10^{-1} volts
6. What voltage is required to stop a proton moving at a speed of 8 x 10^7 m/s?
   - **A. 3.3 x 10^7 volts**
   - B. 5 x 10^7 volts
   - C. 7.5 x 10^7 volts
   - D. 1.1 x 10^8 volts
   - E. 1.7 x 10^8 volts

The next page might contain more answer choices for this question

7. What voltage is required to stop a proton moving at a speed of 1.6 x 10^4 m/s?
    - A. 4 x 10^{-1} volts
    - B. 5.9 x 10^{-1} volts
    - C. 8.9 x 10^{-1} volts
    - **D. 1.3 x 10^0 volts**
    - E. 2 x 10^0 volts

8. What voltage is required to stop a proton moving at a speed of 8.1 x 10^4 m/s?
    - **A. 3.4 x 10^1 volts**
    - B. 5.1 x 10^1 volts
    - C. 7.7 x 10^1 volts
    - D. 1.2 x 10^2 volts
    - E. 1.7 x 10^2 volts

9. What voltage is required to stop a proton moving at a speed of 5.2 x 10^7 m/s?
    - A. 9.4 x 10^6 volts
    - **B. 1.4 x 10^7 volts**
    - C. 2.1 x 10^7 volts
    - D. 3.2 x 10^7 volts
    - E. 4.8 x 10^7 volts

10 c07energy_lineIntegral

1. Integrate the line integral of, $\vec{F} = 9xy\hat{x} + 9.5y^3\hat{y}$, along the y axis from y = 5 to y = 14[70]
    - A.) 7.33E+04
    - B.) 7.84E+04
    - C.) 8.39E+04
    - **D.) 8.98E+04**
    - E.) 9.60E+04

2. Integrate the function, $\vec{F} = r^7\theta^9\hat{r} + r^7\theta^5\hat{\theta}$, along the first quadrant of a circle of radius 8[71]
    - A.) 3.43E+07
    - B.) 3.67E+07
    - C.) 3.93E+07
    - **D.) 4.20E+07**
    - E.) 4.49E+07

3. Integrate the line integral of $\vec{F} = 4xy\hat{x} + 7.7x\hat{y}$ from the origin to the point at x = 2.5 and y = 3.3[72]
    - **A.) 5.93E+01**
    - B.) 6.34E+01
    - C.) 6.78E+01
    - D.) 7.26E+01

The next page might contain more answer choices for this question

E.) 7.77E+01

4. Integrate the function, $\vec{F} = -x^2y^2\hat{x}+x^2y^3\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule[73]

   A.) 4.45E-01

   B.) 4.76E-01

   C.) 5.10E-01

   D.) 5.45E-01

   E.) 5.83E-01

10.1 Renditions

c07energy_lineIntegral Q1

1. Integrate the line integral of, $\vec{F} = 9.4xy\hat{x} + 7.5y^3\hat{y}$, along the y axis from y = 4 to y = 17

   A.) 1.19E+05

   B.) 1.27E+05

   C.) 1.36E+05

   D.) 1.46E+05

   E.) 1.56E+05

2. Integrate the line integral of, $\vec{F} = 8.2xy\hat{x} + 7.4y^3\hat{y}$, along the y axis from y = 5 to y = 12

   A.) 3.25E+04

   B.) 3.48E+04

   C.) 3.72E+04

   D.) 3.98E+04

   E.) 4.26E+04

3. Integrate the line integral of, $\vec{F} = 7.4xy\hat{x} + 9.3y^3\hat{y}$, along the y axis from y = 6 to y = 16

   A.) 1.49E+05

   B.) 1.60E+05

   C.) 1.71E+05

   D.) 1.83E+05

   E.) 1.96E+05

4. Integrate the line integral of, $\vec{F} = 5.6xy\hat{x} + 7.9y^3\hat{y}$, along the y axis from y = 5 to y = 15

   A.) 9.88E+04

   B.) 1.06E+05

   C.) 1.13E+05

   D.) 1.21E+05

   E.) 1.29E+05

5. Integrate the line integral of, $\vec{F} = 7.9xy\hat{x} + 8.1y^3\hat{y}$, along the y axis from y = 5 to y = 12

   A.) 3.32E+04

   B.) 3.56E+04

The next page might contain more answer choices for this question

C.) 3.81E+04

D.) 4.07E+04

E.) 4.36E+04

6. Integrate the line integral of, $\vec{F} = 8.9xy\hat{x} + 6.5y^3\hat{y}$, along the y axis from y = 5 to y = 13

A.) 4.54E+04

B.) 4.86E+04

C.) 5.20E+04

D.) 5.56E+04

E.) 5.95E+04

7. Integrate the line integral of, $\vec{F} = 9xy\hat{x} + 5.4y^3\hat{y}$, along the y axis from y = 3 to y = 19

A.) 1.54E+05

B.) 1.64E+05

C.) 1.76E+05

D.) 1.88E+05

E.) 2.01E+05

8. Integrate the line integral of, $\vec{F} = 7.9xy\hat{x} + 9.7y^3\hat{y}$, along the y axis from y = 3 to y = 18

A.) 1.94E+05

B.) 2.08E+05

C.) 2.22E+05

D.) 2.38E+05

E.) 2.54E+05

9. Integrate the line integral of, $\vec{F} = 6.1xy\hat{x} + 5.9y^3\hat{y}$, along the y axis from y = 6 to y = 12

A.) 2.87E+04

B.) 3.07E+04

C.) 3.28E+04

D.) 3.51E+04

E.) 3.76E+04

10. Integrate the line integral of, $\vec{F} = 6.8xy\hat{x} + 7y^3\hat{y}$, along the y axis from y = 3 to y = 17

A.) 1.28E+05

B.) 1.36E+05

C.) 1.46E+05

D.) 1.56E+05

E.) 1.67E+05

11. Integrate the line integral of, $\vec{F} = 9.9xy\hat{x} + 6.1y^3\hat{y}$, along the y axis from y = 7 to y = 16

A.) 7.86E+04

B.) 8.41E+04

C.) 9.00E+04

The next page might contain more answer choices for this question

D.) 9.63E+04

E.) 1.03E+05

12. Integrate the line integral of, $\vec{F} = 6.9xy\hat{x} + 7.4y^3\hat{y}$, along the y axis from y = 3 to y = 18

A.) 1.69E+05

B.) 1.81E+05

C.) 1.94E+05

D.) 2.08E+05

E.) 2.22E+05

13. Integrate the line integral of, $\vec{F} = 8.3xy\hat{x} + 8.6y^3\hat{y}$, along the y axis from y = 4 to y = 16

A.) 1.31E+05

B.) 1.40E+05

C.) 1.50E+05

D.) 1.61E+05

E.) 1.72E+05

14. Integrate the line integral of, $\vec{F} = 8.9xy\hat{x} + 5.4y^3\hat{y}$, along the y axis from y = 7 to y = 17

A.) 1.10E+05

B.) 1.17E+05

C.) 1.25E+05

D.) 1.34E+05

E.) 1.44E+05

15. Integrate the line integral of, $\vec{F} = 9.4xy\hat{x} + 9.3y^3\hat{y}$, along the y axis from y = 6 to y = 18

A.) 2.11E+05

B.) 2.25E+05

C.) 2.41E+05

D.) 2.58E+05

E.) 2.76E+05

16. Integrate the line integral of, $\vec{F} = 6.9xy\hat{x} + 5.5y^3\hat{y}$, along the y axis from y = 7 to y = 18

A.) 1.41E+05

B.) 1.51E+05

C.) 1.61E+05

D.) 1.73E+05

E.) 1.85E+05

17. Integrate the line integral of, $\vec{F} = 8.4xy\hat{x} + 8.3y^3\hat{y}$, along the y axis from y = 5 to y = 15

A.) 9.70E+04

B.) 1.04E+05

C.) 1.11E+05

D.) 1.19E+05

The next page might contain more answer choices for this question

E.) 1.27E+05

18. Integrate the line integral of, $\vec{F} = 7.3xy\hat{x} + 5.2y^3\hat{y}$, along the y axis from y = 5 to y = 11

A.) 1.82E+04

B.) 1.95E+04

C.) 2.09E+04

D.) 2.23E+04

E.) 2.39E+04

19. Integrate the line integral of, $\vec{F} = 7.8xy\hat{x} + 8y^3\hat{y}$, along the y axis from y = 6 to y = 13

A.) 4.45E+04

B.) 4.76E+04

C.) 5.10E+04

D.) 5.45E+04

E.) 5.83E+04

20. Integrate the line integral of, $\vec{F} = 8.5xy\hat{x} + 7.5y^3\hat{y}$, along the y axis from y = 7 to y = 18

A.) 1.68E+05

B.) 1.80E+05

C.) 1.92E+05

D.) 2.06E+05

E.) 2.20E+05

c07energy_lineIntegral Q2

1. Integrate the function, $\vec{F} = r^6\theta^8\hat{r} + r^7\theta^6\hat{\theta}$, along the first quadrant of a circle of radius 5

A.) 1.15E+06

B.) 1.23E+06

C.) 1.32E+06

D.) 1.41E+06

E.) 1.51E+06

2. Integrate the function, $\vec{F} = r^6\theta^6\hat{r} + r^8\theta^7\hat{\theta}$, along the first quadrant of a circle of radius 3

A.) 6.96E+04

B.) 7.44E+04

C.) 7.97E+04

D.) 8.52E+04

E.) 9.12E+04

3. Integrate the function, $\vec{F} = r^4\theta^6\hat{r} + r^7\theta^8\hat{\theta}$, along the first quadrant of a circle of radius 6

A.) 1.09E+07

B.) 1.16E+07

C.) 1.24E+07

D.) 1.33E+07

The next page might contain more answer choices for this question

E.) 1.42E+07

4. Integrate the function, $\vec{F} = r^8\theta^9\hat{r} + r^8\theta^5\hat{\theta}$, along the first quadrant of a circle of radius 6
   A.) 2.06E+07
   B.) 2.20E+07
   C.) 2.36E+07
   D.) 2.52E+07
   E.) 2.70E+07
5. Integrate the function, $\vec{F} = r^7\theta^8\hat{r} + r^9\theta^4\hat{\theta}$, along the first quadrant of a circle of radius 8
   A.) 1.68E+09
   B.) 1.79E+09
   C.) 1.92E+09
   D.) 2.05E+09
   E.) 2.20E+09
6. Integrate the function, $\vec{F} = r^9\theta^3\hat{r} + r^8\theta^7\hat{\theta}$, along the first quadrant of a circle of radius 4
   A.) 1.14E+06
   B.) 1.21E+06
   C.) 1.30E+06
   D.) 1.39E+06
   E.) 1.49E+06
7. Integrate the function, $\vec{F} = r^5\theta^7\hat{r} + r^4\theta^4\hat{\theta}$, along the first quadrant of a circle of radius 9
   A.) 1.06E+05
   B.) 1.13E+05
   C.) 1.21E+05
   D.) 1.29E+05
   E.) 1.38E+05
8. Integrate the function, $\vec{F} = r^3\theta^4\hat{r} + r^6\theta^5\hat{\theta}$, along the first quadrant of a circle of radius 9
   A.) 1.12E+07
   B.) 1.20E+07
   C.) 1.28E+07
   D.) 1.37E+07
   E.) 1.47E+07
9. Integrate the function, $\vec{F} = r^4\theta^3\hat{r} + r^6\theta^7\hat{\theta}$, along the first quadrant of a circle of radius 7
   A.) 3.33E+06
   B.) 3.57E+06
   C.) 3.82E+06
   D.) 4.08E+06
   E.) 4.37E+06

The next page might contain more answer choices for this question

10. Integrate the function, $\vec{F} = r^3\theta^7\hat{r} + r^7\theta^4\hat{\theta}$, along the first quadrant of a circle of radius 4
    - A.) 1.02E+05
    - B.) 1.09E+05
    - C.) 1.17E+05
    - **D.) 1.25E+05**
    - E.) 1.34E+05

11. Integrate the function, $\vec{F} = r^5\theta^4\hat{r} + r^5\theta^8\hat{\theta}$, along the first quadrant of a circle of radius 5
    - A.) 8.25E+04
    - B.) 8.83E+04
    - C.) 9.45E+04
    - **D.) 1.01E+05**
    - E.) 1.08E+05

12. Integrate the function, $\vec{F} = r^6\theta^8\hat{r} + r^8\theta^9\hat{\theta}$, along the first quadrant of a circle of radius 3
    - A.) 1.37E+05
    - B.) 1.47E+05
    - C.) 1.57E+05
    - D.) 1.68E+05
    - **E.) 1.80E+05**

13. Integrate the function, $\vec{F} = r^8\theta^5\hat{r} + r^4\theta^6\hat{\theta}$, along the first quadrant of a circle of radius 4
    - A.) 2.63E+03
    - B.) 2.82E+03
    - C.) 3.01E+03
    - D.) 3.23E+03
    - **E.) 3.45E+03**

14. Integrate the function, $\vec{F} = r^5\theta^3\hat{r} + r^6\theta^6\hat{\theta}$, along the first quadrant of a circle of radius 3
    - A.) 6.44E+03
    - B.) 6.89E+03
    - **C.) 7.37E+03**
    - D.) 7.89E+03
    - E.) 8.44E+03

15. Integrate the function, $\vec{F} = r^7\theta^4\hat{r} + r^5\theta^6\hat{\theta}$, along the first quadrant of a circle of radius 7
    - A.) 3.03E+05
    - B.) 3.24E+05
    - C.) 3.46E+05
    - D.) 3.71E+05
    - **E.) 3.97E+05**

16. Integrate the function, $\vec{F} = r^9\theta^6\hat{r} + r^4\theta^4\hat{\theta}$, along the first quadrant of a circle of radius 7

The next page might contain more answer choices for this question

A.) 2.45E+04
B.) 2.62E+04
C.) 2.81E+04
D.) 3.00E+04
E.) 3.21E+04

17. Integrate the function, $\vec{F} = r^9\theta^4\hat{r} + r^7\theta^8\hat{\theta}$, along the first quadrant of a circle of radius 8
A.) 8.86E+07
B.) 9.48E+07
C.) 1.01E+08
D.) 1.09E+08
E.) 1.16E+08

18. Integrate the function, $\vec{F} = r^9\theta^5\hat{r} + r^8\theta^7\hat{\theta}$, along the first quadrant of a circle of radius 4
A.) 1.14E+06
B.) 1.21E+06
C.) 1.30E+06
D.) 1.39E+06
E.) 1.49E+06

19. Integrate the function, $\vec{F} = r^7\theta^3\hat{r} + r^4\theta^7\hat{\theta}$, along the first quadrant of a circle of radius 3
A.) 1.05E+03
B.) 1.13E+03
C.) 1.20E+03
D.) 1.29E+03
E.) 1.38E+03

20. Integrate the function, $\vec{F} = r^6\theta^5\hat{r} + r^9\theta^7\hat{\theta}$, along the first quadrant of a circle of radius 3
A.) 2.09E+05
B.) 2.23E+05
C.) 2.39E+05
D.) 2.56E+05
E.) 2.74E+05

c07energy_lineIntegral Q3

1. Integrate the line integral of $\vec{F} = 3xy\hat{x} + 6.9x\hat{y}$ from the origin to the point at x = 2.3 and y = 3.8
A.) 4.70E+01
B.) 5.03E+01
C.) 5.38E+01
D.) 5.75E+01
E.) 6.16E+01

2. Integrate the line integral of $\vec{F} = 2.9xy\hat{x} + 7.3x\hat{y}$ from the origin to the point at x = 2.3 and y = 3.8

The next page might contain more answer choices for this question

A.) 4.48E+01
B.) 4.80E+01
C.) 5.13E+01
D.) 5.49E+01
E.) 5.88E+01

3. Integrate the line integral of $\vec{F} = 1.3xy\hat{x} + 6.4x\hat{y}$ from the origin to the point at x = 2.2 and y = 3.6
A.) 3.07E+01
B.) 3.29E+01
C.) 3.52E+01
D.) 3.77E+01
E.) 4.03E+01

4. Integrate the line integral of $\vec{F} = 2.6xy\hat{x} + 8.6x\hat{y}$ from the origin to the point at x = 2.9 and y = 3.7
A.) 7.31E+01
B.) 7.82E+01
C.) 8.37E+01
D.) 8.96E+01
E.) 9.58E+01

5. Integrate the line integral of $\vec{F} = 4xy\hat{x} + 9.8x\hat{y}$ from the origin to the point at x = 2.6 and y = 3.9
A.) 7.93E+01
B.) 8.48E+01
C.) 9.08E+01
D.) 9.71E+01
E.) 1.04E+02

6. Integrate the line integral of $\vec{F} = 3.8xy\hat{x} + 5.1x\hat{y}$ from the origin to the point at x = 2.5 and y = 3.2
A.) 4.27E+01
B.) 4.57E+01
C.) 4.89E+01
D.) 5.24E+01
E.) 5.60E+01

7. Integrate the line integral of $\vec{F} = 1.6xy\hat{x} + 8x\hat{y}$ from the origin to the point at x = 2.6 and y = 3.4
A.) 4.76E+01
B.) 5.10E+01
C.) 5.45E+01
D.) 5.83E+01
E.) 6.24E+01

8. Integrate the line integral of $\vec{F} = 1.2xy\hat{x} + 5.3x\hat{y}$ from the origin to the point at x = 2.1 and y = 3.1
A.) 1.73E+01

The next page might contain more answer choices for this question

B.) 1.85E+01
C.) 1.98E+01
D.) 2.12E+01
E.) 2.27E+01

9. Integrate the line integral of $\vec{F} = 3.3xy\hat{x} + 8.7x\hat{y}$ from the origin to the point at x = 2.1 and y = 3.2
A.) 4.18E+01
B.) 4.48E+01
C.) 4.79E+01
D.) 5.12E+01
E.) 5.48E+01

10. Integrate the line integral of $\vec{F} = 3.8xy\hat{x} + 9.8x\hat{y}$ from the origin to the point at x = 2.9 and y = 3.4
A.) 7.90E+01
B.) 8.45E+01
C.) 9.05E+01
D.) 9.68E+01
E.) 1.04E+02

11. Integrate the line integral of $\vec{F} = 1.6xy\hat{x} + 8.7x\hat{y}$ from the origin to the point at x = 2.7 and y = 3.2
A.) 4.37E+01
B.) 4.68E+01
C.) 5.00E+01
D.) 5.35E+01
E.) 5.73E+01

12. Integrate the line integral of $\vec{F} = 1.2xy\hat{x} + 8.3x\hat{y}$ from the origin to the point at x = 2.8 and y = 3.8
A.) 4.58E+01
B.) 4.90E+01
C.) 5.24E+01
D.) 5.61E+01
E.) 6.00E+01

13. Integrate the line integral of $\vec{F} = 2.4xy\hat{x} + 6.8x\hat{y}$ from the origin to the point at x = 2.1 and y = 3.8
A.) 4.05E+01
B.) 4.34E+01
C.) 4.64E+01
D.) 4.97E+01
E.) 5.31E+01

14. Integrate the line integral of $\vec{F} = 1.1xy\hat{x} + 6.4x\hat{y}$ from the origin to the point at x = 2.9 and y = 3.7
A.) 4.28E+01
B.) 4.57E+01

The next page might contain more answer choices for this question

C.) 4.89E+01
D.) 5.24E+01
E.) 5.60E+01

15. Integrate the line integral of $\vec{F} = 3.7xy\hat{x} + 8.4x\hat{y}$ from the origin to the point at x = 2.6 and y = 3.4

A.) 5.00E+01
B.) 5.34E+01
C.) 5.72E+01
D.) 6.12E+01
E.) 6.55E+01

16. Integrate the line integral of $\vec{F} = 3.6xy\hat{x} + 5.1x\hat{y}$ from the origin to the point at x = 2.2 and y = 3.5

A.) 3.49E+01
B.) 3.73E+01
C.) 4.00E+01
D.) 4.28E+01
E.) 4.58E+01

17. Integrate the line integral of $\vec{F} = 2xy\hat{x} + 7.2x\hat{y}$ from the origin to the point at x = 2.4 and y = 3.2

A.) 3.05E+01
B.) 3.26E+01
C.) 3.49E+01
D.) 3.73E+01
E.) 3.99E+01

18. Integrate the line integral of $\vec{F} = 2.2xy\hat{x} + 9.2x\hat{y}$ from the origin to the point at x = 2.1 and y = 3.4

A.) 4.38E+01
B.) 4.69E+01
C.) 5.02E+01
D.) 5.37E+01
E.) 5.75E+01

19. Integrate the line integral of $\vec{F} = 2xy\hat{x} + 9.7x\hat{y}$ from the origin to the point at x = 2.8 and y = 3.2

A.) 5.26E+01
B.) 5.62E+01
C.) 6.02E+01
D.) 6.44E+01
E.) 6.89E+01

20. Integrate the line integral of $\vec{F} = 2xy\hat{x} + 9.5x\hat{y}$ from the origin to the point at x = 2.1 and y = 3.8

A.) 4.91E+01
B.) 5.25E+01
C.) 5.62E+01
D.) 6.01E+01
E.) 6.43E+01

The next page might contain more answer choices for this question

c07energy_lineIntegral Q4

1. Integrate the function, $\vec{F} = -x^2y^3\hat{x}+x^2y^4\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
   - A.) 4.66E-01
   - B.) 4.98E-01
   - **C.) 5.33E-01**
   - D.) 5.71E-01
   - E.) 6.11E-01
2. Integrate the function, $\vec{F} = -x^3y^5\hat{x}+x^2y^3\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
   - A.) 3.81E-01
   - B.) 4.08E-01
   - C.) 4.37E-01
   - D.) 4.67E-01
   - **E.) 5.00E-01**
3. Integrate the function, $\vec{F} = -x^5y^2\hat{x}+x^5y^3\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
   - A.) 3.64E-01
   - B.) 3.89E-01
   - **C.) 4.17E-01**
   - D.) 4.46E-01
   - E.) 4.77E-01
4. Integrate the function, $\vec{F} = -x^4y^4\hat{x}+x^5y^4\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
   - A.) 3.27E-01
   - B.) 3.49E-01
   - C.) 3.74E-01
   - **D.) 4.00E-01**
   - E.) 4.28E-01
5. Integrate the function, $\vec{F} = -x^3y^5\hat{x}+x^5y^2\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
   - A.) 4.76E-01
   - B.) 5.10E-01
   - C.) 5.45E-01
   - **D.) 5.83E-01**
   - E.) 6.24E-01
6. Integrate the function, $\vec{F} = -x^5y^4\hat{x}+x^5y^4\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule
   - **A.) 3.67E-01**

The next page might contain more answer choices for this question

B.) 3.92E-01
C.) 4.20E-01
D.) 4.49E-01
E.) 4.81E-01

7. Integrate the function, $\vec{F} = -x^4y^5\hat{x}+x^3y^3\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 4.21E-01
B.) 4.50E-01
C.) 4.82E-01
D.) 5.15E-01
E.) 5.51E-01

8. Integrate the function, $\vec{F} = -x^5y^3\hat{x}+x^5y^4\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 3.43E-01
B.) 3.67E-01
C.) 3.92E-01
D.) 4.20E-01
E.) 4.49E-01

9. Integrate the function, $\vec{F} = -x^2y^2\hat{x}+x^4y^3\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 5.10E-01
B.) 5.45E-01
C.) 5.83E-01
D.) 6.24E-01
E.) 6.68E-01

10. Integrate the function, $\vec{F} = -x^2y^5\hat{x}+x^2y^4\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 5.33E-01
B.) 5.71E-01
C.) 6.11E-01
D.) 6.53E-01
E.) 6.99E-01

11. Integrate the function, $\vec{F} = -x^3y^4\hat{x}+x^4y^4\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 3.43E-01
B.) 3.67E-01
C.) 3.93E-01
D.) 4.21E-01
E.) 4.50E-01

The next page might contain more answer choices for this question

12. Integrate the function, $\vec{F} = -x^2y^4\hat{x}+x^4y^5\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 4.08E-01

B.) 4.37E-01

C.) 4.67E-01

D.) 5.00E-01

E.) 5.35E-01

13. Integrate the function, $\vec{F} = -x^5y^2\hat{x}+x^2y^4\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 3.43E-01

B.) 3.67E-01

C.) 3.92E-01

D.) 4.20E-01

E.) 4.49E-01

14. Integrate the function, $\vec{F} = -x^4y^2\hat{x}+x^4y^5\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 3.67E-01

B.) 3.92E-01

C.) 4.20E-01

D.) 4.49E-01

E.) 4.81E-01

15. Integrate the function, $\vec{F} = -x^3y^2\hat{x}+x^2y^4\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 3.43E-01

B.) 3.67E-01

C.) 3.93E-01

D.) 4.21E-01

E.) 4.50E-01

16. Integrate the function, $\vec{F} = -x^4y^2\hat{x}+x^3y^4\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 3.74E-01

B.) 4.00E-01

C.) 4.28E-01

D.) 4.58E-01

E.) 4.90E-01

17. Integrate the function, $\vec{F} = -x^2y^4\hat{x}+x^4y^3\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 5.10E-01

B.) 5.45E-01

The next page might contain more answer choices for this question

C.) 5.83E-01

D.) 6.24E-01

E.) 6.68E-01

18. Integrate the function, $\vec{F} = -x^4y^2\hat{x}+x^2y^3\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 4.50E-01

B.) 4.82E-01

C.) 5.15E-01

D.) 5.51E-01

E.) 5.90E-01

19. Integrate the function, $\vec{F} = -x^5y^5\hat{x}+x^5y^5\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 3.12E-01

B.) 3.33E-01

C.) 3.57E-01

D.) 3.82E-01

E.) 4.08E-01

20. Integrate the function, $\vec{F} = -x^3y^2\hat{x}+x^5y^3\hat{y}$, as a line integral around a unit square with corners at (0,0),(1,0),(1,1),(0,1). Orient the path so its direction is out of the paper by the right hand rule

A.) 5.00E-01

B.) 5.35E-01

C.) 5.72E-01

D.) 6.13E-01

E.) 6.55E-01

11 d_cp2.8

1. An empty parallel-plate capacitor with metal plates has an area of 1.0 m^2, separated by 1.0 mm. How much charge does it store if the voltage is 3.000E+03 V?[74]

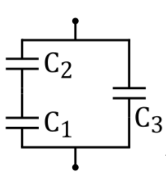
A. 2.195E+01 µ C

B. 2.415E+01 µ C

C. 2.656E+01 µ C

D. 2.922E+01 µ C

E. 3.214E+01 µ C



2. What is the net capacitance if C_1=1 µ F, C_2=5 µ F, and C_3=8 µ F in the configuration shown?[75]

A. 8.030E+00 µ F

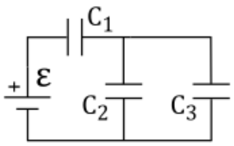
The next page might contain more answer choices for this question

B. 8.833E+00 µ F

C. 9.717E+00 µ F

D. 1.069E+01 µ F

E. 1.176E+01 µ F

3. 

In the figure shown C_1=12 µ F, C_2=2 µ F, and C_3=4 µ F. The voltage source provides ε =12 V. What is the charge on C_1?[76]

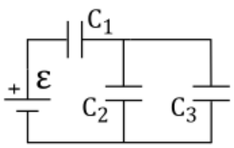
A. 3.606E+01 µ C

B. 3.967E+01 µ C

C. 4.364E+01 µ C

D. 4.800E+01 µ C

E. 5.280E+01 µ C

4. 

In the figure shown C_1=12 µ F, C_2=2 µ F, and C_3=4 µ F. The voltage source provides ε =12 V. What is the energy stored in C_2?[77]

A. 1.600E+01 µ J

B. 1.760E+01 µ J

C. 1.936E+01 µ J

D. 2.130E+01 µ J

E. 2.343E+01 µ J

11.1 Renditions

d_cp2.8 Q1

1. An empty parallel-plate capacitor with metal plates has an area of 1.89 m^2, separated by 1.36 mm. How much charge does it store if the voltage is 4.040E+03 V?

A. 3.395E+01 µ C

B. 3.735E+01 µ C

C. 4.108E+01 µ C

D. 4.519E+01 µ C

E. 4.971E+01 µ C

2. An empty parallel-plate capacitor with metal plates has an area of 2.84 m^2, separated by 1.42 mm. How much charge does it store if the voltage is 1.510E+03 V?

A. 1.826E+01 µ C

B. 2.009E+01 µ C

C. 2.210E+01 µ C

D. 2.431E+01 µ C

The next page might contain more answer choices for this question

E. 2.674E+01 μ C

3. An empty parallel-plate capacitor with metal plates has an area of 2.02 m^2, separated by 1.44 mm. How much charge does it store if the voltage is 2.170E+03 V?
   - A. 2.450E+01 μ C
   - **B. 2.695E+01 μ C**
   - C. 2.965E+01 μ C
   - D. 3.261E+01 μ C
   - E. 3.587E+01 μ C
4. An empty parallel-plate capacitor with metal plates has an area of 1.94 m^2, separated by 1.36 mm. How much charge does it store if the voltage is 8.530E+03 V?
   - A. 7.359E+01 μ C
   - B. 8.094E+01 μ C
   - C. 8.904E+01 μ C
   - D. 9.794E+01 μ C
   - **E. 1.077E+02 μ C**
5. An empty parallel-plate capacitor with metal plates has an area of 2.59 m^2, separated by 1.23 mm. How much charge does it store if the voltage is 2.200E+03 V?
   - A. 3.082E+01 μ C
   - B. 3.390E+01 μ C
   - C. 3.729E+01 μ C
   - **D. 4.102E+01 μ C**
   - E. 4.512E+01 μ C
6. An empty parallel-plate capacitor with metal plates has an area of 2.82 m^2, separated by 1.29 mm. How much charge does it store if the voltage is 7.420E+03 V?
   - A. 1.187E+02 μ C
   - B. 1.306E+02 μ C
   - **C. 1.436E+02 μ C**
   - D. 1.580E+02 μ C
   - E. 1.738E+02 μ C
7. An empty parallel-plate capacitor with metal plates has an area of 2.83 m^2, separated by 1.14 mm. How much charge does it store if the voltage is 4.180E+03 V?
   - A. 6.275E+01 μ C
   - B. 6.903E+01 μ C
   - C. 7.593E+01 μ C
   - D. 8.352E+01 μ C
   - **E. 9.188E+01 μ C**
8. An empty parallel-plate capacitor with metal plates has an area of 2.21 m^2, separated by 1.25 mm. How much charge does it store if the voltage is 1.580E+03 V?
   - A. 2.249E+01 μ C

The next page might contain more answer choices for this question

B. 2.473E+01 µ C
C. 2.721E+01 µ C
D. 2.993E+01 µ C
E. 3.292E+01 µ C

9. An empty parallel-plate capacitor with metal plates has an area of 2.51 m^2, separated by 1.44 mm. How much charge does it store if the voltage is 2.230E+03 V?
A. 2.351E+01 µ C
B. 2.586E+01 µ C
C. 2.844E+01 µ C
D. 3.129E+01 µ C
E. 3.442E+01 µ C

10. An empty parallel-plate capacitor with metal plates has an area of 2.42 m^2, separated by 1.33 mm. How much charge does it store if the voltage is 1.130E+03 V?
A. 1.368E+01 µ C
B. 1.505E+01 µ C
C. 1.655E+01 µ C
D. 1.820E+01 µ C
E. 2.003E+01 µ C

11. An empty parallel-plate capacitor with metal plates has an area of 2.45 m^2, separated by 1.18 mm. How much charge does it store if the voltage is 4.060E+03 V?
A. 5.608E+01 µ C
B. 6.168E+01 µ C
C. 6.785E+01 µ C
D. 7.464E+01 µ C
E. 8.210E+01 µ C

12. An empty parallel-plate capacitor with metal plates has an area of 2.78 m^2, separated by 1.16 mm. How much charge does it store if the voltage is 8.980E+03 V?
A. 1.432E+02 µ C
B. 1.575E+02 µ C
C. 1.732E+02 µ C
D. 1.906E+02 µ C
E. 2.096E+02 µ C

13. An empty parallel-plate capacitor with metal plates has an area of 1.94 m^2, separated by 1.27 mm. How much charge does it store if the voltage is 8.780E+03 V?
A. 1.080E+02 µ C
B. 1.188E+02 µ C
C. 1.306E+02 µ C
D. 1.437E+02 µ C
E. 1.581E+02 µ C

The next page might contain more answer choices for this question

14. An empty parallel-plate capacitor with metal plates has an area of $1.73\,m^2$, separated by 1.16 mm. How much charge does it store if the voltage is 1.130E+03 V?

   A. 1.121E+01 µ C
   B. 1.233E+01 µ C
   C. 1.357E+01 µ C
   D. 1.492E+01 µ C
   E. 1.641E+01 µ C

15. An empty parallel-plate capacitor with metal plates has an area of $1.81\,m^2$, separated by 1.26 mm. How much charge does it store if the voltage is 4.610E+03 V?

   A. 4.005E+01 µ C
   B. 4.405E+01 µ C
   C. 4.846E+01 µ C
   D. 5.330E+01 µ C
   E. 5.864E+01 µ C

16. An empty parallel-plate capacitor with metal plates has an area of $2.1\,m^2$, separated by 1.13 mm. How much charge does it store if the voltage is 1.680E+03 V?

   A. 2.764E+01 µ C
   B. 3.041E+01 µ C
   C. 3.345E+01 µ C
   D. 3.679E+01 µ C
   E. 4.047E+01 µ C

17. An empty parallel-plate capacitor with metal plates has an area of $2.04\,m^2$, separated by 1.21 mm. How much charge does it store if the voltage is 7.730E+03 V?

   A. 1.049E+02 µ C
   B. 1.154E+02 µ C
   C. 1.269E+02 µ C
   D. 1.396E+02 µ C
   E. 1.536E+02 µ C

18. An empty parallel-plate capacitor with metal plates has an area of $2.16\,m^2$, separated by 1.12 mm. How much charge does it store if the voltage is 1.530E+03 V?

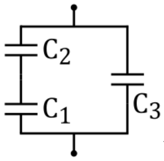
   A. 2.375E+01 µ C
   B. 2.613E+01 µ C
   C. 2.874E+01 µ C
   D. 3.161E+01 µ C
   E. 3.477E+01 µ C

19. An empty parallel-plate capacitor with metal plates has an area of $2.66\,m^2$, separated by 1.18 mm. How much charge does it store if the voltage is 6.170E+03 V?

   A. 1.231E+02 µ C
   B. 1.355E+02 µ C
   C. 1.490E+02 µ C
   D. 1.639E+02 µ C
   E. 1.803E+02 µ C

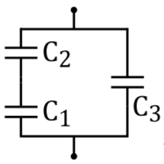
The next page might contain more answer choices for this question

d_cp2.8 Q2

1. 

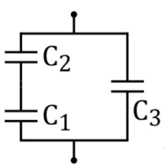
What is the net capacitance if C_1=4.41 μ F, C_2=4.54 μ F, and C_3=2.91 μ F in the configuration shown?

   A. 3.515E+00 μ F
   B. 3.867E+00 μ F
   C. 4.254E+00 μ F
   D. 4.679E+00 μ F
   E. 5.147E+00 μ F

2. 

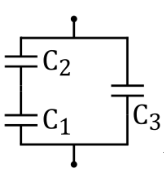
What is the net capacitance if C_1=2.49 μ F, C_2=4.24 μ F, and C_3=2.96 μ F in the configuration shown?

   A. 4.117E+00 μ F
   B. 4.529E+00 μ F
   C. 4.982E+00 μ F
   D. 5.480E+00 μ F
   E. 6.028E+00 μ F

3. 

What is the net capacitance if C_1=4.12 μ F, C_2=3.45 μ F, and C_3=3.41 μ F in the configuration shown?

   A. 4.370E+00 μ F
   B. 4.807E+00 μ F
   C. 5.288E+00 μ F
   D. 5.816E+00 μ F
   E. 6.398E+00 μ F

4. 

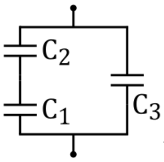
What is the net capacitance if C_1=3.56 μ F, C_2=4.23 μ F, and C_3=2.61 μ F in the configuration shown?

   A. 3.755E+00 μ F
   B. 4.130E+00 μ F
   C. 4.543E+00 μ F

The next page might contain more answer choices for this question

D. 4.997E+00 μ F

E. 5.497E+00 μ F



5. What is the net capacitance if C_1=4.7 μ F, C_2=4.82 μ F, and C_3=3.61 μ F in the configuration shown?

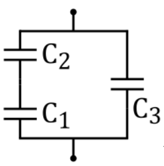
A. 5.445E+00 μ F

B. 5.990E+00 μ F

C. 6.589E+00 μ F

D. 7.247E+00 μ F

E. 7.972E+00 μ F



6. What is the net capacitance if C_1=2.24 μ F, C_2=4.86 μ F, and C_3=3.64 μ F in the configuration shown?

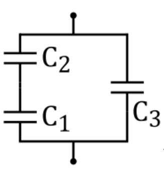
A. 4.275E+00 μ F

B. 4.703E+00 μ F

C. 5.173E+00 μ F

D. 5.691E+00 μ F

E. 6.260E+00 μ F



7. What is the net capacitance if C_1=4.13 μ F, C_2=3.56 μ F, and C_3=3.57 μ F in the configuration shown?

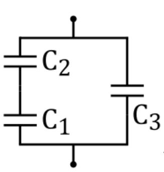
A. 5.482E+00 μ F

B. 6.030E+00 μ F

C. 6.633E+00 μ F

D. 7.296E+00 μ F

E. 8.026E+00 μ F



8. What is the net capacitance if C_1=2.55 μ F, C_2=4.13 μ F, and C_3=2.5 μ F in the configuration shown?

A. 4.077E+00 μ F

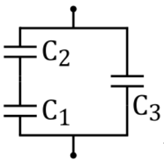
B. 4.484E+00 μ F

The next page might contain more answer choices for this question

C. 4.933E+00 μ F

D. 5.426E+00 μ F

E. 5.969E+00 μ F

9. 

What is the net capacitance if C_1=4.75 μ F, C_2=2.77 μ F, and C_3=2.47 μ F in the configuration shown?

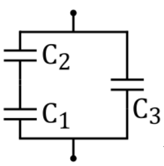
A. 4.220E+00 μ F

B. 4.642E+00 μ F

C. 5.106E+00 μ F

D. 5.616E+00 μ F

E. 6.178E+00 μ F

10. 

What is the net capacitance if C_1=3.97 μ F, C_2=3.51 μ F, and C_3=2.18 μ F in the configuration shown?

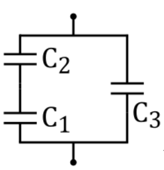
A. 3.038E+00 μ F

B. 3.341E+00 μ F

C. 3.675E+00 μ F

D. 4.043E+00 μ F

E. 4.447E+00 μ F

11. 

What is the net capacitance if C_1=4.55 μ F, C_2=4.39 μ F, and C_3=3.32 μ F in the configuration shown?

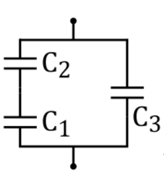
A. 4.173E+00 μ F

B. 4.590E+00 μ F

C. 5.049E+00 μ F

D. 5.554E+00 μ F

E. 6.110E+00 μ F

12. 

What is the net capacitance if C_1=3.54 μ F, C_2=3.53 μ F, and C_3=3.65 μ F in the configuration shown?

A. 3.700E+00 μ F

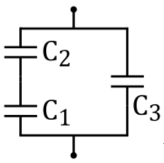
The next page might contain more answer choices for this question

B. 4.070E+00 μ F

C. 4.477E+00 μ F

D. 4.925E+00 μ F

E. 5.417E+00 μ F



13. What is the net capacitance if C_1=2.3 μ F, C_2=2.84 μ F, and C_3=3.41 μ F in the configuration shown?

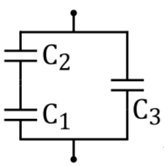
A. 4.255E+00 μ F

B. 4.681E+00 μ F

C. 5.149E+00 μ F

D. 5.664E+00 μ F

E. 6.230E+00 μ F



14. What is the net capacitance if C_1=2.96 μ F, C_2=3.95 μ F, and C_3=3.74 μ F in the configuration shown?

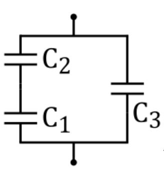
A. 4.489E+00 μ F

B. 4.938E+00 μ F

C. 5.432E+00 μ F

D. 5.975E+00 μ F

E. 6.573E+00 μ F



15. What is the net capacitance if C_1=3.27 μ F, C_2=2.87 μ F, and C_3=3.23 μ F in the configuration shown?

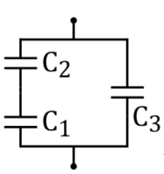
A. 3.250E+00 μ F

B. 3.575E+00 μ F

C. 3.933E+00 μ F

D. 4.326E+00 μ F

E. 4.758E+00 μ F



16. What is the net capacitance if C_1=2.25 μ F, C_2=4.16 μ F, and C_3=2.49 μ F in the configuration shown?

The next page might contain more answer choices for this question

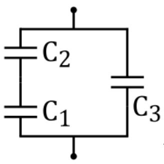
A. 2.698E+00 µ F

B. 2.968E+00 µ F

C. 3.265E+00 µ F

D. 3.591E+00 µ F

E. 3.950E+00 µ F



17. What is the net capacitance if C_1=3.25 µ F, C_2=4.87 µ F, and C_3=2.19 µ F in the configuration shown?

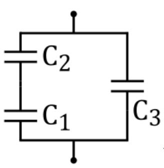
A. 4.139E+00 µ F

B. 4.553E+00 µ F

C. 5.008E+00 µ F

D. 5.509E+00 µ F

E. 6.060E+00 µ F



18. What is the net capacitance if C_1=3.06 µ F, C_2=3.09 µ F, and C_3=2.48 µ F in the configuration shown?

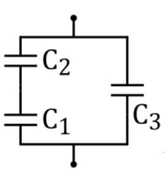
A. 3.018E+00 µ F

B. 3.320E+00 µ F

C. 3.652E+00 µ F

D. 4.017E+00 µ F

E. 4.419E+00 µ F



19. What is the net capacitance if C_1=3.13 µ F, C_2=2.28 µ F, and C_3=2.59 µ F in the configuration shown?

A. 3.231E+00 µ F

B. 3.554E+00 µ F

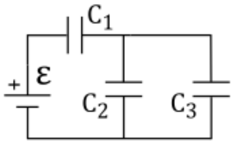
C. 3.909E+00 µ F

D. 4.300E+00 µ F

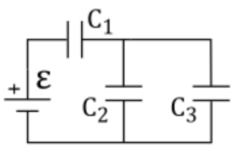
E. 4.730E+00 µ F

The next page might contain more answer choices for this question

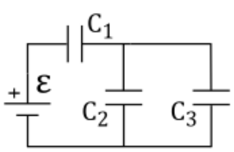
d_cp2.8 Q3

1. 

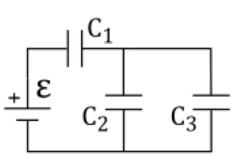
In the figure shown C_1=17.6 μ F, C_2=2.19 μ F, and C_3=5.84 μ F. The voltage source provides ε =5.4 V. What is the charge on C_1?
   - A. 2.707E+01 μ C
   - **B. 2.978E+01 μ C**
   - C. 3.275E+01 μ C
   - D. 3.603E+01 μ C
   - E. 3.963E+01 μ C

2. 

In the figure shown C_1=19.0 μ F, C_2=2.35 μ F, and C_3=5.22 μ F. The voltage source provides ε =6.01 V. What is the charge on C_1?
   - A. 2.444E+01 μ C
   - B. 2.689E+01 μ C
   - C. 2.958E+01 μ C
   - **D. 3.253E+01 μ C**
   - E. 3.579E+01 μ C

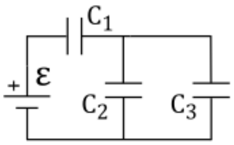
3. 

In the figure shown C_1=17.5 μ F, C_2=2.63 μ F, and C_3=5.76 μ F. The voltage source provides ε =15.9 V. What is the charge on C_1?
   - A. 8.197E+01 μ C
   - **B. 9.017E+01 μ C**
   - C. 9.919E+01 μ C
   - D. 1.091E+02 μ C
   - E. 1.200E+02 μ C

4. 

In the figure shown C_1=15.4 μ F, C_2=2.22 μ F, and C_3=4.77 μ F. The voltage source provides ε =6.8 V. What is the charge on C_1?
   - A. 2.702E+01 μ C
   - B. 2.972E+01 μ C
   - **C. 3.269E+01 μ C**
   - D. 3.596E+01 μ C
   - E. 3.956E+01 μ C

The next page might contain more answer choices for this question

5. 

In the figure shown C_1=17.9 μ F, C_2=2.76 μ F, and C_3=5.12 μ F. The voltage source provides ε =13.2 V. What is the charge on C_1?

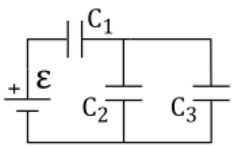
A. 5.969E+01 μ C

B. 6.566E+01 μ C

C. 7.222E+01 μ C

D. 7.944E+01 μ C

E. 8.739E+01 μ C

6. 

In the figure shown C_1=19.4 μ F, C_2=2.49 μ F, and C_3=4.17 μ F. The voltage source provides ε =6.35 V. What is the charge on C_1?

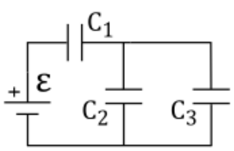
A. 2.602E+01 μ C

B. 2.862E+01 μ C

C. 3.148E+01 μ C

D. 3.463E+01 μ C

E. 3.809E+01 μ C

7. 

In the figure shown C_1=19.2 μ F, C_2=2.86 μ F, and C_3=5.03 μ F. The voltage source provides ε =9.46 V. What is the charge on C_1?

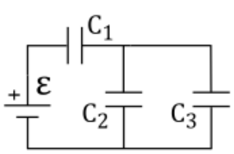
A. 4.809E+01 μ C

B. 5.290E+01 μ C

C. 5.819E+01 μ C

D. 6.401E+01 μ C

E. 7.041E+01 μ C

8. 

In the figure shown C_1=19.9 μ F, C_2=2.25 μ F, and C_3=4.75 μ F. The voltage source provides ε =6.93 V. What is the charge on C_1?

A. 2.451E+01 μ C

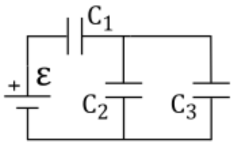
B. 2.696E+01 μ C

C. 2.966E+01 μ C

D. 3.262E+01 μ C

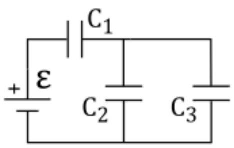
E. 3.589E+01 μ C

The next page might contain more answer choices for this question

9. 

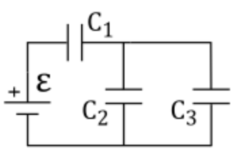
In the figure shown C_1=16.0 μ F, C_2=2.27 μ F, and C_3=4.4 μ F. The voltage source provides ε =7.11 V. What is the charge on C_1?

A. 2.515E+01 μ C
B. 2.766E+01 μ C
C. 3.043E+01 μ C
D. 3.347E+01 μ C
E. 3.682E+01 μ C

10. 

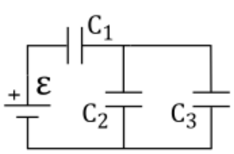
In the figure shown C_1=19.6 μ F, C_2=2.15 μ F, and C_3=5.36 μ F. The voltage source provides ε =11.6 V. What is the charge on C_1?

A. 6.298E+01 μ C
B. 6.928E+01 μ C
C. 7.621E+01 μ C
D. 8.383E+01 μ C
E. 9.221E+01 μ C

11. 

In the figure shown C_1=15.0 μ F, C_2=2.65 μ F, and C_3=5.67 μ F. The voltage source provides ε =7.44 V. What is the charge on C_1?

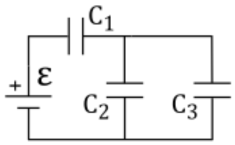
A. 3.982E+01 μ C
B. 4.380E+01 μ C
C. 4.818E+01 μ C
D. 5.300E+01 μ C
E. 5.829E+01 μ C

12. 

In the figure shown C_1=17.9 μ F, C_2=2.71 μ F, and C_3=4.14 μ F. The voltage source provides ε =7.12 V. What is the charge on C_1?

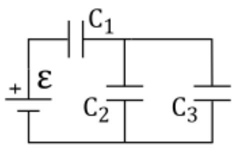
A. 3.527E+01 μ C
B. 3.880E+01 μ C
C. 4.268E+01 μ C
D. 4.695E+01 μ C
E. 5.164E+01 μ C

The next page might contain more answer choices for this question



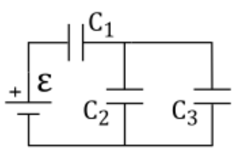
13. In the figure shown C_1=17.7 μ F, C_2=2.5 μ F, and C_3=5.0 μ F. The voltage source provides ε =12.8 V. What is the charge on C_1?

A. 5.066E+01 μ C
B. 5.573E+01 μ C
C. 6.130E+01 μ C
D. 6.743E+01 μ C
E. 7.417E+01 μ C



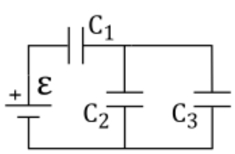
14. In the figure shown C_1=17.1 μ F, C_2=2.87 μ F, and C_3=4.74 μ F. The voltage source provides ε =6.63 V. What is the charge on C_1?

A. 2.385E+01 μ C
B. 2.623E+01 μ C
C. 2.886E+01 μ C
D. 3.174E+01 μ C
E. 3.492E+01 μ C



15. In the figure shown C_1=16.9 μ F, C_2=2.3 μ F, and C_3=4.67 μ F. The voltage source provides ε =13.4 V. What is the charge on C_1?

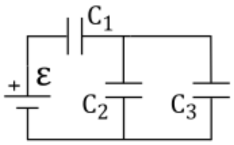
A. 6.011E+01 μ C
B. 6.613E+01 μ C
C. 7.274E+01 μ C
D. 8.001E+01 μ C
E. 8.801E+01 μ C



16. In the figure shown C_1=18.0 μ F, C_2=2.88 μ F, and C_3=5.34 μ F. The voltage source provides ε =11.9 V. What is the charge on C_1?

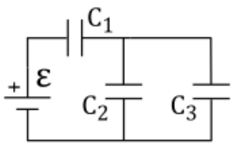
A. 5.045E+01 μ C
B. 5.550E+01 μ C
C. 6.105E+01 μ C
D. 6.715E+01 μ C
E. 7.387E+01 μ C

The next page might contain more answer choices for this question

17. 

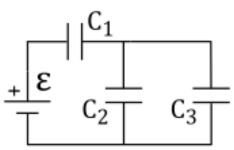
In the figure shown C_1=20.6 μ F, C_2=2.38 μ F, and C_3=5.66 μ F. The voltage source provides ε =12.6 V. What is the charge on C_1?

A. 5.474E+01 μ C
B. 6.022E+01 μ C
C. 6.624E+01 μ C
D. 7.287E+01 μ C
E. 8.015E+01 μ C

18. 

In the figure shown C_1=15.4 μ F, C_2=2.83 μ F, and C_3=4.99 μ F. The voltage source provides ε =6.51 V. What is the charge on C_1?

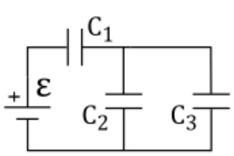
A. 2.306E+01 μ C
B. 2.537E+01 μ C
C. 2.790E+01 μ C
D. 3.069E+01 μ C
E. 3.376E+01 μ C

19. 

In the figure shown C_1=17.8 μ F, C_2=2.22 μ F, and C_3=5.71 μ F. The voltage source provides ε =13.9 V. What is the charge on C_1?

A. 7.625E+01 μ C
B. 8.388E+01 μ C
C. 9.227E+01 μ C
D. 1.015E+02 μ C
E. 1.116E+02 μ C

d_cp2.8 Q4

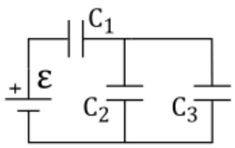
1. 

In the figure shown C_1=15.5 μ F, C_2=2.72 μ F, and C_3=5.1 μ F. The voltage source provides ε =5.89 V. What is the energy stored in C_2?

A. 8.800E+00 μ J
B. 9.680E+00 μ J
C. 1.065E+01 μ J
D. 1.171E+01 μ J

The next page might contain more answer choices for this question

E. 1.288E+01 μ J

2. 

In the figure shown C_1=17.6 μ F, C_2=2.12 μ F, and C_3=4.72 μ F. The voltage source provides ε =5.35 V. What is the energy stored in C_2?

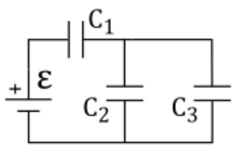
A. 6.750E+00 μ J

B. 7.425E+00 μ J

C. 8.168E+00 μ J

D. 8.984E+00 μ J

E. 9.883E+00 μ J

3. 

In the figure shown C_1=18.1 μ F, C_2=2.89 μ F, and C_3=4.2 μ F. The voltage source provides ε =9.19 V. What is the energy stored in C_2?

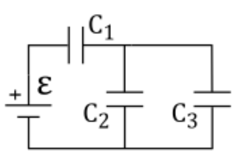
A. 1.303E+01 μ J

B. 1.434E+01 μ J

C. 1.577E+01 μ J

D. 1.735E+01 μ J

E. 1.908E+01 μ J

4. 

In the figure shown C_1=15.4 μ F, C_2=2.6 μ F, and C_3=5.17 μ F. The voltage source provides ε =9.6 V. What is the energy stored in C_2?

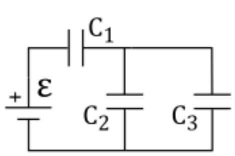
A. 1.508E+01 μ J

B. 1.659E+01 μ J

C. 1.825E+01 μ J

D. 2.007E+01 μ J

E. 2.208E+01 μ J

5. 

In the figure shown C_1=17.2 μ F, C_2=2.71 μ F, and C_3=5.28 μ F. The voltage source provides ε =13.2 V. What is the energy stored in C_2?

A. 2.443E+01 μ J

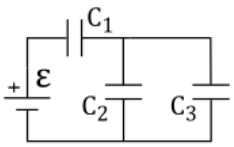
B. 2.687E+01 μ J

C. 2.955E+01 μ J

D. 3.251E+01 μ J

The next page might contain more answer choices for this question

E. 3.576E+01 μ J

6. 

In the figure shown C_1=20.7 μ F, C_2=2.79 μ F, and C_3=5.18 μ F. The voltage source provides ε =15.0 V. What is the energy stored in C_2?

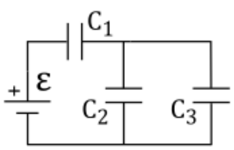
A. 2.064E+01 μ J

B. 2.270E+01 μ J

C. 2.497E+01 μ J

D. 2.747E+01 μ J

E. 3.022E+01 μ J

7. 

In the figure shown C_1=16.5 μ F, C_2=2.7 μ F, and C_3=4.82 μ F. The voltage source provides ε =15.7 V. What is the energy stored in C_2?

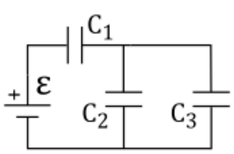
A. 2.188E+01 μ J

B. 2.407E+01 μ J

C. 2.647E+01 μ J

D. 2.912E+01 μ J

E. 3.203E+01 μ J

8. 

In the figure shown C_1=18.2 μ F, C_2=2.44 μ F, and C_3=5.0 μ F. The voltage source provides ε =7.78 V. What is the energy stored in C_2?

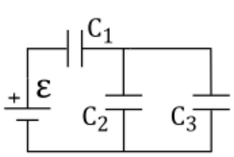
A. 1.225E+01 μ J

B. 1.347E+01 μ J

C. 1.482E+01 μ J

D. 1.630E+01 μ J

E. 1.793E+01 μ J

9. 

In the figure shown C_1=16.7 μ F, C_2=2.26 μ F, and C_3=4.53 μ F. The voltage source provides ε =10.7 V. What is the energy stored in C_2?

A. 1.292E+01 μ J

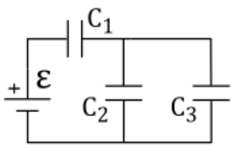
B. 1.421E+01 μ J

C. 1.563E+01 μ J

D. 1.719E+01 μ J

The next page might contain more answer choices for this question

E. 1.891E+01 μ J

10. 

In the figure shown C_1=18.7 μ F, C_2=2.15 μ F, and C_3=4.88 μ F. The voltage source provides ε =11.9 V. What is the energy stored in C_2?

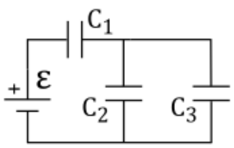
A. 1.270E+01 μ J

B. 1.397E+01 μ J

C. 1.537E+01 μ J

D. 1.690E+01 μ J

E. 1.859E+01 μ J

11. 

In the figure shown C_1=15.7 μ F, C_2=2.87 μ F, and C_3=5.46 μ F. The voltage source provides ε =5.38 V. What is the energy stored in C_2?

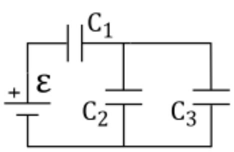
A. 6.890E+00 μ J

B. 7.579E+00 μ J

C. 8.337E+00 μ J

D. 9.171E+00 μ J

E. 1.009E+01 μ J

12. 

In the figure shown C_1=17.7 μ F, C_2=2.48 μ F, and C_3=4.68 μ F. The voltage source provides ε =12.7 V. What is the energy stored in C_2?

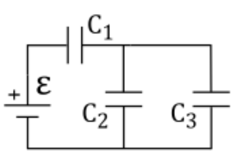
A. 2.242E+01 μ J

B. 2.467E+01 μ J

C. 2.713E+01 μ J

D. 2.985E+01 μ J

E. 3.283E+01 μ J

13. 

In the figure shown C_1=16.3 μ F, C_2=2.17 μ F, and C_3=4.67 μ F. The voltage source provides ε =8.35 V. What is the energy stored in C_2?

A. 8.718E+00 μ J

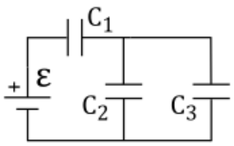
B. 9.589E+00 μ J

C. 1.055E+01 μ J

D. 1.160E+01 μ J

The next page might contain more answer choices for this question

E. 1.276E+01 μ J

14. 

In the figure shown C_1=18.1 μ F, C_2=2.13 μ F, and C_3=5.48 μ F. The voltage source provides ε =14.6 V. What is the energy stored in C_2?

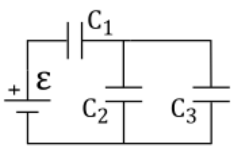
A. 1.645E+01 μ J

B. 1.809E+01 μ J

C. 1.990E+01 μ J

D. 2.189E+01 μ J

E. 2.408E+01 μ J

15. 

In the figure shown C_1=16.1 μ F, C_2=2.14 μ F, and C_3=5.76 μ F. The voltage source provides ε =8.35 V. What is the energy stored in C_2?

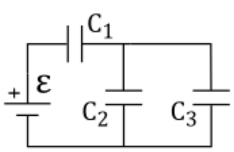
A. 1.199E+01 μ J

B. 1.319E+01 μ J

C. 1.450E+01 μ J

D. 1.595E+01 μ J

E. 1.755E+01 μ J

16. 

In the figure shown C_1=19.2 μ F, C_2=2.71 μ F, and C_3=5.52 μ F. The voltage source provides ε =15.0 V. What is the energy stored in C_2?

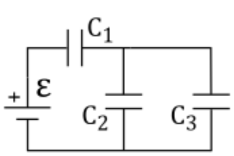
A. 2.138E+01 μ J

B. 2.352E+01 μ J

C. 2.587E+01 μ J

D. 2.845E+01 μ J

E. 3.130E+01 μ J

17. 

In the figure shown C_1=19.2 μ F, C_2=2.24 μ F, and C_3=4.93 μ F. The voltage source provides ε =11.7 V. What is the energy stored in C_2?

A. 1.303E+01 μ J

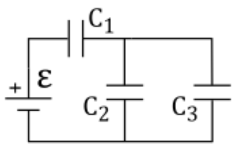
B. 1.434E+01 μ J

C. 1.577E+01 μ J

D. 1.735E+01 μ J

The next page might contain more answer choices for this question

E. 1.908E+01 µ J

18. 

In the figure shown C_1=16.9 µ F, C_2=2.86 µ F, and C_3=5.1 µ F. The voltage source provides ε =9.98 V. What is the energy stored in C_2?

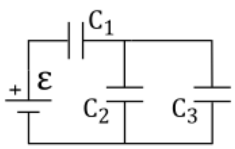
A. 1.764E+01 µ J

B. 1.940E+01 µ J

C. 2.134E+01 µ J

D. 2.348E+01 µ J

E. 2.583E+01 µ J

19. 

In the figure shown C_1=21.1 µ F, C_2=2.69 µ F, and C_3=4.78 µ F. The voltage source provides ε =12.8 V. What is the energy stored in C_2?

A. 2.102E+01 µ J

B. 2.312E+01 µ J

C. 2.543E+01 µ J

D. 2.797E+01 µ J

E. 3.077E+01 µ J

12 a19ElectricPotentialField_Capacitance

1. A parallel plate capacitor has both plates with an area of 1.05 m^2. The separation between the plates is 0.63mm. Applied to the plates is a potential difference of 2.85 kV. What is the capacitance?[78]

A. 8.44 nF.

B. 9.7 nF.

C. 11.16 nF.

D. 12.83 nF.

E. 14.76 nF.

2. Consider a parallel plate capacitor with area 1.05 m^2, plate separation 0.63mm, and an applied voltage of 2.85 kV. How much charge is stored?[79]

A. 24.05 µ C.

B. 27.65 µ C.

C. 31.8 µ C.

D. 36.57 µ C.

E. 42.06 µ C.

3. A 0.8 Farad capacitor is charged with 1.5 Coulombs. What is the value of the electric field if the plates are 0.7 mm apart?[80]

The next page might contain more answer choices for this question

- A. 1.76 kV/m.
- B. 2.03 kV/m.
- C. 2.33 kV/m.
- **D. 2.68 kV/m.**
- E. 3.08 kV/m.

4. A 0.8 Farad capacitor is charged with 1.5 Coulombs. What is the energy stored in the capacitor if the plates are 0.7 mm apart?[81]
   - A. 0.8 J.
   - B. 0.92 J.
   - C. 1.06 J.
   - D. 1.22 J.
   - **E. 1.41 J.**

5. A 0.8 Farad capacitor is charged with 1.5 Coulombs. What is the force between the plates if they are 0.7 mm apart?[82]
   - **A. 2009 N.**
   - B. 2310 N.
   - C. 2657 N.
   - D. 3055 N.
   - E. 3514 N.

12.1 Renditions

a19ElectricPotentialField_Capacitance Q1

1. A parallel plate capacitor has both plates with an area of 1.25 m^2. The separation between the plates is 0.83mm. Applied to the plates is a potential difference of 4.65 kV. What is the capacitance?
   - A. 8.77 nF.
   - B. 10.08 nF.
   - C. 11.6 nF.
   - **D. 13.33 nF.**
   - E. 15.33 nF.

2. A parallel plate capacitor has both plates with an area of 1.45 m^2. The separation between the plates is 1.53mm. Applied to the plates is a potential difference of 2.55 kV. What is the capacitance?
   - **A. 8.39 nF.**
   - B. 9.65 nF.
   - C. 11.1 nF.
   - D. 12.76 nF.
   - E. 14.68 nF.

3. A parallel plate capacitor has both plates with an area of 0.75 m^2. The separation between the plates is 1.53mm. Applied to the plates is a potential difference of 5.05 kV. What is the capacitance?
   - A. 3.28 nF.

The next page might contain more answer choices for this question

B. 3.77 nF.
C. 4.34 nF.
D. 4.99 nF.
E. 5.74 nF.

4. A parallel plate capacitor has both plates with an area of 1.45 m^2. The separation between the plates is 0.93mm. Applied to the plates is a potential difference of 4.45 kV. What is the capacitance?
   A. 12 nF.
   B. 13.8 nF.
   C. 15.88 nF.
   D. 18.26 nF.
   E. 21 nF.

5. A parallel plate capacitor has both plates with an area of 1.05 m^2. The separation between the plates is 0.63mm. Applied to the plates is a potential difference of 4.35 kV. What is the capacitance?
   A. 11.16 nF.
   B. 12.83 nF.
   C. 14.76 nF.
   D. 16.97 nF.
   E. 19.52 nF.

6. A parallel plate capacitor has both plates with an area of 0.55 m^2. The separation between the plates is 0.53mm. Applied to the plates is a potential difference of 4.25 kV. What is the capacitance?
   A. 6.95 nF.
   B. 7.99 nF.
   C. 9.19 nF.
   D. 10.57 nF.
   E. 12.15 nF.

7. A parallel plate capacitor has both plates with an area of 1.35 m^2. The separation between the plates is 1.23mm. Applied to the plates is a potential difference of 2.65 kV. What is the capacitance?
   A. 7.35 nF.
   B. 8.45 nF.
   C. 9.72 nF.
   D. 11.18 nF.
   E. 12.85 nF.

8. A parallel plate capacitor has both plates with an area of 1.15 m^2. The separation between the plates is 0.63mm. Applied to the plates is a potential difference of 2.25 kV. What is the capacitance?
   A. 16.16 nF.
   B. 18.59 nF.
   C. 21.37 nF.
   D. 24.58 nF.
   E. 28.27 nF.

The next page might contain more answer choices for this question

9. A parallel plate capacitor has both plates with an area of 0.75 m^2. The separation between the plates is 0.53mm. Applied to the plates is a potential difference of 3.55 kV. What is the capacitance?
   - A. 7.16 nF.
   - B. 8.24 nF.
   - C. 9.47 nF.
   - D. 10.9 nF.
   - **E. 12.53 nF.**

a19ElectricPotentialField_Capacitance Q2

1. Consider a parallel plate capacitor with area 1.25 m^2, plate separation 0.83mm, and an applied voltage of 4.65 kV. How much charge is stored?
   - A. 35.45 μ C.
   - B. 40.77 μ C.
   - C. 46.89 μ C.
   - D. 53.92 μ C.
   - **E. 62.01 μ C.**
2. Consider a parallel plate capacitor with area 1.45 m^2, plate separation 1.53mm, and an applied voltage of 2.55 kV. How much charge is stored?
   - A. 12.23 μ C.
   - B. 14.07 μ C.
   - C. 16.18 μ C.
   - D. 18.61 μ C.
   - **E. 21.4 μ C.**
3. Consider a parallel plate capacitor with area 0.75 m^2, plate separation 1.53mm, and an applied voltage of 5.05 kV. How much charge is stored?
   - A. 16.57 μ C.
   - B. 19.06 μ C.
   - **C. 21.92 μ C.**
   - D. 25.21 μ C.
   - E. 28.99 μ C.
4. Consider a parallel plate capacitor with area 1.45 m^2, plate separation 0.93mm, and an applied voltage of 4.45 kV. How much charge is stored?
   - A. 40.39 μ C.
   - B. 46.45 μ C.
   - C. 53.42 μ C.
   - **D. 61.43 μ C.**
   - E. 70.65 μ C.
5. Consider a parallel plate capacitor with area 1.05 m^2, plate separation 0.63mm, and an applied voltage of 4.35 kV. How much charge is stored?

The next page might contain more answer choices for this question

A. 42.21 µ C.
B. 48.54 µ C.
C. 55.82 µ C.
D. 64.19 µ C.
E. 73.82 µ C.

6. Consider a parallel plate capacitor with area 0.55 m^2, plate separation 0.53mm, and an applied voltage of 4.25 kV. How much charge is stored?
   A. 39.05 µ C.
   B. 44.91 µ C.
   C. 51.64 µ C.
   D. 59.39 µ C.
   E. 68.3 µ C.

7. Consider a parallel plate capacitor with area 1.35 m^2, plate separation 1.23mm, and an applied voltage of 2.65 kV. How much charge is stored?
   A. 16.93 µ C.
   B. 19.47 µ C.
   C. 22.39 µ C.
   D. 25.75 µ C.
   E. 29.62 µ C.

8. Consider a parallel plate capacitor with area 1.15 m^2, plate separation 0.63mm, and an applied voltage of 2.25 kV. How much charge is stored?
   A. 23.91 µ C.
   B. 27.5 µ C.
   C. 31.62 µ C.
   D. 36.37 µ C.
   E. 41.82 µ C.

9. Consider a parallel plate capacitor with area 0.75 m^2, plate separation 0.53mm, and an applied voltage of 3.55 kV. How much charge is stored?
   A. 29.25 µ C.
   B. 33.63 µ C.
   C. 38.68 µ C.
   D. 44.48 µ C.
   E. 51.15 µ C.

a19ElectricPotentialField_Capacitance Q3

1. A 0.6 Farad capacitor is charged with 1.5 Coulombs. What is the value of the electric field if the plates are 0.8 mm apart?
   A. 3.13 kV/m.
   B. 3.59 kV/m.

The next page might contain more answer choices for this question

C. 4.13 kV/m.

D. 4.75 kV/m.

E. 5.47 kV/m.

2. A 0.9 Farad capacitor is charged with 1.1 Coulombs. What is the value of the electric field if the plates are 0.3 mm apart?

A. 2.68 kV/m.

B. 3.08 kV/m.

C. 3.54 kV/m.

D. 4.07 kV/m.

E. 4.69 kV/m.

3. A 0.5 Farad capacitor is charged with 1.6 Coulombs. What is the value of the electric field if the plates are 0.7 mm apart?

A. 3.46 kV/m.

B. 3.98 kV/m.

C. 4.57 kV/m.

D. 5.26 kV/m.

E. 6.05 kV/m.

4. A 1.4 Farad capacitor is charged with 2.3 Coulombs. What is the value of the electric field if the plates are 0.6 mm apart?

A. 1.57 kV/m.

B. 1.8 kV/m.

C. 2.07 kV/m.

D. 2.38 kV/m.

E. 2.74 kV/m.

5. A 1.2 Farad capacitor is charged with 1.6 Coulombs. What is the value of the electric field if the plates are 0.4 mm apart?

A. 1.91 kV/m.

B. 2.19 kV/m.

C. 2.52 kV/m.

D. 2.9 kV/m.

E. 3.33 kV/m.

6. A 1.4 Farad capacitor is charged with 1.1 Coulombs. What is the value of the electric field if the plates are 0.6 mm apart?

A. 0.86 kV/m.

B. 0.99 kV/m.

C. 1.14 kV/m.

D. 1.31 kV/m.

E. 1.51 kV/m.

The next page might contain more answer choices for this question

7. A 1.3 Farad capacitor is charged with 1.9 Coulombs. What is the value of the electric field if the plates are 0.3 mm apart?
   A. 3.2 kV/m.
   B. 3.68 kV/m.
   C. 4.24 kV/m.
   D. 4.87 kV/m.
   E. 5.6 kV/m.
8. A 0.5 Farad capacitor is charged with 1.3 Coulombs. What is the value of the electric field if the plates are 0.7 mm apart?
   A. 3.71 kV/m.
   B. 4.27 kV/m.
   C. 4.91 kV/m.
   D. 5.65 kV/m.
   E. 6.5 kV/m.
9. A 0.8 Farad capacitor is charged with 1.7 Coulombs. What is the value of the electric field if the plates are 0.5 mm apart?
   A. 2.43 kV/m.
   B. 2.79 kV/m.
   C. 3.21 kV/m.
   D. 3.7 kV/m.
   E. 4.25 kV/m.

a19ElectricPotentialField_Capacitance Q4

1. A 0.6 Farad capacitor is charged with 1.5 Coulombs. What is the energy stored in the capacitor if the plates are 0.8 mm apart?
   A. 1.07 J.
   B. 1.23 J.
   C. 1.42 J.
   D. 1.63 J.
   E. 1.88 J.
2. A 0.9 Farad capacitor is charged with 1.1 Coulombs. What is the energy stored in the capacitor if the plates are 0.3 mm apart?
   A. 0.44 J.
   B. 0.51 J.
   C. 0.58 J.
   D. 0.67 J.
   E. 0.77 J.
3. A 0.5 Farad capacitor is charged with 1.6 Coulombs. What is the energy stored in the capacitor if the plates are 0.7 mm apart?

The next page might contain more answer choices for this question

A. 2.23 J.
B. 2.56 J.
C. 2.94 J.
D. 3.39 J.
E. 3.89 J.

4. A 1.4 Farad capacitor is charged with 2.3 Coulombs. What is the energy stored in the capacitor if the plates are 0.6 mm apart?
   A. 1.08 J.
   B. 1.24 J.
   C. 1.43 J.
   D. 1.64 J.
   E. 1.89 J.

5. A 1.2 Farad capacitor is charged with 1.6 Coulombs. What is the energy stored in the capacitor if the plates are 0.4 mm apart?
   A. 0.81 J.
   B. 0.93 J.
   C. 1.07 J.
   D. 1.23 J.
   E. 1.41 J.

6. A 1.4 Farad capacitor is charged with 1.1 Coulombs. What is the energy stored in the capacitor if the plates are 0.6 mm apart?
   A. 0.38 J.
   B. 0.43 J.
   C. 0.5 J.
   D. 0.57 J.
   E. 0.66 J.

7. A 1.3 Farad capacitor is charged with 1.9 Coulombs. What is the energy stored in the capacitor if the plates are 0.3 mm apart?
   A. 0.91 J.
   B. 1.05 J.
   C. 1.21 J.
   D. 1.39 J.
   E. 1.6 J.

8. A 0.5 Farad capacitor is charged with 1.3 Coulombs. What is the energy stored in the capacitor if the plates are 0.7 mm apart?
   A. 1.28 J.
   B. 1.47 J.
   C. 1.69 J.
   D. 1.94 J.

The next page might contain more answer choices for this question

E. 2.24 J.

9. A 0.8 Farad capacitor is charged with 1.7 Coulombs. What is the energy stored in the capacitor if the plates are 0.5 mm apart?

    A. 1.81 J.

    B. 2.08 J.

    C. 2.39 J.

    D. 2.75 J.

    E. 3.16 J.

a19ElectricPotentialField_Capacitance Q5

1. A 0.6 Farad capacitor is charged with 1.5 Coulombs. What is the force between the plates if they are 0.8 mm apart?

    A. 1772 N.

    B. 2038 N.

    C. 2344 N.

    D. 2695 N.

    E. 3100 N.

2. A 0.9 Farad capacitor is charged with 1.1 Coulombs. What is the force between the plates if they are 0.3 mm apart?

    A. 1473 N.

    B. 1694 N.

    C. 1948 N.

    D. 2241 N.

    E. 2577 N.

3. A 0.5 Farad capacitor is charged with 1.6 Coulombs. What is the force between the plates if they are 0.7 mm apart?

    A. 3180 N.

    B. 3657 N.

    C. 4206 N.

    D. 4837 N.

    E. 5562 N.

4. A 1.4 Farad capacitor is charged with 2.3 Coulombs. What is the force between the plates if they are 0.6 mm apart?

    A. 2381 N.

    B. 2738 N.

    C. 3149 N.

    D. 3621 N.

    E. 4164 N.

The next page might contain more answer choices for this question

5. A 1.2 Farad capacitor is charged with 1.6 Coulombs. What is the force between the plates if they are 0.4 mm apart?

   A. 2319 N.

   B. 2667 N.

   C. 3067 N.

   D. 3527 N.

   E. 4056 N.

6. A 1.4 Farad capacitor is charged with 1.1 Coulombs. What is the force between the plates if they are 0.6 mm apart?

   A. 412 N.

   B. 474 N.

   C. 545 N.

   D. 626 N.

   E. 720 N.

7. A 1.3 Farad capacitor is charged with 1.9 Coulombs. What is the force between the plates if they are 0.3 mm apart?

   A. 4025 N.

   B. 4628 N.

   C. 5322 N.

   D. 6121 N.

   E. 7039 N.

8. A 0.5 Farad capacitor is charged with 1.3 Coulombs. What is the force between the plates if they are 0.7 mm apart?

   A. 1826 N.

   B. 2099 N.

   C. 2414 N.

   D. 2776 N.

   E. 3193 N.

9. A 0.8 Farad capacitor is charged with 1.7 Coulombs. What is the force between the plates if they are 0.5 mm apart?

   A. 2065 N.

   B. 2375 N.

   C. 2732 N.

   D. 3141 N.

   E. 3613 N.

The next page might contain more answer choices for this question

13 d_cp2.9

1. What is the average current involved when a truck battery sets in motion 720 C of charge in 4 s while starting an engine? [83]
   - A. 1.229E+02 A
   - B. 1.352E+02 A
   - C. 1.488E+02 A
   - D. 1.636E+02 A
   - **E. 1.800E+02 A**
2. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=10 C and τ =0.02 s. What is the current at t =1.000E-02 s?[84]
   - A. 2.506E+02 A
   - B. 2.757E+02 A
   - **C. 3.033E+02 A**
   - D. 3.336E+02 A
   - E. 3.670E+02 A
3. Calculate the drift speed of electrons in a copper wire with a diameter of 2.053 mm carrying a 20 A current, given that there is one free electron per copper atom. The density of copper is 8.80 x 10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02 x 10^{23}atoms/mol.[85]
   - A. 4.111E-04 m/s
   - **B. 4.522E-04 m/s**
   - C. 4.974E-04 m/s
   - D. 5.472E-04 m/s
   - E. 6.019E-04 m/s
4. A make-believe metal has a density of 8.800E+03 kg/m^3 and an atomic mass of 63.54 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.[86]
   - A. 5.695E+28 e$^-$/m^3
   - B. 6.264E+28 e$^-$/m^3
   - C. 6.890E+28 e$^-$/m^3
   - D. 7.579E+28 e$^-$/m^3
   - **E. 8.337E+28 e$^-$/m^3**
5. A device requires consumes 100 W of power and requires 0.87 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.[87]
   - A. 1.367E+05 A/m^2
   - B. 1.504E+05 A/m^2
   - **C. 1.654E+05 A/m^2**
   - D. 1.819E+05 A/m^2
   - E. 2.001E+05 A/m^2

The next page might contain more answer choices for this question

6. Calculate the resistance of a 12-gauge copper wire that is 5 m long and carries a current of 10 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.[88]

   A. 1.907E-02 Ω

   B. 2.097E-02 Ω

   C. 2.307E-02 Ω

   D. 2.538E-02 Ω

   E. 2.792E-02 Ω

7. Calculate the electric field in a 12-gauge copper wire that is 5 m long and carries a current of 10 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.[89]

   A. 5.076E-05 V/m

   B. 5.583E-05 V/m

   C. 6.141E-05 V/m

   D. 6.756E-05 V/m

   E. 7.431E-05 V/m

8. Imagine a substance could be made into a very hot filament. Suppose the resitance is 3.5 Ω at a temperature of 20°C and that the temperature coefficient of expansion is 4.500E-03 $(°C)^{-1}$). What is the resistance at a temperature of 2.850E+03 °C?[90]

   A. 4.578E+01 Ω

   B. 4.807E+01 Ω

   C. 5.048E+01 Ω

   D. 5.300E+01 Ω

   E. 5.565E+01 Ω

9. A DC winch moter draws 20 amps at 115 volts as it lifts a 4.900E+03 N weight at a constant speed of 0.333 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.[91]

   A. 1.255E+00 Ω

   B. 1.381E+00 Ω

   C. 1.519E+00 Ω

   D. 1.671E+00 Ω

   E. 1.838E+00 Ω

10. What is consumer cost to operate one 100-W incandescent bulb for 3 hours per day for 1 year (365 days) if the cost of electricity is $0.1 per kilowatt-hour?[92]

    A. $8.227E+00

    B. $9.050E+00

    C. $9.955E+00

    D. $1.095E+01

    E. $1.205E+01

The next page might contain more answer choices for this question

13.1 Renditions

d_cp2.9 Q1

1. What is the average current involved when a truck battery sets in motion 702 C of charge in 2.92 s while starting an engine?
   - **A. 2.404E+02 A**
   - B. 2.645E+02 A
   - C. 2.909E+02 A
   - D. 3.200E+02 A
   - E. 3.520E+02 A
2. What is the average current involved when a truck battery sets in motion 889 C of charge in 3.64 s while starting an engine?
   - **A. 2.442E+02 A**
   - B. 2.687E+02 A
   - C. 2.955E+02 A
   - D. 3.251E+02 A
   - E. 3.576E+02 A
3. What is the average current involved when a truck battery sets in motion 559 C of charge in 4.13 s while starting an engine?
   - A. 9.245E+01 A
   - B. 1.017E+02 A
   - C. 1.119E+02 A
   - D. 1.230E+02 A
   - **E. 1.354E+02 A**
4. What is the average current involved when a truck battery sets in motion 701 C of charge in 4.98 s while starting an engine?
   - A. 1.280E+02 A
   - **B. 1.408E+02 A**
   - C. 1.548E+02 A
   - D. 1.703E+02 A
   - E. 1.874E+02 A
5. What is the average current involved when a truck battery sets in motion 669 C of charge in 4.3 s while starting an engine?
   - A. 1.063E+02 A
   - B. 1.169E+02 A
   - C. 1.286E+02 A
   - D. 1.414E+02 A
   - **E. 1.556E+02 A**
6. What is the average current involved when a truck battery sets in motion 618 C of charge in 2.28 s while starting an engine?

The next page might contain more answer choices for this question

- A. 2.240E+02 A
- B. 2.464E+02 A
- **C. 2.711E+02 A**
- D. 2.982E+02 A
- E. 3.280E+02 A

7. What is the average current involved when a truck battery sets in motion 682 C of charge in 5.29 s while starting an engine?
   - A. 1.065E+02 A
   - B. 1.172E+02 A
   - **C. 1.289E+02 A**
   - D. 1.418E+02 A
   - E. 1.560E+02 A

8. What is the average current involved when a truck battery sets in motion 760 C of charge in 5.35 s while starting an engine?
   - A. 1.291E+02 A
   - **B. 1.421E+02 A**
   - C. 1.563E+02 A
   - D. 1.719E+02 A
   - E. 1.891E+02 A

9. What is the average current involved when a truck battery sets in motion 572 C of charge in 3.33 s while starting an engine?
   - A. 1.173E+02 A
   - B. 1.291E+02 A
   - C. 1.420E+02 A
   - D. 1.562E+02 A
   - **E. 1.718E+02 A**

10. What is the average current involved when a truck battery sets in motion 659 C of charge in 5.48 s while starting an engine?
    - A. 8.214E+01 A
    - B. 9.035E+01 A
    - C. 9.938E+01 A
    - D. 1.093E+02 A
    - **E. 1.203E+02 A**

11. What is the average current involved when a truck battery sets in motion 775 C of charge in 2.9 s while starting an engine?
    - A. 2.209E+02 A
    - B. 2.429E+02 A
    - **C. 2.672E+02 A**
    - D. 2.940E+02 A

The next page might contain more answer choices for this question

E. 3.234E+02 A

12. What is the average current involved when a truck battery sets in motion 779 C of charge in 3.96 s while starting an engine?

A. 1.626E+02 A

B. 1.788E+02 A

C. 1.967E+02 A

D. 2.164E+02 A

E. 2.380E+02 A

13. What is the average current involved when a truck battery sets in motion 622 C of charge in 5.69 s while starting an engine?

A. 9.034E+01 A

B. 9.938E+01 A

C. 1.093E+02 A

D. 1.202E+02 A

E. 1.323E+02 A

14. What is the average current involved when a truck battery sets in motion 821 C of charge in 5.51 s while starting an engine?

A. 1.231E+02 A

B. 1.355E+02 A

C. 1.490E+02 A

D. 1.639E+02 A

E. 1.803E+02 A

15. What is the average current involved when a truck battery sets in motion 728 C of charge in 3.94 s while starting an engine?

A. 1.848E+02 A

B. 2.032E+02 A

C. 2.236E+02 A

D. 2.459E+02 A

E. 2.705E+02 A

16. What is the average current involved when a truck battery sets in motion 546 C of charge in 3.7 s while starting an engine?

A. 1.220E+02 A

B. 1.342E+02 A

C. 1.476E+02 A

D. 1.623E+02 A

E. 1.786E+02 A

17. What is the average current involved when a truck battery sets in motion 537 C of charge in 5.08 s while starting an engine?

A. 8.736E+01 A

The next page might contain more answer choices for this question

B. 9.610E+01 A

C. 1.057E+02 A

D. 1.163E+02 A

E. 1.279E+02 A

18. What is the average current involved when a truck battery sets in motion 631 C of charge in 3.8 s while starting an engine?

A. 1.661E+02 A

B. 1.827E+02 A

C. 2.009E+02 A

D. 2.210E+02 A

E. 2.431E+02 A

19. What is the average current involved when a truck battery sets in motion 738 C of charge in 3.87 s while starting an engine?

A. 1.907E+02 A

B. 2.098E+02 A

C. 2.307E+02 A

D. 2.538E+02 A

E. 2.792E+02 A

d_cp2.9 Q2

1. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=38 C and τ =0.0106 s. What is the current at t =0.0123 s?

A. 1.021E+03 A

B. 1.123E+03 A

C. 1.236E+03 A

D. 1.359E+03 A

E. 1.495E+03 A

2. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=24 C and τ =0.0248 s. What is the current at t =0.0122 s?

A. 4.042E+02 A

B. 4.446E+02 A

C. 4.890E+02 A

D. 5.379E+02 A

E. 5.917E+02 A

3. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=87 C and τ =0.0154 s. What is the current at t =0.0211 s?

A. 1.435E+03 A

B. 1.579E+03 A

C. 1.737E+03 A

The next page might contain more answer choices for this question

D. 1.910E+03 A

E. 2.102E+03 A

4. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=23 C and τ =0.0204 s. What is the current at t =0.0106 s?

A. 6.096E+02 A

B. 6.706E+02 A

C. 7.376E+02 A

D. 8.114E+02 A

E. 8.925E+02 A

5. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=11 C and τ =0.0162 s. What is the current at t =0.0249 s?

A. 9.972E+01 A

B. 1.097E+02 A

C. 1.207E+02 A

D. 1.327E+02 A

E. 1.460E+02 A

6. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=78 C and τ =0.0244 s. What is the current at t =0.0225 s?

A. 1.271E+03 A

B. 1.398E+03 A

C. 1.538E+03 A

D. 1.692E+03 A

E. 1.861E+03 A

7. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=18 C and τ =0.0169 s. What is the current at t =0.0137 s?

A. 3.913E+02 A

B. 4.305E+02 A

C. 4.735E+02 A

D. 5.209E+02 A

E. 5.729E+02 A

8. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=16 C and τ =0.0214 s. What is the current at t =0.0207 s?

A. 2.135E+02 A

B. 2.349E+02 A

C. 2.584E+02 A

D. 2.842E+02 A

E. 3.126E+02 A

9. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=84 C and τ =0.0199 s. What is the current at t =0.0104 s?

The next page might contain more answer choices for this question

A. 2.275E+03 A
B. 2.503E+03 A
C. 2.753E+03 A
D. 3.029E+03 A
E. 3.331E+03 A

10. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=27 C and τ =0.0154 s. What is the current at t =0.0177 s?
   A. 4.591E+02 A
   B. 5.050E+02 A
   C. 5.555E+02 A
   D. 6.111E+02 A
   E. 6.722E+02 A

11. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=38 C and τ =0.0167 s. What is the current at t =0.0183 s?
   A. 5.715E+02 A
   B. 6.286E+02 A
   C. 6.915E+02 A
   D. 7.606E+02 A
   E. 8.367E+02 A

12. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=30 C and τ =0.0178 s. What is the current at t =0.0161 s?
   A. 5.125E+02 A
   B. 5.638E+02 A
   C. 6.201E+02 A
   D. 6.822E+02 A
   E. 7.504E+02 A

13. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=58 C and τ =0.0249 s. What is the current at t =0.0191 s?
   A. 8.127E+02 A
   B. 8.939E+02 A
   C. 9.833E+02 A
   D. 1.082E+03 A
   E. 1.190E+03 A

14. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=97 C and τ =0.0132 s. What is the current at t =0.0225 s?
   A. 1.336E+03 A
   B. 1.470E+03 A
   C. 1.617E+03 A
   D. 1.779E+03 A

The next page might contain more answer choices for this question

E. 1.957E+03 A

15. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=85 C and τ =0.021 s. What is the current at t =0.0128 s?

A. 1.503E+03 A

B. 1.653E+03 A

C. 1.818E+03 A

D. 2.000E+03 A

E. 2.200E+03 A

16. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=42 C and τ =0.0166 s. What is the current at t =0.0156 s?

A. 9.886E+02 A

B. 1.087E+03 A

C. 1.196E+03 A

D. 1.316E+03 A

E. 1.447E+03 A

17. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=52 C and τ =0.018 s. What is the current at t =0.0207 s?

A. 6.872E+02 A

B. 7.560E+02 A

C. 8.316E+02 A

D. 9.147E+02 A

E. 1.006E+03 A

18. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=63 C and τ =0.0149 s. What is the current at t =0.0172 s?

A. 1.212E+03 A

B. 1.333E+03 A

C. 1.466E+03 A

D. 1.613E+03 A

E. 1.774E+03 A

19. The charge passing a plane intersecting a wire is $Q(t) = Q_0\left(1 - e^{-t/\tau}\right)$, where Q_0=91 C and τ =0.0156 s. What is the current at t =0.0131 s?

A. 2.082E+03 A

B. 2.290E+03 A

C. 2.519E+03 A

D. 2.771E+03 A

E. 3.048E+03 A

d_cp2.9 Q3

1. Calculate the drift speed of electrons in a copper wire with a diameter of 3.32 mm carrying a 18.4 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.
   - A. 1.195E-04 m/s
   - B. 1.315E-04 m/s
   - C. 1.446E-04 m/s
   - **D. 1.591E-04 m/s**
   - E. 1.750E-04 m/s
2. Calculate the drift speed of electrons in a copper wire with a diameter of 4.49 mm carrying a 11.6 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.
   - A. 4.120E-05 m/s
   - B. 4.532E-05 m/s
   - C. 4.985E-05 m/s
   - **D. 5.483E-05 m/s**
   - E. 6.032E-05 m/s
3. Calculate the drift speed of electrons in a copper wire with a diameter of 5.82 mm carrying a 9.11 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.
   - A. 1.926E-05 m/s
   - B. 2.118E-05 m/s
   - C. 2.330E-05 m/s
   - **D. 2.563E-05 m/s**
   - E. 2.819E-05 m/s
4. Calculate the drift speed of electrons in a copper wire with a diameter of 5.24 mm carrying a 1.8 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.
   - **A. 6.247E-06 m/s**
   - B. 6.872E-06 m/s
   - C. 7.559E-06 m/s
   - D. 8.315E-06 m/s
   - E. 9.146E-06 m/s
5. Calculate the drift speed of electrons in a copper wire with a diameter of 2.17 mm carrying a 19.4 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.
   - A. 3.569E-04 m/s
   - **B. 3.926E-04 m/s**
   - C. 4.319E-04 m/s
   - D. 4.750E-04 m/s

The next page might contain more answer choices for this question

E. 5.226E-04 m/s

6. Calculate the drift speed of electrons in a copper wire with a diameter of 4.79 mm carrying a 10.9 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23}atoms/mol.

   A. 3.401E-05 m/s
   B. 3.741E-05 m/s
   C. 4.116E-05 m/s
   D. 4.527E-05 m/s
   E. 4.980E-05 m/s

7. Calculate the drift speed of electrons in a copper wire with a diameter of 5.46 mm carrying a 8.19 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23}atoms/mol.

   A. 2.380E-05 m/s
   B. 2.618E-05 m/s
   C. 2.880E-05 m/s
   D. 3.168E-05 m/s
   E. 3.485E-05 m/s

8. Calculate the drift speed of electrons in a copper wire with a diameter of 5.71 mm carrying a 7.54 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23}atoms/mol.

   A. 2.204E-05 m/s
   B. 2.424E-05 m/s
   C. 2.667E-05 m/s
   D. 2.933E-05 m/s
   E. 3.227E-05 m/s

9. Calculate the drift speed of electrons in a copper wire with a diameter of 5.46 mm carrying a 5.05 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23}atoms/mol.

   A. 1.614E-05 m/s
   B. 1.776E-05 m/s
   C. 1.953E-05 m/s
   D. 2.149E-05 m/s
   E. 2.363E-05 m/s

10. Calculate the drift speed of electrons in a copper wire with a diameter of 5.47 mm carrying a 3.48 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23}atoms/mol.

   A. 1.008E-05 m/s
   B. 1.108E-05 m/s
   C. 1.219E-05 m/s
   D. 1.341E-05 m/s

The next page might contain more answer choices for this question

E. 1.475E-05 m/s

11. Calculate the drift speed of electrons in a copper wire with a diameter of 4.38 mm carrying a 5.79 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.

   A. 2.615E-05 m/s

   B. 2.876E-05 m/s

   C. 3.164E-05 m/s

   D. 3.480E-05 m/s

   E. 3.828E-05 m/s

12. Calculate the drift speed of electrons in a copper wire with a diameter of 3.3 mm carrying a 18.5 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.

   A. 1.472E-04 m/s

   B. 1.619E-04 m/s

   C. 1.781E-04 m/s

   D. 1.959E-04 m/s

   E. 2.155E-04 m/s

13. Calculate the drift speed of electrons in a copper wire with a diameter of 2.72 mm carrying a 16.2 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.

   A. 2.087E-04 m/s

   B. 2.295E-04 m/s

   C. 2.525E-04 m/s

   D. 2.777E-04 m/s

   E. 3.055E-04 m/s

14. Calculate the drift speed of electrons in a copper wire with a diameter of 5.33 mm carrying a 5.1 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.

   A. 1.711E-05 m/s

   B. 1.882E-05 m/s

   C. 2.070E-05 m/s

   D. 2.277E-05 m/s

   E. 2.505E-05 m/s

15. Calculate the drift speed of electrons in a copper wire with a diameter of 4.9 mm carrying a 6.43 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3 kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23} atoms/mol.

   A. 2.109E-05 m/s

   B. 2.320E-05 m/s

   C. 2.552E-05 m/s

   D. 2.807E-05 m/s

The next page might contain more answer choices for this question

E. 3.088E-05 m/s

16. Calculate the drift speed of electrons in a copper wire with a diameter of 3.17 mm carrying a 12.0 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23}atoms/mol.

A. 1.138E-04 m/s

B. 1.252E-04 m/s

C. 1.377E-04 m/s

D. 1.515E-04 m/s

E. 1.666E-04 m/s

17. Calculate the drift speed of electrons in a copper wire with a diameter of 3.53 mm carrying a 2.8 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23}atoms/mol.

A. 1.947E-05 m/s

B. 2.141E-05 m/s

C. 2.355E-05 m/s

D. 2.591E-05 m/s

E. 2.850E-05 m/s

18. Calculate the drift speed of electrons in a copper wire with a diameter of 5.19 mm carrying a 18.2 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23}atoms/mol.

A. 5.321E-05 m/s

B. 5.853E-05 m/s

C. 6.439E-05 m/s

D. 7.083E-05 m/s

E. 7.791E-05 m/s

19. Calculate the drift speed of electrons in a copper wire with a diameter of 3.33 mm carrying a 13.8 A current, given that there is one free electron per copper atom. The density of copper is 8.80×10^3kg/m^3 and the atomic mass of copper is 63.54 g/mol. Avagadro's number is 6.02×10^{23}atoms/mol.

A. 8.910E-05 m/s

B. 9.801E-05 m/s

C. 1.078E-04 m/s

D. 1.186E-04 m/s

E. 1.305E-04 m/s

d_cp2.9 Q4

1. A make-believe metal has a density of 5.880E+03 kg/m^3 and an atomic mass of 73.2 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 4.396E+28 e$^-$/m^3

B. 4.836E+28 e$^-$/m^3

The next page might contain more answer choices for this question

C. 5.319E+28 e⁻/m³
D. 5.851E+28 e⁻/m³
E. 6.436E+28 e⁻/m³

2. A make-believe metal has a density of 1.180E+04 kg/m^3 and an atomic mass of 121.0 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

   A. 4.010E+28 e^-/m^3
   B. 4.411E+28 e^-/m^3
   C. 4.852E+28 e^-/m^3
   D. 5.337E+28 e^-/m^3
   E. 5.871E+28 e^-/m^3

3. A make-believe metal has a density of 1.580E+04 kg/m^3 and an atomic mass of 41.5 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

   A. 2.292E+29 e^-/m^3
   B. 2.521E+29 e^-/m^3
   C. 2.773E+29 e^-/m^3
   D. 3.051E+29 e^-/m^3
   E. 3.356E+29 e^-/m^3

4. A make-believe metal has a density of 1.480E+04 kg/m^3 and an atomic mass of 196.0 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

   A. 4.546E+28 e^-/m^3
   B. 5.000E+28 e^-/m^3
   C. 5.500E+28 e^-/m^3
   D. 6.050E+28 e^-/m^3
   E. 6.655E+28 e^-/m^3

5. A make-believe metal has a density of 1.300E+04 kg/m^3 and an atomic mass of 75.7 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

   A. 9.398E+28 e^-/m^3
   B. 1.034E+29 e^-/m^3
   C. 1.137E+29 e^-/m^3
   D. 1.251E+29 e^-/m^3
   E. 1.376E+29 e^-/m^3

6. A make-believe metal has a density of 3.230E+03 kg/m^3 and an atomic mass of 116.0 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

   A. 1.385E+28 e^-/m^3
   B. 1.524E+28 e^-/m^3

The next page might contain more answer choices for this question

C. 1.676E+28 e^-/m^3

D. 1.844E+28 e^-/m^3

E. 2.028E+28 e^-/m^3

7. A make-believe metal has a density of 3.470E+03 kg/m^3 and an atomic mass of 33.8 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 6.180E+28 e^-/m^3

B. 6.798E+28 e^-/m^3

C. 7.478E+28 e^-/m^3

D. 8.226E+28 e^-/m^3

E. 9.049E+28 e^-/m^3

8. A make-believe metal has a density of 3.530E+03 kg/m^3 and an atomic mass of 10.5 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 1.673E+29 e^-/m^3

B. 1.840E+29 e^-/m^3

C. 2.024E+29 e^-/m^3

D. 2.226E+29 e^-/m^3

E. 2.449E+29 e^-/m^3

9. A make-believe metal has a density of 6.650E+03 kg/m^3 and an atomic mass of 67.5 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 4.456E+28 e^-/m^3

B. 4.901E+28 e^-/m^3

C. 5.392E+28 e^-/m^3

D. 5.931E+28 e^-/m^3

E. 6.524E+28 e^-/m^3

10. A make-believe metal has a density of 7.000E+03 kg/m^3 and an atomic mass of 89.4 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 3.219E+28 e^-/m^3

B. 3.541E+28 e^-/m^3

C. 3.896E+28 e^-/m^3

D. 4.285E+28 e^-/m^3

E. 4.714E+28 e^-/m^3

11. A make-believe metal has a density of 8.060E+03 kg/m^3 and an atomic mass of 19.7 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 1.850E+29 e^-/m^3

B. 2.036E+29 e^-/m^3

The next page might contain more answer choices for this question

C. 2.239E+29 e^-/m^3

D. 2.463E+29 e^-/m^3

E. 2.709E+29 e^-/m^3

12. A make-believe metal has a density of 1.810E+04 kg/m^3 and an atomic mass of 14.0 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 5.847E+29 e^-/m^3

B. 6.432E+29 e^-/m^3

C. 7.075E+29 e^-/m^3

D. 7.783E+29 e^-/m^3

E. 8.561E+29 e^-/m^3

13. A make-believe metal has a density of 5.880E+03 kg/m^3 and an atomic mass of 87.4 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 3.347E+28 e^-/m^3

B. 3.682E+28 e^-/m^3

C. 4.050E+28 e^-/m^3

D. 4.455E+28 e^-/m^3

E. 4.901E+28 e^-/m^3

14. A make-believe metal has a density of 1.510E+04 kg/m^3 and an atomic mass of 33.6 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 2.236E+29 e^-/m^3

B. 2.459E+29 e^-/m^3

C. 2.705E+29 e^-/m^3

D. 2.976E+29 e^-/m^3

E. 3.274E+29 e^-/m^3

15. A make-believe metal has a density of 1.050E+04 kg/m^3 and an atomic mass of 58.8 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 1.075E+29 e^-/m^3

B. 1.183E+29 e^-/m^3

C. 1.301E+29 e^-/m^3

D. 1.431E+29 e^-/m^3

E. 1.574E+29 e^-/m^3

16. A make-believe metal has a density of 2.670E+03 kg/m^3 and an atomic mass of 40.9 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.

A. 3.930E+28 e^-/m^3

B. 4.323E+28 e^-/m^3

The next page might contain more answer choices for this question

C. 4.755E+28 e⁻/m³
D. 5.231E+28 e⁻/m³
E. 5.754E+28 e⁻/m³

17. A make-believe metal has a density of 1.430E+04 kg/m^3 and an atomic mass of 37.8 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.
    A. 1.882E+29 e^-/m^3
    B. 2.070E+29 e^-/m^3
    C. 2.277E+29 e^-/m^3
    D. 2.505E+29 e^-/m^3
    E. 2.756E+29 e^-/m^3

18. A make-believe metal has a density of 1.480E+04 kg/m^3 and an atomic mass of 73.3 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.
    A. 1.105E+29 e^-/m^3
    B. 1.215E+29 e^-/m^3
    C. 1.337E+29 e^-/m^3
    D. 1.471E+29 e^-/m^3
    E. 1.618E+29 e^-/m^3

19. A make-believe metal has a density of 8.690E+03 kg/m^3 and an atomic mass of 48.4 g/mol. Taking Avogadro's number to be 6.020E+23 atoms/mol and assuming one free electron per atom, calculate the number of free electrons per cubic meter.
    A. 1.081E+29 e^-/m^3
    B. 1.189E+29 e^-/m^3
    C. 1.308E+29 e^-/m^3
    D. 1.439E+29 e^-/m^3
    E. 1.582E+29 e^-/m^3

d_cp2.9 Q5

1. A device requires consumes 121 W of power and requires 5.12 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.
    A. 8.849E+05 A/m^2
    B. 9.734E+05 A/m^2
    C. 1.071E+06 A/m^2
    D. 1.178E+06 A/m^2
    E. 1.296E+06 A/m^2

2. A device requires consumes 81 W of power and requires 2.34 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.
    A. 3.342E+05 A/m^2
    B. 3.677E+05 A/m^2

The next page might contain more answer choices for this question

C. 4.044E+05 A/m^2

D. 4.449E+05 A/m^2

E. 4.894E+05 A/m^2

3. A device requires consumes 168 W of power and requires 11.0 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 1.901E+06 A/m^2

B. 2.091E+06 A/m^2

C. 2.300E+06 A/m^2

D. 2.530E+06 A/m^2

E. 2.783E+06 A/m^2

4. A device requires consumes 73 W of power and requires 9.14 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 1.187E+06 A/m^2

B. 1.306E+06 A/m^2

C. 1.436E+06 A/m^2

D. 1.580E+06 A/m^2

E. 1.738E+06 A/m^2

5. A device requires consumes 78 W of power and requires 11.3 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 1.953E+06 A/m^2

B. 2.148E+06 A/m^2

C. 2.363E+06 A/m^2

D. 2.599E+06 A/m^2

E. 2.859E+06 A/m^2

6. A device requires consumes 72 W of power and requires 11.7 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 1.519E+06 A/m^2

B. 1.671E+06 A/m^2

C. 1.838E+06 A/m^2

D. 2.022E+06 A/m^2

E. 2.224E+06 A/m^2

7. A device requires consumes 84 W of power and requires 3.66 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 5.751E+05 A/m^2

B. 6.326E+05 A/m^2

C. 6.958E+05 A/m^2

D. 7.654E+05 A/m^2

E. 8.419E+05 A/m^2

The next page might contain more answer choices for this question

8. A device requires consumes 172 W of power and requires 2.21 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.
   - A. 3.157E+05 A/m^2
   - B. 3.472E+05 A/m^2
   - C. 3.820E+05 A/m^2
   - **D. 4.202E+05 A/m^2**
   - E. 4.622E+05 A/m^2
9. A device requires consumes 142 W of power and requires 12.1 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.
   - **A. 2.300E+06 A/m^2**
   - B. 2.530E+06 A/m^2
   - C. 2.783E+06 A/m^2
   - D. 3.062E+06 A/m^2
   - E. 3.368E+06 A/m^2
10. A device requires consumes 166 W of power and requires 9.99 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.
    - A. 1.570E+06 A/m^2
    - B. 1.727E+06 A/m^2
    - **C. 1.899E+06 A/m^2**
    - D. 2.089E+06 A/m^2
    - E. 2.298E+06 A/m^2
11. A device requires consumes 156 W of power and requires 5.42 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.
    - A. 7.742E+05 A/m^2
    - B. 8.516E+05 A/m^2
    - C. 9.367E+05 A/m^2
    - **D. 1.030E+06 A/m^2**
    - E. 1.133E+06 A/m^2
12. A device requires consumes 126 W of power and requires 1.11 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.
    - **A. 2.110E+05 A/m^2**
    - B. 2.321E+05 A/m^2
    - C. 2.553E+05 A/m^2
    - D. 2.809E+05 A/m^2
    - E. 3.090E+05 A/m^2
13. A device requires consumes 177 W of power and requires 6.82 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.
    - A. 9.741E+05 A/m^2
    - B. 1.072E+06 A/m^2

The next page might contain more answer choices for this question

C. 1.179E+06 A/m^2

D. 1.297E+06 A/m^2

E. 1.426E+06 A/m^2

14. A device requires consumes 88 W of power and requires 11.3 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 1.467E+06 A/m^2

B. 1.614E+06 A/m^2

C. 1.775E+06 A/m^2

D. 1.953E+06 A/m^2

E. 2.148E+06 A/m^2

15. A device requires consumes 196 W of power and requires 2.4 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 4.563E+05 A/m^2

B. 5.019E+05 A/m^2

C. 5.521E+05 A/m^2

D. 6.073E+05 A/m^2

E. 6.680E+05 A/m^2

16. A device requires consumes 185 W of power and requires 10.1 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 1.920E+06 A/m^2

B. 2.112E+06 A/m^2

C. 2.323E+06 A/m^2

D. 2.556E+06 A/m^2

E. 2.811E+06 A/m^2

17. A device requires consumes 120 W of power and requires 4.85 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 7.620E+05 A/m^2

B. 8.382E+05 A/m^2

C. 9.221E+05 A/m^2

D. 1.014E+06 A/m^2

E. 1.116E+06 A/m^2

18. A device requires consumes 103 W of power and requires 6.3 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

A. 8.999E+05 A/m^2

B. 9.899E+05 A/m^2

C. 1.089E+06 A/m^2

D. 1.198E+06 A/m^2

E. 1.317E+06 A/m^2

The next page might contain more answer choices for this question

19. A device requires consumes 176 W of power and requires 11.9 A of current which is supplied by a single core 10-guage (2.588 mm diameter) wire. Find the magnitude of the average current density.

    A. 2.262E+06 A/m^2

    B. 2.489E+06 A/m^2

    C. 2.737E+06 A/m^2

    D. 3.011E+06 A/m^2

    E. 3.312E+06 A/m^2

d_cp2.9 Q6

1. Calculate the resistance of a 12-gauge copper wire that is 97 m long and carries a current of 29 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

    A. 4.923E-01 Ω

    B. 5.416E-01 Ω

    C. 5.957E-01 Ω

    D. 6.553E-01 Ω

    E. 7.208E-01 Ω

2. Calculate the resistance of a 12-gauge copper wire that is 52 m long and carries a current of 99 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

    A. 1.983E-01 Ω

    B. 2.181E-01 Ω

    C. 2.399E-01 Ω

    D. 2.639E-01 Ω

    E. 2.903E-01 Ω

3. Calculate the resistance of a 12-gauge copper wire that is 69 m long and carries a current of 98 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

    A. 2.631E-01 Ω

    B. 2.894E-01 Ω

    C. 3.184E-01 Ω

    D. 3.502E-01 Ω

    E. 3.852E-01 Ω

4. Calculate the resistance of a 12-gauge copper wire that is 14 m long and carries a current of 38 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

    A. 5.873E-02 Ω

    B. 6.460E-02 Ω

    C. 7.106E-02 Ω

    D. 7.816E-02 Ω

    E. 8.598E-02 Ω

5. Calculate the resistance of a 12-gauge copper wire that is 13 m long and carries a current of 22 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

The next page might contain more answer choices for this question

A. 4.957E-02 Ω
B. 5.453E-02 Ω
C. 5.998E-02 Ω
D. 6.598E-02 Ω
E. 7.258E-02 Ω

6. Calculate the resistance of a 12-gauge copper wire that is 48 m long and carries a current of 50 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
   A. 2.215E-01 Ω
   B. 2.436E-01 Ω
   C. 2.680E-01 Ω
   D. 2.948E-01 Ω
   E. 3.243E-01 Ω

7. Calculate the resistance of a 12-gauge copper wire that is 42 m long and carries a current of 63 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
   A. 1.938E-01 Ω
   B. 2.132E-01 Ω
   C. 2.345E-01 Ω
   D. 2.579E-01 Ω
   E. 2.837E-01 Ω

8. Calculate the resistance of a 12-gauge copper wire that is 10 m long and carries a current of 41 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
   A. 3.467E-02 Ω
   B. 3.813E-02 Ω
   C. 4.195E-02 Ω
   D. 4.614E-02 Ω
   E. 5.076E-02 Ω

9. Calculate the resistance of a 12-gauge copper wire that is 10 m long and carries a current of 69 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
   A. 4.614E-02 Ω
   B. 5.076E-02 Ω
   C. 5.583E-02 Ω
   D. 6.141E-02 Ω
   E. 6.756E-02 Ω

10. Calculate the resistance of a 12-gauge copper wire that is 78 m long and carries a current of 82 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
   A. 2.974E-01 Ω
   B. 3.272E-01 Ω
   C. 3.599E-01 Ω
   D. 3.959E-01 Ω

The next page might contain more answer choices for this question

E. 4.355E-01 Ω

11. Calculate the resistance of a 12-gauge copper wire that is 19 m long and carries a current of 59 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 7.970E-02 Ω

B. 8.767E-02 Ω

C. 9.644E-02 Ω

D. 1.061E-01 Ω

E. 1.167E-01 Ω

12. Calculate the resistance of a 12-gauge copper wire that is 90 m long and carries a current of 34 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 3.432E-01 Ω

B. 3.775E-01 Ω

C. 4.153E-01 Ω

D. 4.568E-01 Ω

E. 5.025E-01 Ω

13. Calculate the resistance of a 12-gauge copper wire that is 45 m long and carries a current of 51 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 1.716E-01 Ω

B. 1.888E-01 Ω

C. 2.076E-01 Ω

D. 2.284E-01 Ω

E. 2.512E-01 Ω

14. Calculate the resistance of a 12-gauge copper wire that is 15 m long and carries a current of 27 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 5.200E-02 Ω

B. 5.720E-02 Ω

C. 6.292E-02 Ω

D. 6.921E-02 Ω

E. 7.613E-02 Ω

15. Calculate the resistance of a 12-gauge copper wire that is 11 m long and carries a current of 94 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 3.813E-02 Ω

B. 4.195E-02 Ω

C. 4.614E-02 Ω

D. 5.076E-02 Ω

E. 5.583E-02 Ω

16. Calculate the resistance of a 12-gauge copper wire that is 30 m long and carries a current of 31 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 1.384E-01 Ω

The next page might contain more answer choices for this question

B. 1.523E-01 Ω

C. 1.675E-01 Ω

D. 1.842E-01 Ω

E. 2.027E-01 Ω

17. Calculate the resistance of a 12-gauge copper wire that is 86 m long and carries a current of 97 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 4.365E-01 Ω

B. 4.801E-01 Ω

C. 5.282E-01 Ω

D. 5.810E-01 Ω

E. 6.391E-01 Ω

18. Calculate the resistance of a 12-gauge copper wire that is 81 m long and carries a current of 32 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 3.737E-01 Ω

B. 4.111E-01 Ω

C. 4.522E-01 Ω

D. 4.975E-01 Ω

E. 5.472E-01 Ω

19. Calculate the resistance of a 12-gauge copper wire that is 59 m long and carries a current of 26 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 2.995E-01 Ω

B. 3.294E-01 Ω

C. 3.623E-01 Ω

D. 3.986E-01 Ω

E. 4.384E-01 Ω

d_cp2.9 Q7

1. Calculate the electric field in a 12-gauge copper wire that is 75 m long and carries a current of 21 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 7.280E-05 V/m

B. 8.008E-05 V/m

C. 8.809E-05 V/m

D. 9.690E-05 V/m

E. 1.066E-04 V/m

2. Calculate the electric field in a 12-gauge copper wire that is 78 m long and carries a current of 24 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 1.218E-04 V/m

B. 1.340E-04 V/m

C. 1.474E-04 V/m

D. 1.621E-04 V/m
E. 1.783E-04 V/m

3. Calculate the electric field in a 12-gauge copper wire that is 23 m long and carries a current of 64 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
    A. 2.953E-04 V/m
    B. 3.248E-04 V/m
    C. 3.573E-04 V/m
    D. 3.930E-04 V/m
    E. 4.324E-04 V/m

4. Calculate the electric field in a 12-gauge copper wire that is 13 m long and carries a current of 59 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
    A. 2.250E-04 V/m
    B. 2.475E-04 V/m
    C. 2.722E-04 V/m
    D. 2.995E-04 V/m
    E. 3.294E-04 V/m

5. Calculate the electric field in a 12-gauge copper wire that is 26 m long and carries a current of 24 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
    A. 9.152E-05 V/m
    B. 1.007E-04 V/m
    C. 1.107E-04 V/m
    D. 1.218E-04 V/m
    E. 1.340E-04 V/m

6. Calculate the electric field in a 12-gauge copper wire that is 62 m long and carries a current of 52 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
    A. 1.983E-04 V/m
    B. 2.181E-04 V/m
    C. 2.399E-04 V/m
    D. 2.639E-04 V/m
    E. 2.903E-04 V/m

7. Calculate the electric field in a 12-gauge copper wire that is 21 m long and carries a current of 42 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
    A. 1.602E-04 V/m
    B. 1.762E-04 V/m
    C. 1.938E-04 V/m
    D. 2.132E-04 V/m
    E. 2.345E-04 V/m

8. Calculate the electric field in a 12-gauge copper wire that is 17 m long and carries a current of 56 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

The next page might contain more answer choices for this question

A. 1.941E-04 V/m
B. 2.135E-04 V/m
C. 2.349E-04 V/m
D. 2.584E-04 V/m
E. 2.842E-04 V/m

9. Calculate the electric field in a 12-gauge copper wire that is 25 m long and carries a current of 43 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
A. 2.182E-04 V/m
B. 2.401E-04 V/m
C. 2.641E-04 V/m
D. 2.905E-04 V/m
E. 3.195E-04 V/m

10. Calculate the electric field in a 12-gauge copper wire that is 64 m long and carries a current of 76 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
A. 2.635E-04 V/m
B. 2.898E-04 V/m
C. 3.188E-04 V/m
D. 3.507E-04 V/m
E. 3.857E-04 V/m

11. Calculate the electric field in a 12-gauge copper wire that is 18 m long and carries a current of 22 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
A. 1.117E-04 V/m
B. 1.228E-04 V/m
C. 1.351E-04 V/m
D. 1.486E-04 V/m
E. 1.635E-04 V/m

12. Calculate the electric field in a 12-gauge copper wire that is 16 m long and carries a current of 58 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
A. 2.212E-04 V/m
B. 2.433E-04 V/m
C. 2.676E-04 V/m
D. 2.944E-04 V/m
E. 3.238E-04 V/m

13. Calculate the electric field in a 12-gauge copper wire that is 99 m long and carries a current of 71 mA. The resistivity of copper is 1.680E-08 Ω · m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.
A. 3.604E-04 V/m
B. 3.964E-04 V/m
C. 4.360E-04 V/m
D. 4.796E-04 V/m

The next page might contain more answer choices for this question

E. 5.276E-04 V/m

14. Calculate the electric field in a 12-gauge copper wire that is 44 m long and carries a current of 78 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 2.704E-04 V/m

B. 2.974E-04 V/m

C. 3.272E-04 V/m

D. 3.599E-04 V/m

E. 3.959E-04 V/m

15. Calculate the electric field in a 12-gauge copper wire that is 48 m long and carries a current of 63 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 3.198E-04 V/m

B. 3.517E-04 V/m

C. 3.869E-04 V/m

D. 4.256E-04 V/m

E. 4.682E-04 V/m

16. Calculate the electric field in a 12-gauge copper wire that is 84 m long and carries a current of 48 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 1.664E-04 V/m

B. 1.830E-04 V/m

C. 2.013E-04 V/m

D. 2.215E-04 V/m

E. 2.436E-04 V/m

17. Calculate the electric field in a 12-gauge copper wire that is 56 m long and carries a current of 81 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 4.111E-04 V/m

B. 4.522E-04 V/m

C. 4.975E-04 V/m

D. 5.472E-04 V/m

E. 6.019E-04 V/m

18. Calculate the electric field in a 12-gauge copper wire that is 15 m long and carries a current of 85 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 2.947E-04 V/m

B. 3.241E-04 V/m

C. 3.565E-04 V/m

D. 3.922E-04 V/m

E. 4.314E-04 V/m

19. Calculate the electric field in a 12-gauge copper wire that is 41 m long and carries a current of 71 mA. The resistivity of copper is 1.680E-08 $\Omega \cdot$ m and 12-gauge wire as a cross-sectional area of 3.31 mm^2.

A. 3.604E-04 V/m

The next page might contain more answer choices for this question

B. 3.964E-04 V/m
C. 4.360E-04 V/m
D. 4.796E-04 V/m
E. 5.276E-04 V/m

d_cp2.9 Q8

1. Imagine a substance could be made into a very hot filament. Suppose the resitance is 2.14 Ω at a temperature of 77°C and that the temperature coefficient of expansion is 4.750E-03 $(°C)^{-1}$). What is the resistance at a temperature of 542 °C?
   - A. 6.540E+00 Ω
   - **B. 6.867E+00 Ω**
   - C. 7.210E+00 Ω
   - D. 7.571E+00 Ω
   - E. 7.949E+00 Ω
2. Imagine a substance could be made into a very hot filament. Suppose the resitance is 6.74 Ω at a temperature of 89°C and that the temperature coefficient of expansion is 4.990E-03 $(°C)^{-1}$). What is the resistance at a temperature of 366 °C?
   - A. 1.529E+01 Ω
   - **B. 1.606E+01 Ω**
   - C. 1.686E+01 Ω
   - D. 1.770E+01 Ω
   - E. 1.859E+01 Ω
3. Imagine a substance could be made into a very hot filament. Suppose the resitance is 3.58 Ω at a temperature of 24°C and that the temperature coefficient of expansion is 5.520E-03 $(°C)^{-1}$). What is the resistance at a temperature of 349 °C?
   - A. 9.526E+00 Ω
   - **B. 1.000E+01 Ω**
   - C. 1.050E+01 Ω
   - D. 1.103E+01 Ω
   - E. 1.158E+01 Ω
4. Imagine a substance could be made into a very hot filament. Suppose the resitance is 5.89 Ω at a temperature of 43°C and that the temperature coefficient of expansion is 4.400E-03 $(°C)^{-1}$). What is the resistance at a temperature of 398 °C?
   - A. 1.369E+01 Ω
   - B. 1.437E+01 Ω
   - **C. 1.509E+01 Ω**
   - D. 1.584E+01 Ω
   - E. 1.664E+01 Ω
5. Imagine a substance could be made into a very hot filament. Suppose the resitance is 5.73 Ω at a temperature of 99°C and that the temperature coefficient of expansion is 5.260E-03 $(°C)^{-1}$). What is the resistance at a temperature of 420 °C?

The next page might contain more answer choices for this question

- A. 1.267E+01 Ω
- B. 1.331E+01 Ω
- C. 1.397E+01 Ω
- D. 1.467E+01 Ω
- **E. 1.540E+01 Ω**

6. Imagine a substance could be made into a very hot filament. Suppose the resitance is 4.08 Ω at a temperature of 26°C and that the temperature coefficient of expansion is 4.800E-03 $(°C)^{-1}$). What is the resistance at a temperature of 388 °C?
   - A. 1.064E+01 Ω
   - **B. 1.117E+01 Ω**
   - C. 1.173E+01 Ω
   - D. 1.231E+01 Ω
   - E. 1.293E+01 Ω

7. Imagine a substance could be made into a very hot filament. Suppose the resitance is 2.94 Ω at a temperature of 30°C and that the temperature coefficient of expansion is 5.900E-03 $(°C)^{-1}$). What is the resistance at a temperature of 445 °C?
   - **A. 1.014E+01 Ω**
   - B. 1.065E+01 Ω
   - C. 1.118E+01 Ω
   - D. 1.174E+01 Ω
   - E. 1.232E+01 Ω

8. Imagine a substance could be made into a very hot filament. Suppose the resitance is 2.89 Ω at a temperature of 89°C and that the temperature coefficient of expansion is 5.340E-03 $(°C)^{-1}$). What is the resistance at a temperature of 566 °C?
   - A. 9.763E+00 Ω
   - **B. 1.025E+01 Ω**
   - C. 1.076E+01 Ω
   - D. 1.130E+01 Ω
   - E. 1.187E+01 Ω

9. Imagine a substance could be made into a very hot filament. Suppose the resitance is 5.88 Ω at a temperature of 87°C and that the temperature coefficient of expansion is 5.290E-03 $(°C)^{-1}$). What is the resistance at a temperature of 547 °C?
   - A. 1.831E+01 Ω
   - B. 1.923E+01 Ω
   - **C. 2.019E+01 Ω**
   - D. 2.120E+01 Ω
   - E. 2.226E+01 Ω

10. Imagine a substance could be made into a very hot filament. Suppose the resitance is 1.56 Ω at a temperature of 97°C and that the temperature coefficient of expansion is 5.020E-03 $(°C)^{-1}$). What is the resistance at a temperature of 340 °C?

The next page might contain more answer choices for this question

A. 3.463E+00 Ω
B. 3.636E+00 Ω
C. 3.818E+00 Ω
D. 4.009E+00 Ω
E. 4.209E+00 Ω

11. Imagine a substance could be made into a very hot filament. Suppose the resitance is 2.61 Ω at a temperature of 92°C and that the temperature coefficient of expansion is 4.260E-03 (°C)$^{-1}$). What is the resistance at a temperature of 422 °C?

A. 6.279E+00 Ω
B. 6.593E+00 Ω
C. 6.923E+00 Ω
D. 7.269E+00 Ω
E. 7.632E+00 Ω

12. Imagine a substance could be made into a very hot filament. Suppose the resitance is 4.48 Ω at a temperature of 56°C and that the temperature coefficient of expansion is 4.550E-03 (°C)$^{-1}$). What is the resistance at a temperature of 449 °C?

A. 1.028E+01 Ω
B. 1.079E+01 Ω
C. 1.133E+01 Ω
D. 1.190E+01 Ω
E. 1.249E+01 Ω

13. Imagine a substance could be made into a very hot filament. Suppose the resitance is 1.98 Ω at a temperature of 92°C and that the temperature coefficient of expansion is 5.080E-03 (°C)$^{-1}$). What is the resistance at a temperature of 455 °C?

A. 5.363E+00 Ω
B. 5.631E+00 Ω
C. 5.913E+00 Ω
D. 6.208E+00 Ω
E. 6.519E+00 Ω

14. Imagine a substance could be made into a very hot filament. Suppose the resitance is 6.06 Ω at a temperature of 80°C and that the temperature coefficient of expansion is 4.290E-03 (°C)$^{-1}$). What is the resistance at a temperature of 330 °C?

A. 1.196E+01 Ω
B. 1.256E+01 Ω
C. 1.319E+01 Ω
D. 1.385E+01 Ω
E. 1.454E+01 Ω

15. Imagine a substance could be made into a very hot filament. Suppose the resitance is 1.95 Ω at a temperature of 96°C and that the temperature coefficient of expansion is 4.400E-03 (°C)$^{-1}$). What is the resistance at a temperature of 469 °C?

The next page might contain more answer choices for this question

A. 4.449E+00 Ω

B. 4.672E+00 Ω

C. 4.905E+00 Ω

D. 5.150E+00 Ω

E. 5.408E+00 Ω

16. Imagine a substance could be made into a very hot filament. Suppose the resitance is 3.64 Ω at a temperature of 82°C and that the temperature coefficient of expansion is 4.530E-03 $(°C)^{-1}$). What is the resistance at a temperature of 390 °C?

A. 7.532E+00 Ω

B. 7.908E+00 Ω

C. 8.303E+00 Ω

D. 8.719E+00 Ω

E. 9.155E+00 Ω

17. Imagine a substance could be made into a very hot filament. Suppose the resitance is 5.94 Ω at a temperature of 70°C and that the temperature coefficient of expansion is 5.120E-03 $(°C)^{-1}$). What is the resistance at a temperature of 386 °C?

A. 1.279E+01 Ω

B. 1.343E+01 Ω

C. 1.410E+01 Ω

D. 1.481E+01 Ω

E. 1.555E+01 Ω

18. Imagine a substance could be made into a very hot filament. Suppose the resitance is 3.75 Ω at a temperature of 24°C and that the temperature coefficient of expansion is 4.300E-03 $(°C)^{-1}$). What is the resistance at a temperature of 423 °C?

A. 1.018E+01 Ω

B. 1.069E+01 Ω

C. 1.123E+01 Ω

D. 1.179E+01 Ω

E. 1.238E+01 Ω

19. Imagine a substance could be made into a very hot filament. Suppose the resitance is 1.52 Ω at a temperature of 45°C and that the temperature coefficient of expansion is 4.330E-03 $(°C)^{-1}$). What is the resistance at a temperature of 479 °C?

A. 3.970E+00 Ω

B. 4.168E+00 Ω

C. 4.376E+00 Ω

D. 4.595E+00 Ω

E. 4.825E+00 Ω

The next page might contain more answer choices for this question

d_cp2.9 Q9

1. A DC winch moter draws 31 amps at 191 volts as it lifts a 5.080E+03 N weight at a constant speed of 0.99 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.
   - A. 6.972E-01 Ω
   - B. 7.669E-01 Ω
   - C. 8.436E-01 Ω
   - **D. 9.280E-01 Ω**
   - E. 1.021E+00 Ω
2. A DC winch moter draws 23 amps at 196 volts as it lifts a 4.870E+03 N weight at a constant speed of 0.731 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.
   - A. 1.346E+00 Ω
   - B. 1.481E+00 Ω
   - C. 1.629E+00 Ω
   - **D. 1.792E+00 Ω**
   - E. 1.971E+00 Ω
3. A DC winch moter draws 26 amps at 177 volts as it lifts a 4.820E+03 N weight at a constant speed of 0.696 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.
   - A. 1.677E+00 Ω
   - **B. 1.845E+00 Ω**
   - C. 2.030E+00 Ω
   - D. 2.233E+00 Ω
   - E. 2.456E+00 Ω
4. A DC winch moter draws 20 amps at 157 volts as it lifts a 5.270E+03 N weight at a constant speed of 0.403 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.
   - **A. 2.540E+00 Ω**
   - B. 2.795E+00 Ω
   - C. 3.074E+00 Ω
   - D. 3.381E+00 Ω
   - E. 3.720E+00 Ω
5. A DC winch moter draws 29 amps at 153 volts as it lifts a 4.780E+03 N weight at a constant speed of 0.691 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.
   - A. 1.226E+00 Ω
   - **B. 1.348E+00 Ω**
   - C. 1.483E+00 Ω
   - D. 1.632E+00 Ω

The next page might contain more answer choices for this question

E. 1.795E+00 Ω

6. A DC winch moter draws 26 amps at 153 volts as it lifts a 4.100E+03 N weight at a constant speed of 0.609 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

   A. 2.191E+00 Ω

   B. 2.410E+00 Ω

   C. 2.651E+00 Ω

   D. 2.916E+00 Ω

   E. 3.208E+00 Ω

7. A DC winch moter draws 20 amps at 169 volts as it lifts a 5.120E+03 N weight at a constant speed of 0.543 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

   A. 1.500E+00 Ω

   B. 1.650E+00 Ω

   C. 1.815E+00 Ω

   D. 1.996E+00 Ω

   E. 2.196E+00 Ω

8. A DC winch moter draws 25 amps at 128 volts as it lifts a 5.710E+03 N weight at a constant speed of 0.449 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

   A. 8.413E-01 Ω

   B. 9.254E-01 Ω

   C. 1.018E+00 Ω

   D. 1.120E+00 Ω

   E. 1.232E+00 Ω

9. A DC winch moter draws 19 amps at 175 volts as it lifts a 4.230E+03 N weight at a constant speed of 0.483 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

   A. 3.551E+00 Ω

   B. 3.906E+00 Ω

   C. 4.297E+00 Ω

   D. 4.726E+00 Ω

   E. 5.199E+00 Ω

10. A DC winch moter draws 24 amps at 159 volts as it lifts a 4.120E+03 N weight at a constant speed of 0.657 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

    A. 1.447E+00 Ω

    B. 1.591E+00 Ω

    C. 1.751E+00 Ω

    D. 1.926E+00 Ω

The next page might contain more answer choices for this question

E. 2.118E+00 Ω

11. A DC winch moter draws 27 amps at 190 volts as it lifts a 4.910E+03 N weight at a constant speed of 0.769 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

A. 1.396E+00 Ω

B. 1.535E+00 Ω

C. 1.689E+00 Ω

D. 1.858E+00 Ω

E. 2.043E+00 Ω

12. A DC winch moter draws 20 amps at 175 volts as it lifts a 5.180E+03 N weight at a constant speed of 0.541 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

A. 1.744E+00 Ω

B. 1.918E+00 Ω

C. 2.110E+00 Ω

D. 2.321E+00 Ω

E. 2.553E+00 Ω

13. A DC winch moter draws 23 amps at 170 volts as it lifts a 5.200E+03 N weight at a constant speed of 0.662 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

A. 7.305E-01 Ω

B. 8.036E-01 Ω

C. 8.839E-01 Ω

D. 9.723E-01 Ω

E. 1.070E+00 Ω

14. A DC winch moter draws 27 amps at 143 volts as it lifts a 5.060E+03 N weight at a constant speed of 0.623 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

A. 8.033E-01 Ω

B. 8.837E-01 Ω

C. 9.720E-01 Ω

D. 1.069E+00 Ω

E. 1.176E+00 Ω

15. A DC winch moter draws 17 amps at 187 volts as it lifts a 5.600E+03 N weight at a constant speed of 0.381 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.

A. 2.471E+00 Ω

B. 2.718E+00 Ω

C. 2.990E+00 Ω

D. 3.288E+00 Ω

The next page might contain more answer choices for this question

E. 3.617E+00 Ω

16. A DC winch moter draws 12 amps at 129 volts as it lifts a 4.210E+03 N weight at a constant speed of 0.318 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.
    - A. 9.924E-01 Ω
    - B. 1.092E+00 Ω
    - C. 1.201E+00 Ω
    - D. 1.321E+00 Ω
    - **E. 1.453E+00 Ω**
17. A DC winch moter draws 25 amps at 119 volts as it lifts a 4.730E+03 N weight at a constant speed of 0.47 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.
    - A. 1.094E+00 Ω
    - **B. 1.203E+00 Ω**
    - C. 1.323E+00 Ω
    - D. 1.456E+00 Ω
    - E. 1.601E+00 Ω
18. A DC winch moter draws 18 amps at 126 volts as it lifts a 5.830E+03 N weight at a constant speed of 0.26 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.
    - A. 1.919E+00 Ω
    - B. 2.111E+00 Ω
    - **C. 2.322E+00 Ω**
    - D. 2.554E+00 Ω
    - E. 2.809E+00 Ω
19. A DC winch moter draws 13 amps at 159 volts as it lifts a 4.270E+03 N weight at a constant speed of 0.357 m/s. Assuming that all the electrical power is either converted into gravitational potential energy or ohmically heats the motor's coils, calculate the coil's resistance.
    - **A. 3.211E+00 Ω**
    - B. 3.532E+00 Ω
    - C. 3.885E+00 Ω
    - D. 4.273E+00 Ω
    - E. 4.701E+00 Ω

d_cp2.9 Q10

1. What is consumer cost to operate one 77-W incandescent bulb for 12 hours per day for 1 year (365 days) if the cost of electricity is $0.134 per kilowatt-hour?
    - A. $3.087E+01
    - B. $3.395E+01
    - C. $3.735E+01

The next page might contain more answer choices for this question

- D. \$4.108E+01
- **E. \$4.519E+01**

2. What is consumer cost to operate one 102-W incandescent bulb for 6 hours per day for 1 year (365 days) if the cost of electricity is \$0.127 per kilowatt-hour?
   - A. \$2.131E+01
   - B. \$2.345E+01
   - C. \$2.579E+01
   - **D. \$2.837E+01**
   - E. \$3.121E+01

3. What is consumer cost to operate one 65-W incandescent bulb for 12 hours per day for 1 year (365 days) if the cost of electricity is \$0.134 per kilowatt-hour?
   - A. \$2.866E+01
   - B. \$3.153E+01
   - C. \$3.468E+01
   - **D. \$3.815E+01**
   - E. \$4.196E+01

4. What is consumer cost to operate one 89-W incandescent bulb for 10 hours per day for 1 year (365 days) if the cost of electricity is \$0.141 per kilowatt-hour?
   - A. \$3.785E+01
   - B. \$4.164E+01
   - **C. \$4.580E+01**
   - D. \$5.038E+01
   - E. \$5.542E+01

5. What is consumer cost to operate one 87-W incandescent bulb for 11 hours per day for 1 year (365 days) if the cost of electricity is \$0.117 per kilowatt-hour?
   - A. \$2.791E+01
   - B. \$3.071E+01
   - C. \$3.378E+01
   - D. \$3.715E+01
   - **E. \$4.087E+01**

6. What is consumer cost to operate one 73-W incandescent bulb for 11 hours per day for 1 year (365 days) if the cost of electricity is \$0.113 per kilowatt-hour?
   - **A. \$3.312E+01**
   - B. \$3.643E+01
   - C. \$4.007E+01
   - D. \$4.408E+01
   - E. \$4.849E+01

7. What is consumer cost to operate one 57-W incandescent bulb for 11 hours per day for 1 year (365 days) if the cost of electricity is \$0.146 per kilowatt-hour?

The next page might contain more answer choices for this question

A. $2.282E+01
B. $2.510E+01
C. $2.761E+01
D. $3.038E+01
E. $3.341E+01

8. What is consumer cost to operate one 74-W incandescent bulb for 9 hours per day for 1 year (365 days) if the cost of electricity is $0.119 per kilowatt-hour?

A. $1.976E+01
B. $2.173E+01
C. $2.391E+01
D. $2.630E+01
E. $2.893E+01

9. What is consumer cost to operate one 91-W incandescent bulb for 10 hours per day for 1 year (365 days) if the cost of electricity is $0.131 per kilowatt-hour?

A. $2.972E+01
B. $3.269E+01
C. $3.596E+01
D. $3.956E+01
E. $4.351E+01

10. What is consumer cost to operate one 56-W incandescent bulb for 6 hours per day for 1 year (365 days) if the cost of electricity is $0.13 per kilowatt-hour?

A. $1.198E+01
B. $1.318E+01
C. $1.449E+01
D. $1.594E+01
E. $1.754E+01

11. What is consumer cost to operate one 59-W incandescent bulb for 10 hours per day for 1 year (365 days) if the cost of electricity is $0.132 per kilowatt-hour?

A. $2.584E+01
B. $2.843E+01
C. $3.127E+01
D. $3.440E+01
E. $3.784E+01

12. What is consumer cost to operate one 79-W incandescent bulb for 9 hours per day for 1 year (365 days) if the cost of electricity is $0.142 per kilowatt-hour?

A. $2.517E+01
B. $2.769E+01
C. $3.046E+01
D. $3.350E+01

The next page might contain more answer choices for this question

E. $3.685E+01

13. What is consumer cost to operate one 115-W incandescent bulb for 12 hours per day for 1 year (365 days) if the cost of electricity is $0.128 per kilowatt-hour?

    A. $5.328E+01

    B. $5.861E+01

    C. $6.447E+01

    D. $7.092E+01

    E. $7.801E+01

14. What is consumer cost to operate one 102-W incandescent bulb for 5 hours per day for 1 year (365 days) if the cost of electricity is $0.149 per kilowatt-hour?

    A. $2.292E+01

    B. $2.521E+01

    C. $2.774E+01

    D. $3.051E+01

    E. $3.356E+01

15. What is consumer cost to operate one 77-W incandescent bulb for 12 hours per day for 1 year (365 days) if the cost of electricity is $0.124 per kilowatt-hour?

    A. $3.142E+01

    B. $3.456E+01

    C. $3.802E+01

    D. $4.182E+01

    E. $4.600E+01

16. What is consumer cost to operate one 76-W incandescent bulb for 9 hours per day for 1 year (365 days) if the cost of electricity is $0.144 per kilowatt-hour?

    A. $3.595E+01

    B. $3.955E+01

    C. $4.350E+01

    D. $4.785E+01

    E. $5.264E+01

17. What is consumer cost to operate one 104-W incandescent bulb for 6 hours per day for 1 year (365 days) if the cost of electricity is $0.136 per kilowatt-hour?

    A. $2.116E+01

    B. $2.327E+01

    C. $2.560E+01

    D. $2.816E+01

    E. $3.098E+01

18. What is consumer cost to operate one 69-W incandescent bulb for 7 hours per day for 1 year (365 days) if the cost of electricity is $0.117 per kilowatt-hour?

    A. $2.063E+01

The next page might contain more answer choices for this question

B. \$2.269E+01

C. \$2.496E+01

D. \$2.745E+01

E. \$3.020E+01

19. What is consumer cost to operate one 105-W incandescent bulb for 11 hours per day for 1 year (365 days) if the cost of electricity is \$0.131 per kilowatt-hour?

A. \$5.021E+01

B. \$5.523E+01

C. \$6.075E+01

D. \$6.682E+01

E. \$7.351E+01

14 d_cp2.gaussC

1. If Gauss' law can be reduced to an algebraic expression that easily calculates the electric field ($\varepsilon_0 EA^* = \rho V^*$), $\vec{E}$ was calculated inside the Gaussian surface[93]

A. True

B. False

2. If Gauss' law can be reduced to an algebraic expression that easily calculates the electric field ($\varepsilon_0 EA^* = \rho V^*$), $\vec{E}$ was calculated outside the Gaussian surface[94]

A. True

B. False

3. If Gauss' law can be reduced to an algebraic expression that easily calculates the electric field ($\varepsilon_0 EA^* = \rho V^*$), $\vec{E}$ was calculated on the Gaussian surface[95]

A. True

B. False

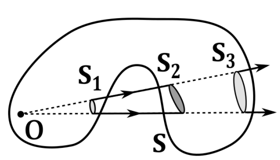
4. If Gauss' law can be reduced to an algebraic expression that easily calculates the electric field ($\varepsilon_0 EA^* = \rho V^*$), $\vec{E}$ had[96]

A. constant direction and magnitude over the entire Gaussian surface

B. constant magnitude over a portion of the Gaussian surface

C. constant direction over a portion of the Gaussian surface

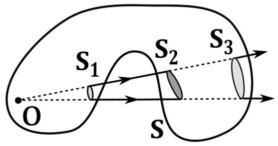
D. constant in direction over the entire Gaussian surface

5. 

In this description of the flux element, $d\vec{S} = \hat{n} dA_j$ (j=1,2,3) where $\hat{n}$ is the outward unit normal, and a positive charge is assumed at point "'O"', inside the Gaussian surface shown. The field lines exit at S_1 and S_3 but enter at S_2. In this figure, $dA_1 = dA_3$[97]

A. True

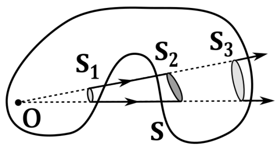
B. False

6. 

In this description of the flux element, $d\vec{S} = \hat{n}dA_j$ (j=1,2,3) where $\hat{n}$ is the outward unit normal, and a positive charge is assumed at point "'O"', inside the Gaussian surface shown. The field lines exit at S_1 and S_3 but enter at S_2. In this figure, $\vec{E}_1 \cdot d\vec{A}_1 = \vec{E}_3 \cdot d\vec{A}_3$ [98]

   A. True

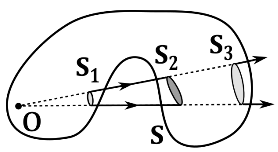
   B. False

7. 

In this description of the flux element, $d\vec{S} = \hat{n}dA_j$ (j=1,2,3) where $\hat{n}$ is the outward unit normal, and a positive charge is assumed at point "'O"', inside the Gaussian surface shown. The field lines exit at S_1 and S_3 but enter at S_2. In this figure, $\vec{E}_1 \cdot d\vec{A}_1 + \vec{E}_3 \cdot d\vec{A}_3 = 0$[99]

   A. True

   B. False

8. 

In this description of the flux element, $d\vec{S} = \hat{n}dA_j$ (j=1,2,3) where $\hat{n}$ is the outward unit normal, and a positive charge is assumed at point "'O"', inside the Gaussian surface shown. The field lines exit at S_1 and S_3 but enter at S_2. In this figure, $\vec{E}_1 \cdot d\vec{A}_1 + \vec{E}_2 \cdot d\vec{A}_3 = 0$ [100]

   A. True

   B. False

15 a20ElectricCurrentResistivityOhm_PowerDriftVel

1. A 4 volt battery moves 27 Coulombs of charge in 2.6 hours. What is the power?[101]

   A. 7.86 x 10^{-3} W

   B. 9.52 x 10^{-3} W

   C. 1.15 x 10^{-2} W

   D. 1.4 x 10^{-2} W

   E. 1.69 x 10^{-2} W

2. The diameter of a copper wire is 5.5 mm, and it carries a current of 76 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)[102]

   A. 1.35 x 10^{-4}m/s

   B. 1.63 x 10^{-4}m/s

   C. 1.98 x 10^{-4}m/s

   D. 2.39 x 10^{-4}m/s

   E. 2.9 x 10^{-4}m/s

3. A 168 Watt DC motor draws 0.3 amps of current. What is effective resistance?[103]

The next page might contain more answer choices for this question

A. 1.87 x 10^{3} Ω
B. 2.26 x 10^{3} Ω
C. 2.74 x 10^{3} Ω
D. 3.32 x 10^{3} Ω
E. 4.02 x 10^{3} Ω

4. A power supply delivers 113 watts of power to a 104 ohm resistor. What was the applied voltage?[104]
   A. 5.03 x 10^{1} volts
   B. 6.1 x 10^{1} volts
   C. 7.39 x 10^{1} volts
   D. 8.95 x 10^{1} volts
   E. 1.08 x 10^{2} volts

15.1 Renditions

a20ElectricCurrentResistivityOhm_PowerDriftVel Q1

1. A 5.3 volt battery moves 11 Coulombs of charge in 2.1 hours. What is the power?
   A. 7.71 x 10^{-3} W
   B. 9.34 x 10^{-3} W
   C. 1.13 x 10^{-2} W
   D. 1.37 x 10^{-2} W
   E. 1.66 x 10^{-2} W
2. A 1.4 volt battery moves 87 Coulombs of charge in 2 hours. What is the power?
   A. 7.85 x 10^{-3} W
   B. 9.51 x 10^{-3} W
   C. 1.15 x 10^{-2} W
   D. 1.4 x 10^{-2} W
   E. 1.69 x 10^{-2} W
3. A 5.8 volt battery moves 95 Coulombs of charge in 0.3 hours. What is the power?
   A. 4.21 x 10^{-1} W
   B. 5.1 x 10^{-1} W
   C. 6.18 x 10^{-1} W
   D. 7.49 x 10^{-1} W
   E. 9.07 x 10^{-1} W
4. A 4.7 volt battery moves 50 Coulombs of charge in 1.3 hours. What is the power?
   A. 4.14 x 10^{-2} W
   B. 5.02 x 10^{-2} W
   C. 6.08 x 10^{-2} W
   D. 7.37 x 10^{-2} W
   E. 8.93 x 10^{-2} W

The next page might contain more answer choices for this question

5. A 3.9 volt battery moves 90 Coulombs of charge in 2.2 hours. What is the power?
   A. 4.43×10^{-2} W
   B. 5.37×10^{-2} W
   C. 6.51×10^{-2} W
   D. 7.88×10^{-2} W
   E. 9.55×10^{-2} W

6. A 5.1 volt battery moves 43 Coulombs of charge in 1.5 hours. What is the power?
   A. 4.06×10^{-2} W
   B. 4.92×10^{-2} W
   C. 5.96×10^{-2} W
   D. 7.22×10^{-2} W
   E. 8.75×10^{-2} W

7. A 4 volt battery moves 19 Coulombs of charge in 1.3 hours. What is the power?
   A. 1.62×10^{-2} W
   B. 1.97×10^{-2} W
   C. 2.38×10^{-2} W
   D. 2.89×10^{-2} W
   E. 3.5×10^{-2} W

8. A 3.1 volt battery moves 52 Coulombs of charge in 1.7 hours. What is the power?
   A. 1.79×10^{-2} W
   B. 2.17×10^{-2} W
   C. 2.63×10^{-2} W
   D. 3.19×10^{-2} W
   E. 3.87×10^{-2} W

9. A 3.1 volt battery moves 40 Coulombs of charge in 0.9 hours. What is the power?
   A. 2.61×10^{-2} W
   B. 3.16×10^{-2} W
   C. 3.83×10^{-2} W
   D. 4.64×10^{-2} W
   E. 5.62×10^{-2} W

a20ElectricCurrentResistivityOhm_PowerDriftVel Q2

1. The diameter of a copper wire is 1.7 mm, and it carries a current of 92 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
   A. 2.07×10^{-3}m/s
   B. 2.5×10^{-3}m/s
   C. 3.03×10^{-3}m/s

The next page might contain more answer choices for this question

D. 3.67×10^{-3}m/s
E. 4.45×10^{-3}m/s

2. The diameter of a copper wire is 8.7 mm, and it carries a current of 22 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
   A. 2.77×10^{-5}m/s
   B. 3.36×10^{-5}m/s
   C. 4.06×10^{-5}m/s
   D. 4.92×10^{-5}m/s
   E. 5.97×10^{-5}m/s
3. The diameter of a copper wire is 3.6 mm, and it carries a current of 52 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
   A. 3.82×10^{-4}m/s
   B. 4.63×10^{-4}m/s
   C. 5.61×10^{-4}m/s
   D. 6.8×10^{-4}m/s
   E. 8.24×10^{-4}m/s
4. The diameter of a copper wire is 9.9 mm, and it carries a current of 41 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
   A. 2.24×10^{-5}m/s
   B. 2.72×10^{-5}m/s
   C. 3.29×10^{-5}m/s
   D. 3.99×10^{-5}m/s
   E. 4.83×10^{-5}m/s
5. The diameter of a copper wire is 9.2 mm, and it carries a current of 64 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
   A. 4.91×10^{-5}m/s
   B. 5.95×10^{-5}m/s
   C. 7.2×10^{-5}m/s
   D. 8.73×10^{-5}m/s
   E. 1.06×10^{-4}m/s
6. The diameter of a copper wire is 3.8 mm, and it carries a current of 88 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)
   A. 2.7×10^{-4}m/s
   B. 3.27×10^{-4}m/s
   C. 3.96×10^{-4}m/s

The next page might contain more answer choices for this question

D. 4.79 x 10^{-4}m/s

E. 5.81 x 10^{-4}m/s

7. The diameter of a copper wire is 1.9 mm, and it carries a current of 33 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)

A. 5.93 x 10^{-4}m/s

B. 7.19 x 10^{-4}m/s

C. 8.71 x 10^{-4}m/s

D. 1.06 x 10^{-3}m/s

E. 1.28 x 10^{-3}m/s

8. The diameter of a copper wire is 7.4 mm, and it carries a current of 38 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)

A. 3.07 x 10^{-5}m/s

B. 3.72 x 10^{-5}m/s

C. 4.5 x 10^{-5}m/s

D. 5.46 x 10^{-5}m/s

E. 6.61 x 10^{-5}m/s

9. The diameter of a copper wire is 8.3 mm, and it carries a current of 87 amps. What is the drift velocity if copper has a density of 8.8E3 kg/m^3 and an atomic mass of 63.54 g/mol? (1 mol = 6.02E23 atoms, and copper has one free electron per atom.)

A. 6.77 x 10^{-5}m/s

B. 8.2 x 10^{-5}m/s

C. 9.93 x 10^{-5}m/s

D. 1.2 x 10^{-4}m/s

E. 1.46 x 10^{-4}m/s

a20ElectricCurrentResistivityOhm_PowerDriftVel Q3

1. A 164 Watt DC motor draws 0.25 amps of current. What is effective resistance?

A. 1.22 x 10^3 Ω

B. 1.48 x 10^3 Ω

C. 1.79 x 10^3 Ω

D. 2.17 x 10^3 Ω

E. 2.62 x 10^3 Ω

2. A 162 Watt DC motor draws 0.41 amps of current. What is effective resistance?

A. 5.42 x 10^2 Ω

B. 6.57 x 10^2 Ω

C. 7.95 x 10^2 Ω

D. 9.64 x 10^2 Ω

The next page might contain more answer choices for this question

E. $1.17 \times 10^3\ \Omega$

3. A 195 Watt DC motor draws 0.49 amps of current. What is effective resistance?
   A. $8.12 \times 10^2\ \Omega$
   B. $9.84 \times 10^2\ \Omega$
   C. $1.19 \times 10^3\ \Omega$
   D. $1.44 \times 10^3\ \Omega$
   E. $1.75 \times 10^3\ \Omega$

4. A 130 Watt DC motor draws 0.3 amps of current. What is effective resistance?
   A. $8.12 \times 10^2\ \Omega$
   B. $9.84 \times 10^2\ \Omega$
   C. $1.19 \times 10^3\ \Omega$
   D. $1.44 \times 10^3\ \Omega$
   E. $1.75 \times 10^3\ \Omega$

5. A 104 Watt DC motor draws 0.13 amps of current. What is effective resistance?
   A. $3.46 \times 10^3\ \Omega$
   B. $4.19 \times 10^3\ \Omega$
   C. $5.08 \times 10^3\ \Omega$
   D. $6.15 \times 10^3\ \Omega$
   E. $7.46 \times 10^3\ \Omega$

6. A 196 Watt DC motor draws 0.35 amps of current. What is effective resistance?
   A. $1.6 \times 10^3\ \Omega$
   B. $1.94 \times 10^3\ \Omega$
   C. $2.35 \times 10^3\ \Omega$
   D. $2.85 \times 10^3\ \Omega$
   E. $3.45 \times 10^3\ \Omega$

7. A 171 Watt DC motor draws 0.47 amps of current. What is effective resistance?
   A. $7.74 \times 10^2\ \Omega$
   B. $9.38 \times 10^2\ \Omega$
   C. $1.14 \times 10^3\ \Omega$
   D. $1.38 \times 10^3\ \Omega$
   E. $1.67 \times 10^3\ \Omega$

8. A 129 Watt DC motor draws 0.22 amps of current. What is effective resistance?
   A. $2.2 \times 10^3\ \Omega$
   B. $2.67 \times 10^3\ \Omega$
   C. $3.23 \times 10^3\ \Omega$
   D. $3.91 \times 10^3\ \Omega$
   E. $4.74 \times 10^3\ \Omega$

The next page might contain more answer choices for this question

9. A 146 Watt DC motor draws 0.23 amps of current. What is effective resistance?
   - A. 2.28 x 10^3 Ω
   - **B. 2.76 x 10^3 Ω**
   - C. 3.34 x 10^3 Ω
   - D. 4.05 x 10^3 Ω
   - E. 4.91 x 10^3 Ω

a20ElectricCurrentResistivityOhm_PowerDriftVel Q4

1. A power supply delivers 149 watts of power to a 153 ohm resistor. What was the applied voltage?
   - A. 8.49 x 10^1 volts
   - B. 1.03 x 10^2 volts
   - C. 1.25 x 10^2 volts
   - **D. 1.51 x 10^2 volts**
   - E. 1.83 x 10^2 volts
2. A power supply delivers 101 watts of power to a 219 ohm resistor. What was the applied voltage?
   - **A. 1.49 x 10^2 volts**
   - B. 1.8 x 10^2 volts
   - C. 2.18 x 10^2 volts
   - D. 2.64 x 10^2 volts
   - E. 3.2 x 10^2 volts
3. A power supply delivers 145 watts of power to a 132 ohm resistor. What was the applied voltage?
   - A. 6.42 x 10^1 volts
   - B. 7.78 x 10^1 volts
   - C. 9.43 x 10^1 volts
   - D. 1.14 x 10^2 volts
   - **E. 1.38 x 10^2 volts**
4. A power supply delivers 145 watts of power to a 244 ohm resistor. What was the applied voltage?
   - **A. 1.88 x 10^2 volts**
   - B. 2.28 x 10^2 volts
   - C. 2.76 x 10^2 volts
   - D. 3.34 x 10^2 volts
   - E. 4.05 x 10^2 volts
5. A power supply delivers 138 watts of power to a 206 ohm resistor. What was the applied voltage?
   - A. 1.39 x 10^2 volts
   - **B. 1.69 x 10^2 volts**
   - C. 2.04 x 10^2 volts
   - D. 2.47 x 10^2 volts
   - E. 3 x 10^2 volts

The next page might contain more answer choices for this question

6. A power supply delivers 187 watts of power to a 287 ohm resistor. What was the applied voltage?
   - **A. 2.32 x 10^2 volts**
   - B. 2.81 x 10^2 volts
   - C. 3.4 x 10^2 volts
   - D. 4.12 x 10^2 volts
   - E. 4.99 x 10^2 volts
7. A power supply delivers 169 watts of power to a 219 ohm resistor. What was the applied voltage?
   - A. 8.93 x 10^1 volts
   - B. 1.08 x 10^2 volts
   - C. 1.31 x 10^2 volts
   - D. 1.59 x 10^2 volts
   - **E. 1.92 x 10^2 volts**
8. A power supply delivers 110 watts of power to a 299 ohm resistor. What was the applied voltage?
   - A. 8.42 x 10^1 volts
   - B. 1.02 x 10^2 volts
   - C. 1.24 x 10^2 volts
   - D. 1.5 x 10^2 volts
   - **E. 1.81 x 10^2 volts**
9. A power supply delivers 114 watts of power to a 294 ohm resistor. What was the applied voltage?
   - A. 1.25 x 10^2 volts
   - B. 1.51 x 10^2 volts
   - **C. 1.83 x 10^2 volts**
   - D. 2.22 x 10^2 volts
   - E. 2.69 x 10^2 volts

16 d_cp2.10

1. A given battery has a 12 V emf and an internal resistance of 0.1 Ω . If it is connected to a 0.5 Ω resistor what is the power dissipated by that load?[105]
   - A. 1.503E+02 W
   - B. 1.653E+02 W
   - C. 1.818E+02 W
   - **D. 2.000E+02 W**
   - E. 2.200E+02 W
2. A battery with a terminal voltage of 9 V is connected to a circuit consisting of 4 20 Ω resistors and one 10 Ω resistor. What is the voltage drop across the 10 Ω resistor?[106]
   - A. 7.513E-01 V
   - B. 8.264E-01 V
   - C. 9.091E-01 V

The next page might contain more answer choices for this question

D. 1.000E+00 V

E. 1.100E+00 V

3. Three resistors, $R_1 = 1\,\Omega$, and $R_2 = R_2 = 2\,\Omega$, are connected in parallel to a 3 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.) [107]

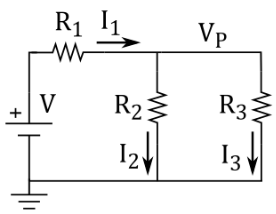
A. 6.762E+00 W

B. 7.438E+00 W

C. 8.182E+00 W

D. 9.000E+00 W

E. 9.900E+00 W



4. In the circuit shown V=12 V, R_1=1 Ω , R_2=6 Ω , and R_3=13 Ω . What is the power dissipated by R_2?[108]

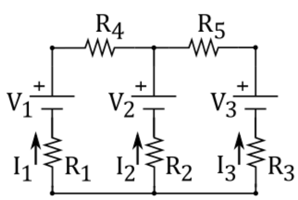
A. 1.552E+01 W

B. 1.707E+01 W

C. 1.878E+01 W

D. 2.066E+01 W

E. 2.272E+01 W



5. The resistances in the figure shown are R_1= 2 Ω , R_2= 1 Ω , and R_2= 3 Ω . V_1 and V_3 are text 0.5 V and 2.3 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.6 V. What is the absolute value of the current through R_1?[109]

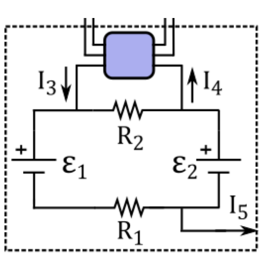
A. 1.653E-01 A

B. 1.818E-01 A

C. 2.000E-01 A

D. 2.200E-01 A

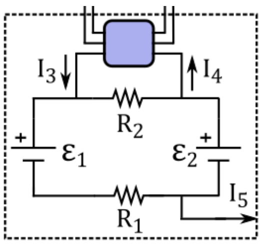
E. 2.420E-01 A



6. Two sources of emf ε_1=22.5 V, and ε_2=10 V are oriented as shown in the circuit. The resistances are R_1=2 kΩ and R_2=1 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=5.0 mA and I_4=1.25 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?[110]

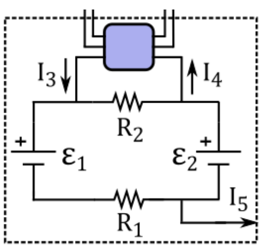
The next page might contain more answer choices for this question

A. 3.099E+00 mA
B. 3.409E+00 mA
C. 3.750E+00 mA
D. 4.125E+00 mA
E. 4.538E+00 mA

7. 

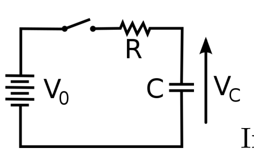
Two sources of emf ε_1=22.5 V, and ε_2=10 V are oriented as shown in the circuit. The resistances are R_1=2 kΩ and R_2=1 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=5.0 mA and I_4=1.25 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?[111]

A. 5.000E+00 V
B. 5.500E+00 V
C. 6.050E+00 V
D. 6.655E+00 V
E. 7.321E+00 V

8. 

Two sources of emf ε_1=22.5 V, and ε_2=10 V are oriented as shown in the circuit. The resistances are R_1=2 kΩ and R_2=1 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=5.0 mA and I_4=1.25 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?[112]

A. 6.198E+00 V
B. 6.818E+00 V
C. 7.500E+00 V
D. 8.250E+00 V
E. 9.075E+00 V

9. 

In the circuit shown the voltage across the capaciator is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 100 V. If the combined external and internal resistance is 101 Ω and the capacitance is 50 mF, how long will it take for the capacitor's voltage to reach 80 V?[113]

A. 8.128E+00 s
B. 8.940E+00 s
C. 9.834E+00 s
D. 1.082E+01 s
E. 1.190E+01 s

The next page might contain more answer choices for this question

16.1 Renditions

d_cp2.10 Q1

1. A given battery has a 12 V emf and an internal resistance of 0.193 Ω . If it is connected to a 0.89 Ω resistor what is the power dissipated by that load?
   - A. 8.210E+01 W
   - B. 9.030E+01 W
   - C. 9.934E+01 W
   - **D. 1.093E+02 W**
   - E. 1.202E+02 W
2. A given battery has a 14 V emf and an internal resistance of 0.0842 Ω . If it is connected to a 0.835 Ω resistor what is the power dissipated by that load?
   - A. 1.455E+02 W
   - B. 1.601E+02 W
   - C. 1.761E+02 W
   - **D. 1.937E+02 W**
   - E. 2.131E+02 W
3. A given battery has a 13 V emf and an internal resistance of 0.159 Ω . If it is connected to a 0.617 Ω resistor what is the power dissipated by that load?
   - A. 1.301E+02 W
   - B. 1.431E+02 W
   - C. 1.574E+02 W
   - **D. 1.732E+02 W**
   - E. 1.905E+02 W
4. A given battery has a 12 V emf and an internal resistance of 0.107 Ω . If it is connected to a 0.814 Ω resistor what is the power dissipated by that load?
   - **A. 1.382E+02 W**
   - B. 1.520E+02 W
   - C. 1.672E+02 W
   - D. 1.839E+02 W
   - E. 2.023E+02 W
5. A given battery has a 14 V emf and an internal resistance of 0.198 Ω . If it is connected to a 0.534 Ω resistor what is the power dissipated by that load?
   - A. 1.776E+02 W
   - **B. 1.953E+02 W**
   - C. 2.149E+02 W
   - D. 2.364E+02 W
   - E. 2.600E+02 W
6. A given battery has a 13 V emf and an internal resistance of 0.106 Ω . If it is connected to a 0.752 Ω resistor what is the power dissipated by that load?

The next page might contain more answer choices for this question

A. 1.569E+02 W
B. 1.726E+02 W
C. 1.899E+02 W
D. 2.089E+02 W
E. 2.298E+02 W

7. A given battery has a 15 V emf and an internal resistance of 0.162 Ω . If it is connected to a 0.561 Ω resistor what is the power dissipated by that load?
A. 1.814E+02 W
B. 1.996E+02 W
C. 2.195E+02 W
D. 2.415E+02 W
E. 2.656E+02 W

8. A given battery has a 11 V emf and an internal resistance of 0.0998 Ω . If it is connected to a 0.417 Ω resistor what is the power dissipated by that load?
A. 1.419E+02 W
B. 1.561E+02 W
C. 1.717E+02 W
D. 1.889E+02 W
E. 2.078E+02 W

9. A given battery has a 15 V emf and an internal resistance of 0.113 Ω . If it is connected to a 0.645 Ω resistor what is the power dissipated by that load?
A. 1.898E+02 W
B. 2.087E+02 W
C. 2.296E+02 W
D. 2.526E+02 W
E. 2.778E+02 W

10. A given battery has a 14 V emf and an internal resistance of 0.132 Ω . If it is connected to a 0.689 Ω resistor what is the power dissipated by that load?
A. 1.656E+02 W
B. 1.821E+02 W
C. 2.003E+02 W
D. 2.204E+02 W
E. 2.424E+02 W

11. A given battery has a 14 V emf and an internal resistance of 0.192 Ω . If it is connected to a 0.766 Ω resistor what is the power dissipated by that load?
A. 1.229E+02 W
B. 1.352E+02 W
C. 1.487E+02 W
D. 1.636E+02 W

The next page might contain more answer choices for this question

E. 1.799E+02 W

12. A given battery has a 13 V emf and an internal resistance of 0.161 Ω . If it is connected to a 0.814 Ω resistor what is the power dissipated by that load?

A. 1.087E+02 W

B. 1.196E+02 W

C. 1.316E+02 W

D. 1.447E+02 W

E. 1.592E+02 W

13. A given battery has a 12 V emf and an internal resistance of 0.0984 Ω . If it is connected to a 0.485 Ω resistor what is the power dissipated by that load?

A. 2.052E+02 W

B. 2.257E+02 W

C. 2.483E+02 W

D. 2.731E+02 W

E. 3.004E+02 W

14. A given battery has a 15 V emf and an internal resistance of 0.177 Ω . If it is connected to a 0.824 Ω resistor what is the power dissipated by that load?

A. 1.682E+02 W

B. 1.850E+02 W

C. 2.035E+02 W

D. 2.239E+02 W

E. 2.463E+02 W

15. A given battery has a 15 V emf and an internal resistance of 0.0536 Ω . If it is connected to a 0.64 Ω resistor what is the power dissipated by that load?

A. 2.721E+02 W

B. 2.993E+02 W

C. 3.293E+02 W

D. 3.622E+02 W

E. 3.984E+02 W

16. A given battery has a 9 V emf and an internal resistance of 0.141 Ω . If it is connected to a 0.663 Ω resistor what is the power dissipated by that load?

A. 5.674E+01 W

B. 6.242E+01 W

C. 6.866E+01 W

D. 7.553E+01 W

E. 8.308E+01 W

17. A given battery has a 9 V emf and an internal resistance of 0.16 Ω . If it is connected to a 0.45 Ω resistor what is the power dissipated by that load?

A. 6.691E+01 W

The next page might contain more answer choices for this question

B. 7.360E+01 W

C. 8.096E+01 W

D. 8.905E+01 W

E. 9.796E+01 W

18. A given battery has a 10 V emf and an internal resistance of 0.119 Ω . If it is connected to a 0.445 Ω resistor what is the power dissipated by that load?

A. 1.272E+02 W

B. 1.399E+02 W

C. 1.539E+02 W

D. 1.693E+02 W

E. 1.862E+02 W

19. A given battery has a 13 V emf and an internal resistance of 0.113 Ω . If it is connected to a 0.686 Ω resistor what is the power dissipated by that load?

A. 1.501E+02 W

B. 1.651E+02 W

C. 1.816E+02 W

D. 1.998E+02 W

E. 2.197E+02 W

d_cp2.10 Q2

1. A battery with a terminal voltage of 14.9 V is connected to a circuit consisting of 2 23.3 Ω resistors and one 13.6 Ω resistor. What is the voltage drop across the 13.6 Ω resistor?

A. 3.366E+00 V

B. 3.703E+00 V

C. 4.073E+00 V

D. 4.480E+00 V

E. 4.928E+00 V

2. A battery with a terminal voltage of 8.14 V is connected to a circuit consisting of 2 21.5 Ω resistors and one 13.1 Ω resistor. What is the voltage drop across the 13.1 Ω resistor?

A. 1.298E+00 V

B. 1.428E+00 V

C. 1.571E+00 V

D. 1.728E+00 V

E. 1.901E+00 V

3. A battery with a terminal voltage of 14.1 V is connected to a circuit consisting of 3 15.7 Ω resistors and one 10.2 Ω resistor. What is the voltage drop across the 10.2 Ω resistor?

A. 2.074E+00 V

B. 2.282E+00 V

C. 2.510E+00 V

The next page might contain more answer choices for this question

D. 2.761E+00 V

E. 3.037E+00 V

4. A battery with a terminal voltage of 8.72 V is connected to a circuit consisting of 2 15.8 Ω resistors and one 9.58 Ω resistor. What is the voltage drop across the 9.58 Ω resistor?

   A. 1.677E+00 V

   B. 1.844E+00 V

   C. 2.029E+00 V

   D. 2.231E+00 V

   E. 2.455E+00 V

5. A battery with a terminal voltage of 8.41 V is connected to a circuit consisting of 3 16.1 Ω resistors and one 10.9 Ω resistor. What is the voltage drop across the 10.9 Ω resistor?

   A. 1.058E+00 V

   B. 1.163E+00 V

   C. 1.280E+00 V

   D. 1.408E+00 V

   E. 1.548E+00 V

6. A battery with a terminal voltage of 6.49 V is connected to a circuit consisting of 3 18.0 Ω resistors and one 10.3 Ω resistor. What is the voltage drop across the 10.3 Ω resistor?

   A. 7.101E-01 V

   B. 7.811E-01 V

   C. 8.592E-01 V

   D. 9.451E-01 V

   E. 1.040E+00 V

7. A battery with a terminal voltage of 9.88 V is connected to a circuit consisting of 3 15.9 Ω resistors and one 10.8 Ω resistor. What is the voltage drop across the 10.8 Ω resistor?

   A. 1.370E+00 V

   B. 1.507E+00 V

   C. 1.658E+00 V

   D. 1.824E+00 V

   E. 2.006E+00 V

8. A battery with a terminal voltage of 8.01 V is connected to a circuit consisting of 3 22.1 Ω resistors and one 14.5 Ω resistor. What is the voltage drop across the 14.5 Ω resistor?

   A. 9.818E-01 V

   B. 1.080E+00 V

   C. 1.188E+00 V

   D. 1.307E+00 V

   E. 1.437E+00 V

9. A battery with a terminal voltage of 14.1 V is connected to a circuit consisting of 2 20.3 Ω resistors and one 13.1 Ω resistor. What is the voltage drop across the 13.1 Ω resistor?

The next page might contain more answer choices for this question

A. 2.843E+00 V
B. 3.127E+00 V
C. 3.440E+00 V
D. 3.784E+00 V
E. 4.162E+00 V

10. A battery with a terminal voltage of 13.2 V is connected to a circuit consisting of 3 15.7 Ω resistors and one 10.3 Ω resistor. What is the voltage drop across the 10.3 Ω resistor?
A. 1.958E+00 V
B. 2.153E+00 V
C. 2.369E+00 V
D. 2.606E+00 V
E. 2.866E+00 V

11. A battery with a terminal voltage of 7.82 V is connected to a circuit consisting of 2 19.3 Ω resistors and one 12.2 Ω resistor. What is the voltage drop across the 12.2 Ω resistor?
A. 1.552E+00 V
B. 1.707E+00 V
C. 1.878E+00 V
D. 2.066E+00 V
E. 2.272E+00 V

12. A battery with a terminal voltage of 10.6 V is connected to a circuit consisting of 2 21.1 Ω resistors and one 12.8 Ω resistor. What is the voltage drop across the 12.8 Ω resistor?
A. 2.467E+00 V
B. 2.714E+00 V
C. 2.985E+00 V
D. 3.283E+00 V
E. 3.612E+00 V

13. A battery with a terminal voltage of 8.66 V is connected to a circuit consisting of 3 19.6 Ω resistors and one 10.6 Ω resistor. What is the voltage drop across the 10.6 Ω resistor?
A. 1.202E+00 V
B. 1.323E+00 V
C. 1.455E+00 V
D. 1.600E+00 V
E. 1.761E+00 V

14. A battery with a terminal voltage of 10.7 V is connected to a circuit consisting of 2 24.5 Ω resistors and one 15.2 Ω resistor. What is the voltage drop across the 15.2 Ω resistor?
A. 1.730E+00 V
B. 1.903E+00 V
C. 2.094E+00 V
D. 2.303E+00 V

The next page might contain more answer choices for this question

E. 2.533E+00 V

15. A battery with a terminal voltage of 14.6 V is connected to a circuit consisting of 2 21.7 Ω resistors and one 14.4 Ω resistor. What is the voltage drop across the 14.4 Ω resistor?

A. 3.637E+00 V

B. 4.001E+00 V

C. 4.401E+00 V

D. 4.841E+00 V

E. 5.325E+00 V

16. A battery with a terminal voltage of 7.63 V is connected to a circuit consisting of 3 20.9 Ω resistors and one 12.1 Ω resistor. What is the voltage drop across the 12.1 Ω resistor?

A. 1.234E+00 V

B. 1.358E+00 V

C. 1.493E+00 V

D. 1.643E+00 V

E. 1.807E+00 V

17. A battery with a terminal voltage of 14.9 V is connected to a circuit consisting of 2 16.3 Ω resistors and one 9.8 Ω resistor. What is the voltage drop across the 9.8 Ω resistor?

A. 2.352E+00 V

B. 2.587E+00 V

C. 2.846E+00 V

D. 3.131E+00 V

E. 3.444E+00 V

18. A battery with a terminal voltage of 7.63 V is connected to a circuit consisting of 2 15.9 Ω resistors and one 10.4 Ω resistor. What is the voltage drop across the 10.4 Ω resistor?

A. 1.709E+00 V

B. 1.880E+00 V

C. 2.068E+00 V

D. 2.275E+00 V

E. 2.503E+00 V

19. A battery with a terminal voltage of 12.4 V is connected to a circuit consisting of 3 21.6 Ω resistors and one 12.1 Ω resistor. What is the voltage drop across the 12.1 Ω resistor?

A. 1.333E+00 V

B. 1.466E+00 V

C. 1.612E+00 V

D. 1.774E+00 V

E. 1.951E+00 V

The next page might contain more answer choices for this question

d_cp2.10 Q3

1. Three resistors, $R_1 = 1.7\,\Omega$, and $R_2 = R_2 = 3.75\,\Omega$, are connected in parallel to a 9.74 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
   - A. 4.193E+01 W
   - B. 4.612E+01 W
   - C. 5.073E+01 W
   - **D. 5.580E+01 W**
   - E. 6.138E+01 W
2. Three resistors, $R_1 = 0.672\,\Omega$, and $R_2 = R_2 = 1.52\,\Omega$, are connected in parallel to a 5.34 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
   - A. 2.898E+01 W
   - B. 3.188E+01 W
   - C. 3.507E+01 W
   - D. 3.858E+01 W
   - **E. 4.243E+01 W**
3. Three resistors, $R_1 = 1.82\,\Omega$, and $R_2 = R_2 = 4.14\,\Omega$, are connected in parallel to a 5.65 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
   - **A. 1.754E+01 W**
   - B. 1.929E+01 W
   - C. 2.122E+01 W
   - D. 2.335E+01 W
   - E. 2.568E+01 W
4. Three resistors, $R_1 = 0.61\,\Omega$, and $R_2 = R_2 = 1.35\,\Omega$, are connected in parallel to a 7.04 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
   - A. 7.386E+01 W
   - **B. 8.125E+01 W**
   - C. 8.937E+01 W
   - D. 9.831E+01 W
   - E. 1.081E+02 W
5. Three resistors, $R_1 = 0.624\,\Omega$, and $R_2 = R_2 = 1.37\,\Omega$, are connected in parallel to a 7.46 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
   - A. 7.371E+01 W
   - B. 8.108E+01 W
   - **C. 8.919E+01 W**
   - D. 9.810E+01 W
   - E. 1.079E+02 W
6. Three resistors, $R_1 = 0.87\,\Omega$, and $R_2 = R_2 = 2.0\,\Omega$, are connected in parallel to a 8.57 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
   - A. 6.977E+01 W

The next page might contain more answer choices for this question

B. 7.674E+01 W

C. 8.442E+01 W

D. 9.286E+01 W

E. 1.021E+02 W

7. Three resistors, $R_1 = 1.41\,\Omega$, and $R_2 = R_2 = 3.17\,\Omega$, are connected in parallel to a 5.89 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)

   A. 1.681E+01 W

   B. 1.849E+01 W

   C. 2.033E+01 W

   D. 2.237E+01 W

   E. 2.460E+01 W

8. Three resistors, $R_1 = 1.74\,\Omega$, and $R_2 = R_2 = 3.92\,\Omega$, are connected in parallel to a 8.5 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)

   A. 2.836E+01 W

   B. 3.120E+01 W

   C. 3.432E+01 W

   D. 3.775E+01 W

   E. 4.152E+01 W

9. Three resistors, $R_1 = 0.906\,\Omega$, and $R_2 = R_2 = 2.02\,\Omega$, are connected in parallel to a 5.98 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)

   A. 3.262E+01 W

   B. 3.588E+01 W

   C. 3.947E+01 W

   D. 4.342E+01 W

   E. 4.776E+01 W

10. Three resistors, $R_1 = 1.43\,\Omega$, and $R_2 = R_2 = 3.25\,\Omega$, are connected in parallel to a 9.03 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)

   A. 5.184E+01 W

   B. 5.702E+01 W

   C. 6.272E+01 W

   D. 6.900E+01 W

   E. 7.590E+01 W

11. Three resistors, $R_1 = 1.23\,\Omega$, and $R_2 = R_2 = 2.73\,\Omega$, are connected in parallel to a 5.41 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)

   A. 1.788E+01 W

   B. 1.967E+01 W

   C. 2.163E+01 W

   D. 2.380E+01 W

   E. 2.617E+01 W

The next page might contain more answer choices for this question

12. Three resistors, $R_1 = 1.39\,\Omega$, and $R_2 = R_2 = 3.06\,\Omega$, are connected in parallel to a 6.21 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
    - A. 2.293E+01 W
    - B. 2.522E+01 W
    - **C. 2.774E+01 W**
    - D. 3.052E+01 W
    - E. 3.357E+01 W

13. Three resistors, $R_1 = 1.2\,\Omega$, and $R_2 = R_2 = 2.75\,\Omega$, are connected in parallel to a 6.42 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
    - A. 2.581E+01 W
    - B. 2.839E+01 W
    - C. 3.122E+01 W
    - **D. 3.435E+01 W**
    - E. 3.778E+01 W

14. Three resistors, $R_1 = 1.31\,\Omega$, and $R_2 = R_2 = 2.91\,\Omega$, are connected in parallel to a 6.03 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
    - A. 2.294E+01 W
    - B. 2.523E+01 W
    - **C. 2.776E+01 W**
    - D. 3.053E+01 W
    - E. 3.359E+01 W

15. Three resistors, $R_1 = 1.52\,\Omega$, and $R_2 = R_2 = 3.38\,\Omega$, are connected in parallel to a 5.82 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
    - A. 1.842E+01 W
    - B. 2.026E+01 W
    - **C. 2.228E+01 W**
    - D. 2.451E+01 W
    - E. 2.696E+01 W

16. Three resistors, $R_1 = 0.686\,\Omega$, and $R_2 = R_2 = 1.58\,\Omega$, are connected in parallel to a 8.97 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
    - **A. 1.173E+02 W**
    - B. 1.290E+02 W
    - C. 1.419E+02 W
    - D. 1.561E+02 W
    - E. 1.717E+02 W

17. Three resistors, $R_1 = 0.855\,\Omega$, and $R_2 = R_2 = 1.91\,\Omega$, are connected in parallel to a 6.97 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)
    - **A. 5.682E+01 W**
    - B. 6.250E+01 W

The next page might contain more answer choices for this question

C. 6.875E+01 W
D. 7.563E+01 W
E. 8.319E+01 W

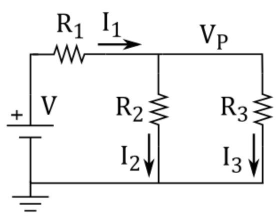
18. Three resistors, $R_1 = 1.25\,\Omega$, and $R_2 = R_2 = 2.82\,\Omega$, are connected in parallel to a 8.6 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)

A. 4.890E+01 W
B. 5.379E+01 W
C. 5.917E+01 W
D. 6.508E+01 W
E. 7.159E+01 W

19. Three resistors, $R_1 = 0.548\,\Omega$, and $R_2 = R_2 = 1.24\,\Omega$, are connected in parallel to a 7.16 V voltage source. Calculate the power dissipated by the smaller resistor (R_1.)

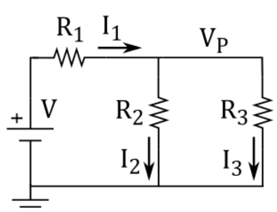
A. 7.029E+01 W
B. 7.731E+01 W
C. 8.505E+01 W
D. 9.355E+01 W
E. 1.029E+02 W

d_cp2.10 Q4

1. 

In the circuit shown V=19.9 V, R_1=1.69 Ω , R_2=7.02 Ω , and R_3=12.8 Ω . What is the power dissipated by R_2?

A. 2.993E+01 W
B. 3.293E+01 W
C. 3.622E+01 W
D. 3.984E+01 W
E. 4.383E+01 W

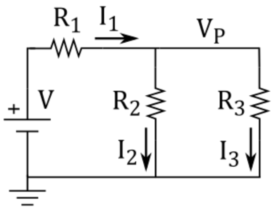
2. 

In the circuit shown V=11.9 V, R_1=2.75 Ω , R_2=7.19 Ω , and R_3=14.6 Ω . What is the power dissipated by R_2?

A. 7.982E+00 W
B. 8.780E+00 W
C. 9.658E+00 W

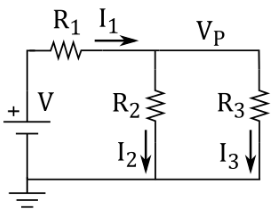
The next page might contain more answer choices for this question

D. 1.062E+01 W
E. 1.169E+01 W



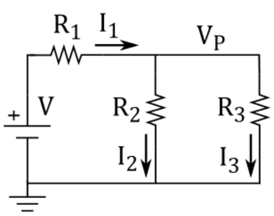
3. In the circuit shown V=18.4 V, R_1=1.64 Ω , R_2=6.56 Ω , and R_3=12.8 Ω . What is the power dissipated by R_2?

A. 2.470E+01 W
B. 2.717E+01 W
C. 2.989E+01 W
D. 3.288E+01 W
E. 3.617E+01 W



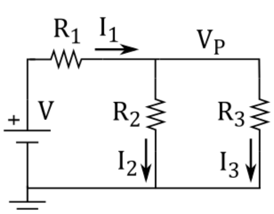
4. In the circuit shown V=16.1 V, R_1=1.18 Ω , R_2=5.28 Ω , and R_3=14.8 Ω . What is the power dissipated by R_2?

A. 2.172E+01 W
B. 2.389E+01 W
C. 2.628E+01 W
D. 2.891E+01 W
E. 3.180E+01 W



5. In the circuit shown V=17.8 V, R_1=2.27 Ω , R_2=6.79 Ω , and R_3=15.1 Ω . What is the power dissipated by R_2?

A. 1.446E+01 W
B. 1.591E+01 W
C. 1.750E+01 W
D. 1.925E+01 W
E. 2.117E+01 W



6. In the circuit shown V=15.4 V, R_1=2.55 Ω , R_2=5.12 Ω , and R_3=12.7 Ω . What is the power dissipated by R_2?

The next page might contain more answer choices for this question

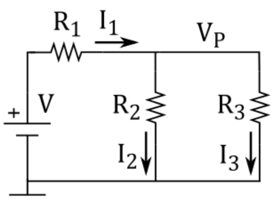
A. 1.096E+01 W

B. 1.206E+01 W

C. 1.326E+01 W

D. 1.459E+01 W

E. 1.605E+01 W



7. In the circuit shown V=15.2 V, R_1=1.6 Ω , R_2=7.89 Ω , and R_3=15.3 Ω . What is the power dissipated by R_2?

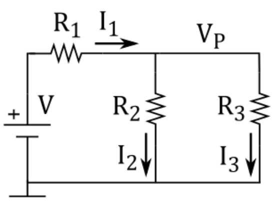
A. 1.713E+01 W

B. 1.885E+01 W

C. 2.073E+01 W

D. 2.280E+01 W

E. 2.508E+01 W



8. In the circuit shown V=15.8 V, R_1=1.86 Ω , R_2=7.66 Ω , and R_3=12.9 Ω . What is the power dissipated by R_2?

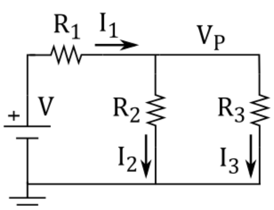
A. 1.157E+01 W

B. 1.273E+01 W

C. 1.400E+01 W

D. 1.540E+01 W

E. 1.694E+01 W



9. In the circuit shown V=19.6 V, R_1=1.45 Ω , R_2=7.85 Ω , and R_3=15.8 Ω . What is the power dissipated by R_2?

A. 2.730E+01 W

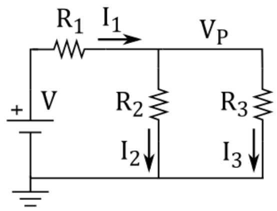
B. 3.003E+01 W

C. 3.304E+01 W

D. 3.634E+01 W

E. 3.998E+01 W

The next page might contain more answer choices for this question



10. In the circuit shown V=16.2 V, R_1=2.84 Ω , R_2=7.06 Ω , and R_3=13.1 Ω . What is the power dissipated by R_2?

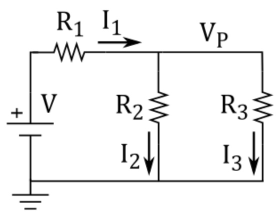
A. 1.418E+01 W

B. 1.560E+01 W

C. 1.716E+01 W

D. 1.887E+01 W

E. 2.076E+01 W



11. In the circuit shown V=18.8 V, R_1=2.59 Ω , R_2=5.47 Ω , and R_3=15.8 Ω . What is the power dissipated by R_2?

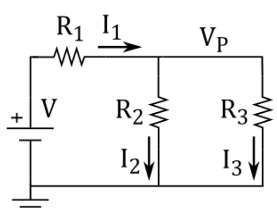
A. 2.191E+01 W

B. 2.410E+01 W

C. 2.651E+01 W

D. 2.916E+01 W

E. 3.208E+01 W



12. In the circuit shown V=11.8 V, R_1=2.38 Ω , R_2=5.11 Ω , and R_3=14.6 Ω . What is the power dissipated by R_2?

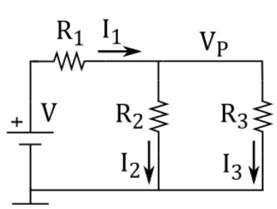
A. 8.489E+00 W

B. 9.338E+00 W

C. 1.027E+01 W

D. 1.130E+01 W

E. 1.243E+01 W



13. In the circuit shown V=17.5 V, R_1=2.34 Ω , R_2=7.1 Ω , and R_3=15.3 Ω . What is the power dissipated by R_2?

The next page might contain more answer choices for this question

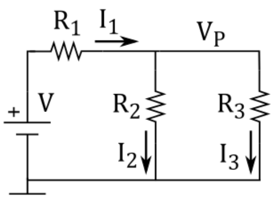
A. 1.784E+01 W

B. 1.963E+01 W

C. 2.159E+01 W

D. 2.375E+01 W

E. 2.612E+01 W



14. In the circuit shown V=10.8 V, R_1=1.26 Ω , R_2=5.65 Ω , and R_3=14.8 Ω . What is the power dissipated by R_2?

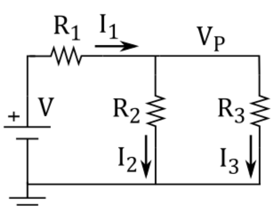
A. 8.240E+00 W

B. 9.064E+00 W

C. 9.970E+00 W

D. 1.097E+01 W

E. 1.206E+01 W



15. In the circuit shown V=17.9 V, R_1=1.3 Ω , R_2=5.1 Ω , and R_3=12.1 Ω . What is the power dissipated by R_2?

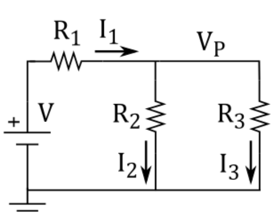
A. 2.543E+01 W

B. 2.798E+01 W

C. 3.077E+01 W

D. 3.385E+01 W

E. 3.724E+01 W



16. In the circuit shown V=17.9 V, R_1=1.68 Ω , R_2=7.84 Ω , and R_3=12.3 Ω . What is the power dissipated by R_2?

A. 2.240E+01 W

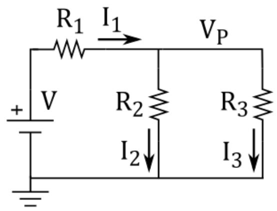
B. 2.464E+01 W

C. 2.710E+01 W

D. 2.981E+01 W

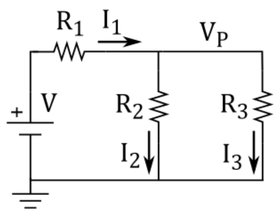
E. 3.279E+01 W

The next page might contain more answer choices for this question



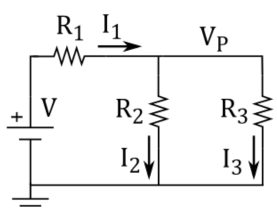
17. In the circuit shown V=13.5 V, R_1=2.66 Ω , R_2=7.29 Ω , and R_3=14.5 Ω . What is the power dissipated by R_2?

   A. 7.123E+00 W
   B. 7.835E+00 W
   C. 8.618E+00 W
   D. 9.480E+00 W
   E. 1.043E+01 W



18. In the circuit shown V=10.9 V, R_1=1.68 Ω , R_2=7.52 Ω , and R_3=12.8 Ω . What is the power dissipated by R_2?

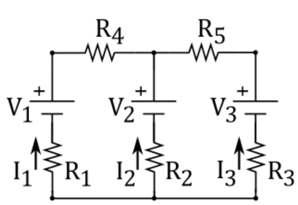
   A. 7.827E+00 W
   B. 8.610E+00 W
   C. 9.470E+00 W
   D. 1.042E+01 W
   E. 1.146E+01 W



19. In the circuit shown V=15.4 V, R_1=2.77 Ω , R_2=6.07 Ω , and R_3=14.5 Ω . What is the power dissipated by R_2?

   A. 1.190E+01 W
   B. 1.309E+01 W
   C. 1.440E+01 W
   D. 1.584E+01 W
   E. 1.742E+01 W

d_cp2.10 Q5



1. The resistances in the figure shown are R_1= 1.35 Ω , R_2= 1.52 Ω , and R_2= 2.45 Ω . V_1 and V_3 are text 0.419 V and 2.37 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.511 V. What is the absolute value of the current through R_1?

The next page might contain more answer choices for this question

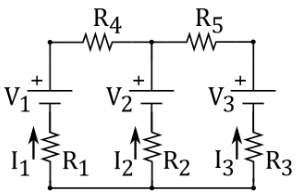
A. 8.841E-02 A

B. 9.725E-02 A

C. 1.070E-01 A

D. 1.177E-01 A

E. 1.294E-01 A

2. 

The resistances in the figure shown are R_1= 2.41 Ω , R_2= 1.74 Ω , and R_2= 3.35 Ω . V_1 and V_3 are text 0.508 V and 1.36 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.595 V. What is the absolute value of the current through R_1?

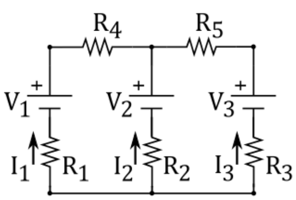
A. 1.203E-01 A

B. 1.324E-01 A

C. 1.456E-01 A

D. 1.602E-01 A

E. 1.762E-01 A

3. 

The resistances in the figure shown are R_1= 2.04 Ω , R_2= 1.19 Ω , and R_2= 2.5 Ω . V_1 and V_3 are text 0.507 V and 3.07 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.602 V. What is the absolute value of the current through R_1?

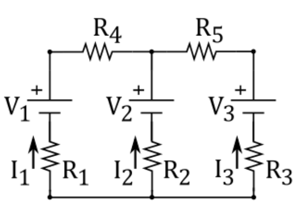
A. 1.401E-01 A

B. 1.542E-01 A

C. 1.696E-01 A

D. 1.865E-01 A

E. 2.052E-01 A

4. 

The resistances in the figure shown are R_1= 2.38 Ω , R_2= 1.87 Ω , and R_2= 2.32 Ω . V_1 and V_3 are text 0.605 V and 3.8 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.67 V. What is the absolute value of the current through R_1?

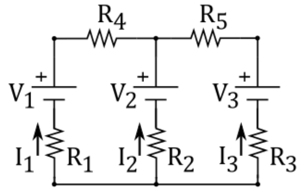
A. 8.147E-02 A

B. 8.962E-02 A

C. 9.858E-02 A

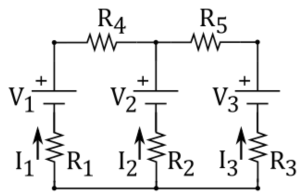
D. 1.084E-01 A

E. 1.193E-01 A

5. 

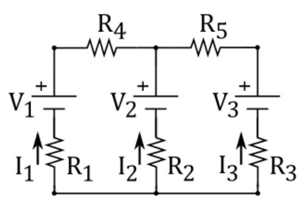
The resistances in the figure shown are R_1= 1.1 Ω , R_2= 1.55 Ω , and R_2= 2.11 Ω . V_1 and V_3 are text 0.545 V and 3.22 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.744 V. What is the absolute value of the current through R_1?

- A. 1.886E-01 A
- **B. 2.075E-01 A**
- C. 2.282E-01 A
- D. 2.510E-01 A
- E. 2.761E-01 A

6. 

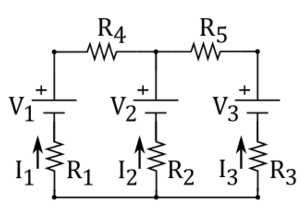
The resistances in the figure shown are R_1= 1.54 Ω , R_2= 0.927 Ω , and R_2= 2.46 Ω . V_1 and V_3 are text 0.632 V and 2.12 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.586 V. What is the absolute value of the current through R_1?

- A. 1.770E-01 A
- B. 1.947E-01 A
- **C. 2.141E-01 A**
- D. 2.355E-01 A
- E. 2.591E-01 A

7. 

The resistances in the figure shown are R_1= 1.18 Ω , R_2= 0.878 Ω , and R_2= 2.11 Ω . V_1 and V_3 are text 0.637 V and 3.51 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.547 V. What is the absolute value of the current through R_1?

- A. 1.701E-01 A
- **B. 1.871E-01 A**
- C. 2.058E-01 A
- D. 2.264E-01 A
- E. 2.490E-01 A

8. 

The resistances in the figure shown are R_1= 1.6 Ω , R_2= 1.3 Ω , and R_2= 2.22 Ω . V_1 and V_3 are text 0.55 V and 3.18 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.743 V. What is the absolute value of the current through R_1?

The next page might contain more answer choices for this question

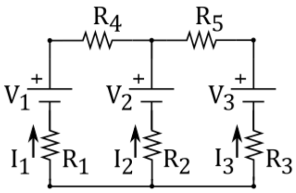
A. 1.721E-01 A

B. 1.893E-01 A

C. 2.082E-01 A

D. 2.291E-01 A

E. 2.520E-01 A

9. 

The resistances in the figure shown are R_1= 2.42 Ω , R_2= 1.09 Ω , and R_2= 3.89 Ω . V_1 and V_3 are text 0.677 V and 1.86 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.745 V. What is the absolute value of the current through R_1?

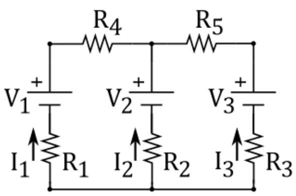
A. 2.089E-01 A

B. 2.298E-01 A

C. 2.528E-01 A

D. 2.781E-01 A

E. 3.059E-01 A

10. 

The resistances in the figure shown are R_1= 1.81 Ω , R_2= 1.18 Ω , and R_2= 2.62 Ω . V_1 and V_3 are text 0.628 V and 2.54 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.748 V. What is the absolute value of the current through R_1?

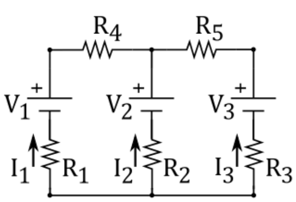
A. 1.552E-01 A

B. 1.707E-01 A

C. 1.878E-01 A

D. 2.065E-01 A

E. 2.272E-01 A

11. 

The resistances in the figure shown are R_1= 2.34 Ω , R_2= 1.34 Ω , and R_2= 2.94 Ω . V_1 and V_3 are text 0.609 V and 1.68 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.541 V. What is the absolute value of the current through R_1?

A. 1.464E-01 A

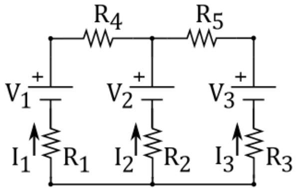
B. 1.610E-01 A

C. 1.772E-01 A

D. 1.949E-01 A

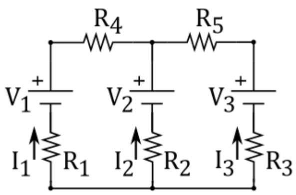
E. 2.144E-01 A

The next page might contain more answer choices for this question

12. 

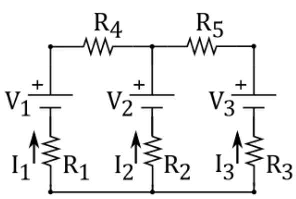
The resistances in the figure shown are R_1= 2.49 Ω , R_2= 1.72 Ω , and R_2= 3.58 Ω . V_1 and V_3 are text 0.417 V and 1.83 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.53 V. What is the absolute value of the current through R_1?

A. 8.220E-02 A
B. 9.042E-02 A
C. 9.946E-02 A
D. 1.094E-01 A
E. 1.203E-01 A

13. 

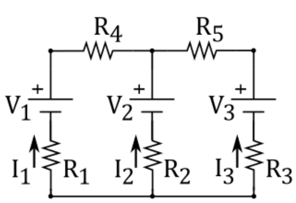
The resistances in the figure shown are R_1= 2.67 Ω , R_2= 1.78 Ω , and R_2= 3.63 Ω . V_1 and V_3 are text 0.448 V and 2.29 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.656 V. What is the absolute value of the current through R_1?

A. 9.287E-02 A
B. 1.022E-01 A
C. 1.124E-01 A
D. 1.236E-01 A
E. 1.360E-01 A

14. 

The resistances in the figure shown are R_1= 2.73 Ω , R_2= 1.4 Ω , and R_2= 2.35 Ω . V_1 and V_3 are text 0.549 V and 1.27 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.584 V. What is the absolute value of the current through R_1?

A. 1.213E-01 A
B. 1.334E-01 A
C. 1.468E-01 A
D. 1.614E-01 A
E. 1.776E-01 A

15. 

The resistances in the figure shown are R_1= 1.57 Ω , R_2= 1.25 Ω , and R_2= 3.38 Ω . V_1 and V_3 are text 0.585 V and 2.91 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.55 V. What is the absolute value of the current through R_1?

The next page might contain more answer choices for this question

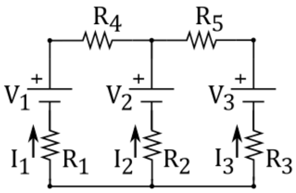
A. 1.427E-01 A

B. 1.569E-01 A

C. 1.726E-01 A

D. 1.899E-01 A

E. 2.089E-01 A

16. 

The resistances in the figure shown are R_1= 1.33 Ω , R_2= 1.72 Ω , and R_2= 3.69 Ω . V_1 and V_3 are text 0.606 V and 3.31 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.608 V. What is the absolute value of the current through R_1?

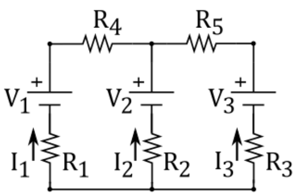
A. 1.137E-01 A

B. 1.251E-01 A

C. 1.376E-01 A

D. 1.514E-01 A

E. 1.665E-01 A

17. 

The resistances in the figure shown are R_1= 2.74 Ω , R_2= 1.63 Ω , and R_2= 2.75 Ω . V_1 and V_3 are text 0.485 V and 2.01 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.555 V. What is the absolute value of the current through R_1?

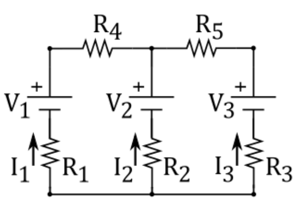
A. 1.114E-01 A

B. 1.225E-01 A

C. 1.348E-01 A

D. 1.483E-01 A

E. 1.631E-01 A

18. 

The resistances in the figure shown are R_1= 2.54 Ω , R_2= 1.15 Ω , and R_2= 2.9 Ω . V_1 and V_3 are text 0.446 V and 3.39 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.744 V. What is the absolute value of the current through R_1?

A. 1.285E-01 A

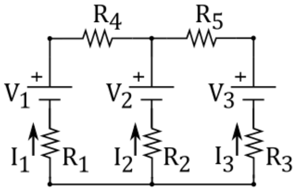
B. 1.414E-01 A

C. 1.555E-01 A

D. 1.711E-01 A

E. 1.882E-01 A

The next page might contain more answer choices for this question

19. 

The resistances in the figure shown are R_1= 2.24 Ω , R_2= 1.03 Ω , and R_2= 2.39 Ω . V_1 and V_3 are text 0.595 V and 2.58 V, respectively. But V_2 is opposite to that shown in the figure, or, equivalently, V_2=−0.707 V. What is the absolute value of the current through R_1?

A. 1.834E-01 A

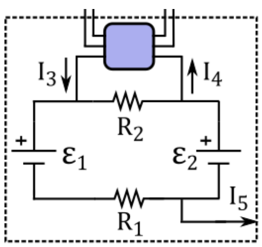
B. 2.018E-01 A

C. 2.220E-01 A

D. 2.441E-01 A

E. 2.686E-01 A

d_cp2.10 Q6

1. 

Two sources of emf ε_1=52.2 V, and ε_2=15.4 V are oriented as shown in the circuit. The resistances are R_1=4.89 kΩ and R_2=2.76 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.99 mA and I_4=0.693 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

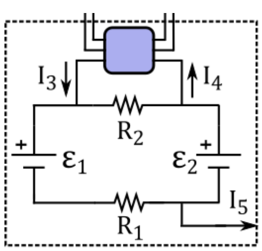
A. 1.726E+00 mA

B. 1.898E+00 mA

C. 2.088E+00 mA

D. 2.297E+00 mA

E. 2.527E+00 mA

2. 

Two sources of emf ε_1=40.3 V, and ε_2=16.8 V are oriented as shown in the circuit. The resistances are R_1=2.57 kΩ and R_2=2.25 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.96 mA and I_4=0.752 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

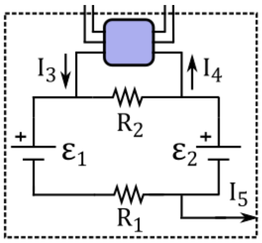
A. 1.825E+00 mA

B. 2.007E+00 mA

C. 2.208E+00 mA

D. 2.429E+00 mA

E. 2.672E+00 mA

3. 

Two sources of emf ε_1=44.4 V, and ε_2=16.8 V are oriented as shown in the circuit. The resistances are R_1=4.58 kΩ and R_2=1.2 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=8.43 mA and I_4=1.46 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

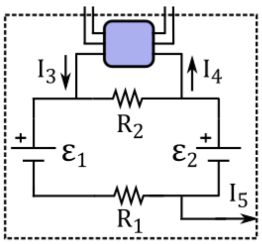
A. 6.970E+00 mA

B. 7.667E+00 mA

C. 8.434E+00 mA

D. 9.277E+00 mA

E. 1.020E+01 mA

4. 

Two sources of emf ε_1=24.9 V, and ε_2=10.1 V are oriented as shown in the circuit. The resistances are R_1=2.32 kΩ and R_2=2.31 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.74 mA and I_4=0.444 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

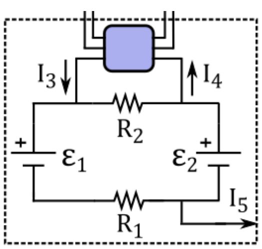
A. 1.725E+00 mA

B. 1.898E+00 mA

C. 2.087E+00 mA

D. 2.296E+00 mA

E. 2.526E+00 mA

5. 

Two sources of emf ε_1=43.7 V, and ε_2=13.1 V are oriented as shown in the circuit. The resistances are R_1=5.21 kΩ and R_2=1.72 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.86 mA and I_4=0.9 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

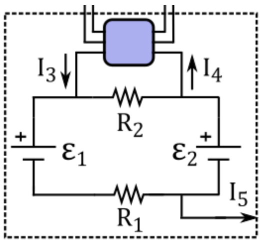
A. 2.691E+00 mA

B. 2.960E+00 mA

C. 3.256E+00 mA

D. 3.582E+00 mA

E. 3.940E+00 mA

6. 

Two sources of emf ε_1=31.0 V, and ε_2=10.0 V are oriented as shown in the circuit. The resistances are R_1=4.22 kΩ and R_2=1.37 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.32 mA and I_4=1.03 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

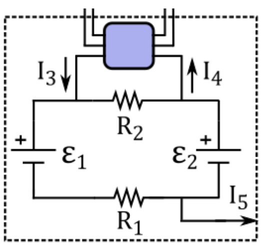
A. 2.290E+00 mA

B. 2.519E+00 mA

C. 2.771E+00 mA

D. 3.048E+00 mA

E. 3.353E+00 mA

7. 

Two sources of emf ε_1=20.6 V, and ε_2=9.53 V are oriented as shown in the circuit. The resistances are R_1=5.46 kΩ and R_2=2.55 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=1.5 mA and I_4=0.415 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

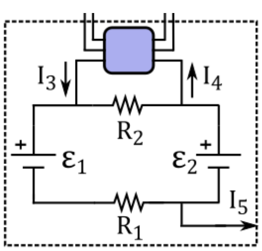
A. 1.085E+00 mA

B. 1.194E+00 mA

C. 1.313E+00 mA

D. 1.444E+00 mA

E. 1.589E+00 mA

8. 

Two sources of emf ε_1=29.5 V, and ε_2=11.0 V are oriented as shown in the circuit. The resistances are R_1=2.45 kΩ and R_2=1.96 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.03 mA and I_4=0.783 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

A. 2.247E+00 mA

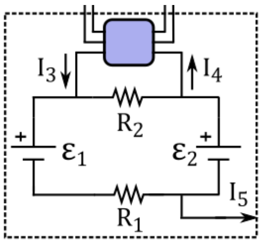
B. 2.472E+00 mA

C. 2.719E+00 mA

D. 2.991E+00 mA

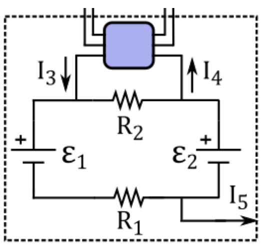
E. 3.290E+00 mA

The next page might contain more answer choices for this question

9. 

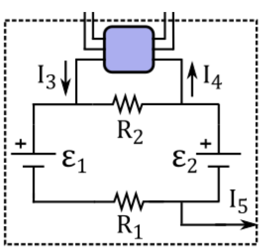
Two sources of emf ε_1=38.9 V, and ε_2=15.7 V are oriented as shown in the circuit. The resistances are R_1=2.24 kΩ and R_2=2.23 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.01 mA and I_4=0.86 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

A. 1.955E+00 mA
B. 2.150E+00 mA
C. 2.365E+00 mA
D. 2.601E+00 mA
E. 2.862E+00 mA

10. 

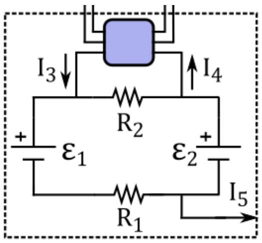
Two sources of emf ε_1=36.3 V, and ε_2=12.9 V are oriented as shown in the circuit. The resistances are R_1=4.28 kΩ and R_2=1.58 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.16 mA and I_4=1.2 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

A. 2.224E+00 mA
B. 2.446E+00 mA
C. 2.691E+00 mA
D. 2.960E+00 mA
E. 3.256E+00 mA

11. 

Two sources of emf ε_1=30.5 V, and ε_2=12.0 V are oriented as shown in the circuit. The resistances are R_1=3.79 kΩ and R_2=1.86 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.07 mA and I_4=0.73 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

A. 2.281E+00 mA
B. 2.509E+00 mA
C. 2.760E+00 mA
D. 3.036E+00 mA
E. 3.340E+00 mA



12. Two sources of emf ε_1=40.6 V, and ε_2=13.5 V are oriented as shown in the circuit. The resistances are R_1=4.35 kΩ and R_2=2.44 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.73 mA and I_4=0.78 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

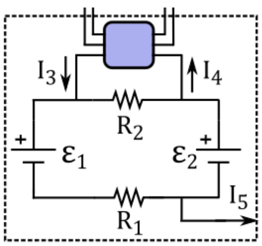
A. 1.332E+00 mA

B. 1.465E+00 mA

C. 1.612E+00 mA

D. 1.773E+00 mA

E. 1.950E+00 mA



13. Two sources of emf ε_1=13.6 V, and ε_2=6.53 V are oriented as shown in the circuit. The resistances are R_1=2.89 kΩ and R_2=2.12 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=1.11 mA and I_4=0.311 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

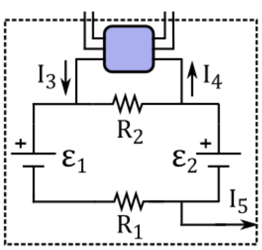
A. 7.264E-01 mA

B. 7.990E-01 mA

C. 8.789E-01 mA

D. 9.668E-01 mA

E. 1.063E+00 mA



14. Two sources of emf ε_1=18.2 V, and ε_2=6.59 V are oriented as shown in the circuit. The resistances are R_1=5.47 kΩ and R_2=2.81 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=1.64 mA and I_4=0.341 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

A. 1.299E+00 mA

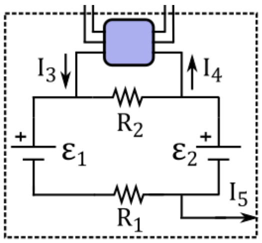
B. 1.429E+00 mA

C. 1.572E+00 mA

D. 1.729E+00 mA

E. 1.902E+00 mA

The next page might contain more answer choices for this question

15. 

Two sources of emf ε_1=29.3 V, and ε_2=11.0 V are oriented as shown in the circuit. The resistances are R_1=5.65 kΩ and R_2=2.68 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.81 mA and I_4=0.525 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

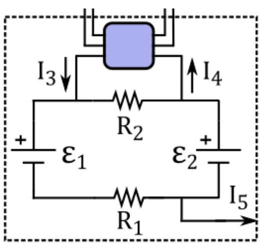
A. 1.717E+00 mA

B. 1.888E+00 mA

C. 2.077E+00 mA

D. 2.285E+00 mA

E. 2.514E+00 mA

16. 

Two sources of emf ε_1=49.6 V, and ε_2=19.3 V are oriented as shown in the circuit. The resistances are R_1=4.87 kΩ and R_2=2.81 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.37 mA and I_4=1.01 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

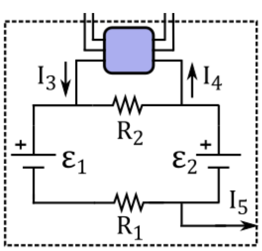
A. 3.055E+00 mA

B. 3.360E+00 mA

C. 3.696E+00 mA

D. 4.066E+00 mA

E. 4.472E+00 mA

17. 

Two sources of emf ε_1=43.0 V, and ε_2=13.8 V are oriented as shown in the circuit. The resistances are R_1=3.97 kΩ and R_2=1.12 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=6.25 mA and I_4=1.82 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

A. 3.661E+00 mA

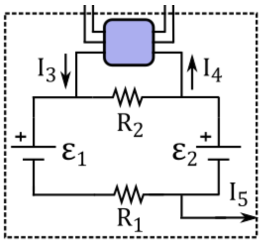
B. 4.027E+00 mA

C. 4.430E+00 mA

D. 4.873E+00 mA

E. 5.360E+00 mA

The next page might contain more answer choices for this question

18. 

Two sources of emf ε_1=24.8 V, and ε_2=10.3 V are oriented as shown in the circuit. The resistances are R_1=2.19 kΩ and R_2=1.6 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.49 mA and I_4=0.83 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

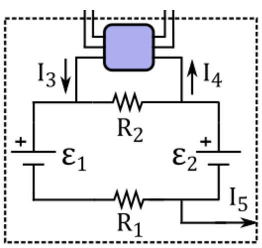
A. 1.660E+00 mA

B. 1.826E+00 mA

C. 2.009E+00 mA

D. 2.209E+00 mA

E. 2.430E+00 mA

19. 

Two sources of emf ε_1=39.0 V, and ε_2=15.9 V are oriented as shown in the circuit. The resistances are R_1=3.4 kΩ and R_2=2.12 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.58 mA and I_4=0.978 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of I_5?

A. 2.150E+00 mA

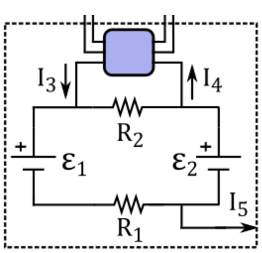
B. 2.365E+00 mA

C. 2.602E+00 mA

D. 2.862E+00 mA

E. 3.148E+00 mA

d_cp2.10 Q7

1. 

Two sources of emf ε_1=57.8 V, and ε_2=18.5 V are oriented as shown in the circuit. The resistances are R_1=2.53 kΩ and R_2=1.8 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=7.15 mA and I_4=1.27 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

A. 1.276E+01 V

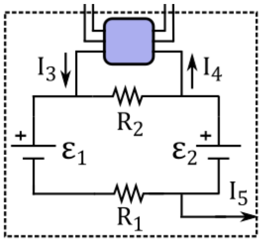
B. 1.404E+01 V

C. 1.544E+01 V

The next page might contain more answer choices for this question

D. 1.699E+01 V

E. 1.869E+01 V

2. 

Two sources of emf ε_1=38.9 V, and ε_2=16.9 V are oriented as shown in the circuit. The resistances are R_1=3.3 kΩ and R_2=2.51 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.34 mA and I_4=0.955 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

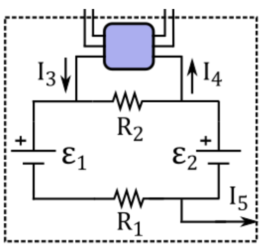
A. 7.031E+00 V

B. 7.734E+00 V

C. 8.507E+00 V

D. 9.358E+00 V

E. 1.029E+01 V

3. 

Two sources of emf ε_1=26.2 V, and ε_2=11.5 V are oriented as shown in the circuit. The resistances are R_1=2.13 kΩ and R_2=1.72 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.11 mA and I_4=0.746 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

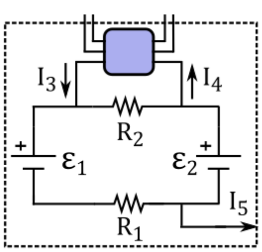
A. 4.275E+00 V

B. 4.703E+00 V

C. 5.173E+00 V

D. 5.691E+00 V

E. 6.260E+00 V

4. 

Two sources of emf ε_1=28.6 V, and ε_2=11.1 V are oriented as shown in the circuit. The resistances are R_1=3.73 kΩ and R_2=1.95 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.27 mA and I_4=0.774 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

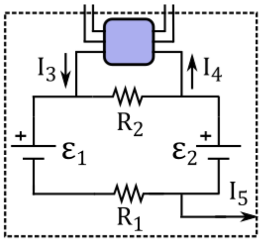
A. 6.641E+00 V

B. 7.305E+00 V

C. 8.035E+00 V

D. 8.839E+00 V

E. 9.723E+00 V

5. 

Two sources of emf ε_1=52.7 V, and ε_2=17.5 V are oriented as shown in the circuit. The resistances are R_1=5.86 kΩ and R_2=2.08 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.48 mA and I_4=0.988 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

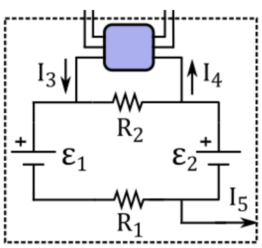
A. 2.064E+01 V

B. 2.270E+01 V

C. 2.497E+01 V

D. 2.747E+01 V

E. 3.021E+01 V

6. 

Two sources of emf ε_1=16.8 V, and ε_2=7.15 V are oriented as shown in the circuit. The resistances are R_1=3.12 kΩ and R_2=1.51 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=1.95 mA and I_4=0.603 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

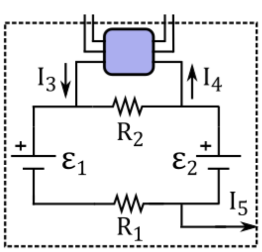
A. 4.108E+00 V

B. 4.519E+00 V

C. 4.970E+00 V

D. 5.468E+00 V

E. 6.014E+00 V

7. 

Two sources of emf ε_1=26.2 V, and ε_2=8.29 V are oriented as shown in the circuit. The resistances are R_1=3.43 kΩ and R_2=1.16 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.09 mA and I_4=1.06 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

A. 6.720E+00 V

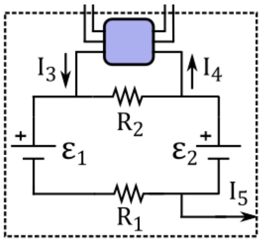
B. 7.392E+00 V

C. 8.131E+00 V

The next page might contain more answer choices for this question

D. 8.944E+00 V

E. 9.838E+00 V

8. 

Two sources of emf ε_1=35.5 V, and ε_2=12.3 V are oriented as shown in the circuit. The resistances are R_1=4.49 kΩ and R_2=1.53 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.63 mA and I_4=0.972 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

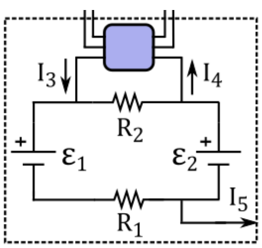
A. 1.093E+01 V

B. 1.202E+01 V

C. 1.322E+01 V

D. 1.454E+01 V

E. 1.600E+01 V

9. 

Two sources of emf ε_1=49.8 V, and ε_2=18.1 V are oriented as shown in the circuit. The resistances are R_1=2.78 kΩ and R_2=2.63 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.51 mA and I_4=0.969 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

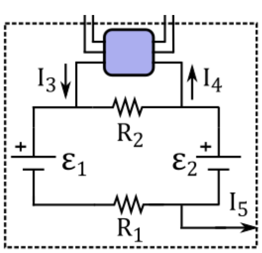
A. 7.886E+00 V

B. 8.675E+00 V

C. 9.542E+00 V

D. 1.050E+01 V

E. 1.155E+01 V

10. 

Two sources of emf ε_1=38.8 V, and ε_2=14.9 V are oriented as shown in the circuit. The resistances are R_1=5.83 kΩ and R_2=1.77 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.57 mA and I_4=1.19 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

A. 1.013E+01 V

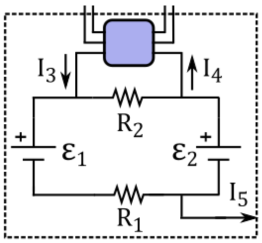
B. 1.115E+01 V

C. 1.226E+01 V

The next page might contain more answer choices for this question

D. 1.349E+01 V

E. 1.484E+01 V

11. 

Two sources of emf ε_1=30.6 V, and ε_2=12.0 V are oriented as shown in the circuit. The resistances are R_1=3.46 kΩ and R_2=2.77 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=1.97 mA and I_4=0.643 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

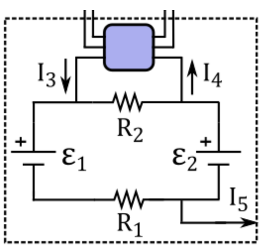
A. 4.986E+00 V

B. 5.484E+00 V

C. 6.033E+00 V

D. 6.636E+00 V

E. 7.299E+00 V

12. 

Two sources of emf ε_1=39.2 V, and ε_2=12.6 V are oriented as shown in the circuit. The resistances are R_1=3.86 kΩ and R_2=1.89 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.05 mA and I_4=0.701 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

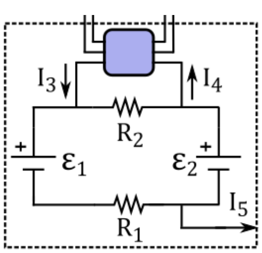
A. 8.687E+00 V

B. 9.555E+00 V

C. 1.051E+01 V

D. 1.156E+01 V

E. 1.272E+01 V

13. 

Two sources of emf ε_1=57.0 V, and ε_2=18.1 V are oriented as shown in the circuit. The resistances are R_1=4.95 kΩ and R_2=2.09 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.23 mA and I_4=1.04 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

A. 1.921E+01 V

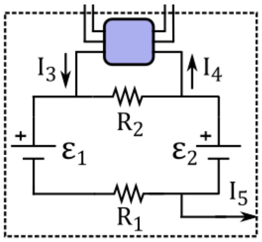
B. 2.114E+01 V

C. 2.325E+01 V

The next page might contain more answer choices for this question

D. 2.557E+01 V

E. 2.813E+01 V

14. 

Two sources of emf ε_1=38.9 V, and ε_2=14.4 V are oriented as shown in the circuit. The resistances are R_1=4.33 kΩ and R_2=1.65 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=5.59 mA and I_4=1.07 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

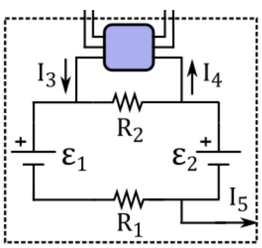
A. 9.142E+00 V

B. 1.006E+01 V

C. 1.106E+01 V

D. 1.217E+01 V

E. 1.338E+01 V

15. 

Two sources of emf ε_1=30.3 V, and ε_2=8.6 V are oriented as shown in the circuit. The resistances are R_1=3.81 kΩ and R_2=2.39 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.38 mA and I_4=0.416 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

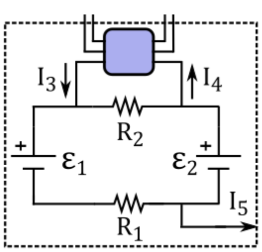
A. 8.945E+00 V

B. 9.840E+00 V

C. 1.082E+01 V

D. 1.191E+01 V

E. 1.310E+01 V

16. 

Two sources of emf ε_1=21.0 V, and ε_2=8.72 V are oriented as shown in the circuit. The resistances are R_1=3.12 kΩ and R_2=1.15 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.41 mA and I_4=0.816 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

A. 5.267E+00 V

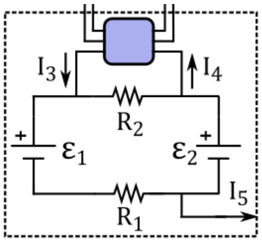
B. 5.794E+00 V

C. 6.373E+00 V

The next page might contain more answer choices for this question

D. 7.011E+00 V

E. 7.712E+00 V



17. Two sources of emf ε_1=27.1 V, and ε_2=8.04 V are oriented as shown in the circuit. The resistances are R_1=2.94 kΩ and R_2=1.61 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.87 mA and I_4=0.57 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

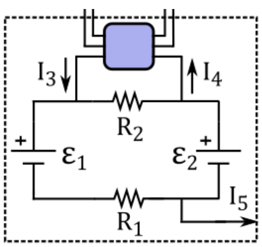
A. 8.482E+00 V

B. 9.330E+00 V

C. 1.026E+01 V

D. 1.129E+01 V

E. 1.242E+01 V



18. Two sources of emf ε_1=16.8 V, and ε_2=6.85 V are oriented as shown in the circuit. The resistances are R_1=4.43 kΩ and R_2=1.24 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.68 mA and I_4=0.758 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

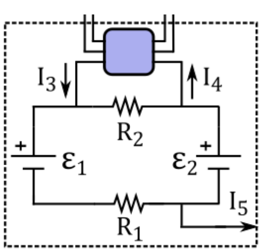
A. 3.890E+00 V

B. 4.279E+00 V

C. 4.707E+00 V

D. 5.178E+00 V

E. 5.695E+00 V



19. Two sources of emf ε_1=26.8 V, and ε_2=10.1 V are oriented as shown in the circuit. The resistances are R_1=2.2 kΩ and R_2=2.55 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.29 mA and I_4=0.464 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_1?

A. 3.436E+00 V

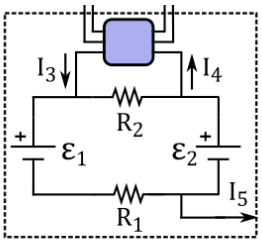
B. 3.779E+00 V

C. 4.157E+00 V

D. 4.573E+00 V

E. 5.030E+00 V

d_cp2.10 Q8

1. 

Two sources of emf ε_1=60.7 V, and ε_2=16.7 V are oriented as shown in the circuit. The resistances are R_1=4.72 kΩ and R_2=2.33 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.65 mA and I_4=0.946 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

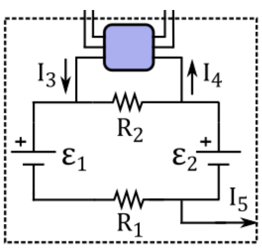
A. 1.981E+01 V

B. 2.180E+01 V

C. 2.398E+01 V

D. 2.637E+01 V

E. 2.901E+01 V

2. 

Two sources of emf ε_1=36.7 V, and ε_2=12.1 V are oriented as shown in the circuit. The resistances are R_1=2.52 kΩ and R_2=1.22 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.14 mA and I_4=1.19 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

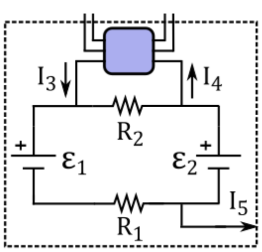
A. 7.805E+00 V

B. 8.586E+00 V

C. 9.444E+00 V

D. 1.039E+01 V

E. 1.143E+01 V

3. 

Two sources of emf ε_1=21.6 V, and ε_2=8.59 V are oriented as shown in the circuit. The resistances are R_1=4.97 kΩ and R_2=1.69 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.2 mA and I_4=0.749 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

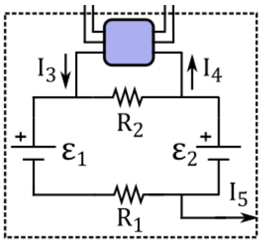
A. 6.064E+00 V

B. 6.670E+00 V

C. 7.337E+00 V

D. 8.071E+00 V

E. 8.878E+00 V

4. 

Two sources of emf ε_1=14.3 V, and ε_2=5.6 V are oriented as shown in the circuit. The resistances are R_1=5.31 kΩ and R_2=2.39 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=1.12 mA and I_4=0.284 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

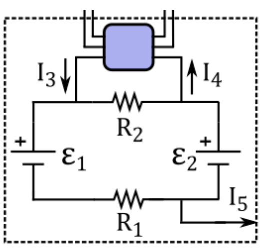
A. 3.416E+00 V

B. 3.757E+00 V

C. 4.133E+00 V

D. 4.546E+00 V

E. 5.001E+00 V

5. 

Two sources of emf ε_1=58.5 V, and ε_2=17.3 V are oriented as shown in the circuit. The resistances are R_1=3.06 kΩ and R_2=1.88 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=5.25 mA and I_4=1.25 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

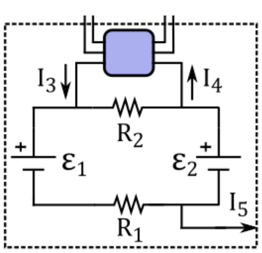
A. 1.981E+01 V

B. 2.179E+01 V

C. 2.397E+01 V

D. 2.637E+01 V

E. 2.901E+01 V

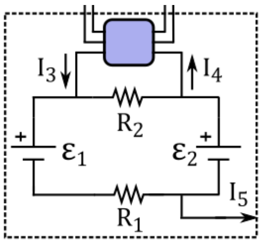
6. 

Two sources of emf ε_1=18.6 V, and ε_2=5.63 V are oriented as shown in the circuit. The resistances are R_1=3.9 kΩ and R_2=1.1 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.41 mA and I_4=0.614 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 4.342E+00 V

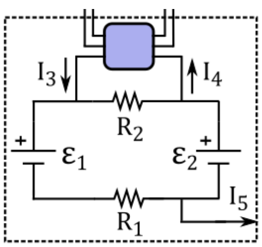
The next page might contain more answer choices for this question

B. 4.776E+00 V
C. 5.254E+00 V
D. 5.779E+00 V
E. 6.357E+00 V

7. 

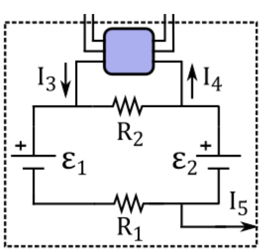
Two sources of emf ε_1=42.2 V, and ε_2=17.8 V are oriented as shown in the circuit. The resistances are R_1=4.2 kΩ and R_2=2.83 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.5 mA and I_4=0.749 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 1.056E+01 V
B. 1.161E+01 V
C. 1.277E+01 V
D. 1.405E+01 V
E. 1.545E+01 V

8. 

Two sources of emf ε_1=40.9 V, and ε_2=16.1 V are oriented as shown in the circuit. The resistances are R_1=5.55 kΩ and R_2=1.55 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=6.11 mA and I_4=1.06 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 8.754E+00 V
B. 9.630E+00 V
C. 1.059E+01 V
D. 1.165E+01 V
E. 1.282E+01 V

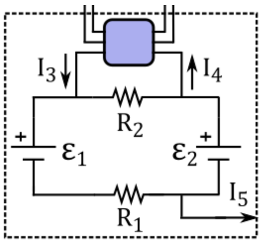
9. 

Two sources of emf ε_1=27.9 V, and ε_2=11.1 V are oriented as shown in the circuit. The resistances are R_1=2.82 kΩ and R_2=2.25 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.1 mA and I_4=0.676 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 8.334E+00 V

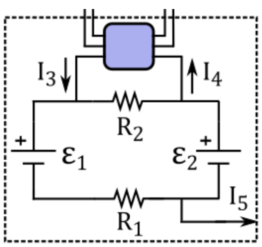
The next page might contain more answer choices for this question

B. 9.167E+00 V
C. 1.008E+01 V
D. 1.109E+01 V
E. 1.220E+01 V

10. 

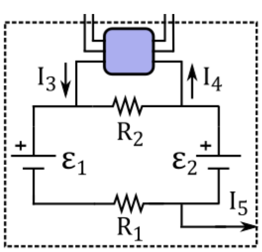
Two sources of emf ε_1=39.4 V, and ε_2=12.2 V are oriented as shown in the circuit. The resistances are R_1=3.84 kΩ and R_2=2.01 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.71 mA and I_4=0.669 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 8.825E+00 V
B. 9.708E+00 V
C. 1.068E+01 V
D. 1.175E+01 V
E. 1.292E+01 V

11. 

Two sources of emf ε_1=46.1 V, and ε_2=16.2 V are oriented as shown in the circuit. The resistances are R_1=5.17 kΩ and R_2=2.06 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=4.97 mA and I_4=1.07 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 1.309E+01 V
B. 1.440E+01 V
C. 1.584E+01 V
D. 1.742E+01 V
E. 1.917E+01 V

12. 

Two sources of emf ε_1=45.3 V, and ε_2=13.3 V are oriented as shown in the circuit. The resistances are R_1=3.82 kΩ and R_2=1.5 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=6.17 mA and I_4=1.11 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 1.177E+01 V

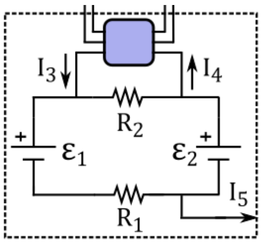
The next page might contain more answer choices for this question

B. 1.295E+01 V

C. 1.424E+01 V

D. 1.567E+01 V

E. 1.723E+01 V

13. 

Two sources of emf ε_1=36.7 V, and ε_2=13.6 V are oriented as shown in the circuit. The resistances are R_1=2.86 kΩ and R_2=2.2 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.02 mA and I_4=0.854 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

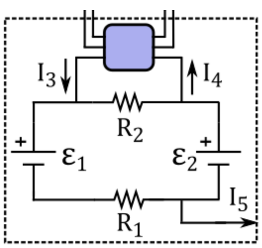
A. 1.380E+01 V

B. 1.518E+01 V

C. 1.670E+01 V

D. 1.837E+01 V

E. 2.020E+01 V

14. 

Two sources of emf ε_1=67.2 V, and ε_2=18.7 V are oriented as shown in the circuit. The resistances are R_1=3.45 kΩ and R_2=1.2 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=9.49 mA and I_4=1.81 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

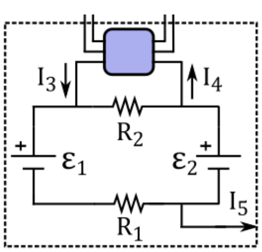
A. 1.906E+01 V

B. 2.097E+01 V

C. 2.306E+01 V

D. 2.537E+01 V

E. 2.790E+01 V

15. 

Two sources of emf ε_1=34.7 V, and ε_2=13.9 V are oriented as shown in the circuit. The resistances are R_1=3.68 kΩ and R_2=1.55 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=5.68 mA and I_4=0.933 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 9.286E+00 V

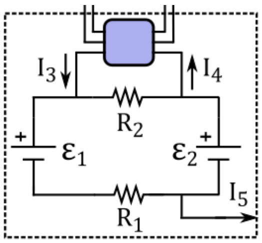
The next page might contain more answer choices for this question

B. 1.021E+01 V

C. 1.124E+01 V

D. 1.236E+01 V

E. 1.360E+01 V

16. 

Two sources of emf ε_1=40.7 V, and ε_2=12.3 V are oriented as shown in the circuit. The resistances are R_1=3.5 kΩ and R_2=1.94 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=3.42 mA and I_4=0.932 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

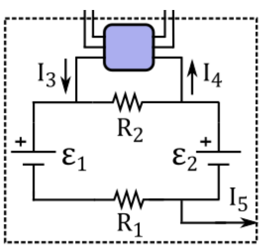
A. 1.440E+01 V

B. 1.584E+01 V

C. 1.742E+01 V

D. 1.916E+01 V

E. 2.108E+01 V

17. 

Two sources of emf ε_1=54.9 V, and ε_2=19.8 V are oriented as shown in the circuit. The resistances are R_1=3.93 kΩ and R_2=1.31 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=9.18 mA and I_4=1.83 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

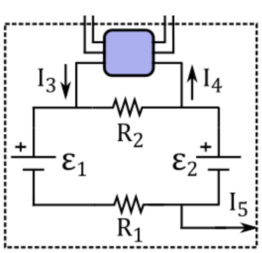
A. 1.779E+01 V

B. 1.957E+01 V

C. 2.153E+01 V

D. 2.368E+01 V

E. 2.605E+01 V

18. 

Two sources of emf ε_1=17.3 V, and ε_2=6.46 V are oriented as shown in the circuit. The resistances are R_1=2.54 kΩ and R_2=2.79 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=1.1 mA and I_4=0.281 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 6.488E+00 V

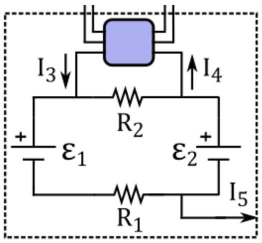
The next page might contain more answer choices for this question

B. 7.137E+00 V

C. 7.850E+00 V

D. 8.635E+00 V

E. 9.499E+00 V

19. 

Two sources of emf ε_1=24.4 V, and ε_2=6.73 V are oriented as shown in the circuit. The resistances are R_1=5.7 kΩ and R_2=1.95 kΩ . Three other currents enter and exit or exit from portions of the circuit that lie outside the dotted rectangle and are not shown. I_3=2.36 mA and I_4=0.418 mA enter and leave near R_2, while the current I_5 exits near R_1.What is the magnitude (absolute value) of voltage drop across R_2?

A. 5.418E+00 V

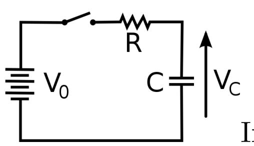
B. 5.960E+00 V

C. 6.556E+00 V

D. 7.212E+00 V

E. 7.933E+00 V

d_cp2.10 Q9

1. 

In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 379 V. If the combined external and internal resistance is 158 Ω and the capacitance is 95 mF, how long will it take for the capacitor's voltage to reach 234.0 V?

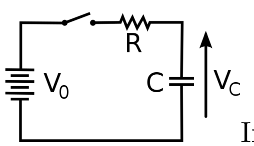
A. 1.084E+01 s

B. 1.192E+01 s

C. 1.311E+01 s

D. 1.442E+01 s

E. 1.586E+01 s

2. 

In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 319 V. If the combined external and internal resistance is 231 Ω and the capacitance is 64 mF, how long will it take for the capacitor's voltage to reach 175.0 V?

A. 9.718E+00 s

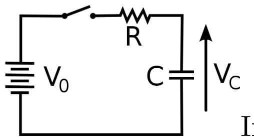
B. 1.069E+01 s

C. 1.176E+01 s

D. 1.293E+01 s

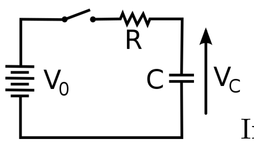
E. 1.423E+01 s

The next page might contain more answer choices for this question

3. 

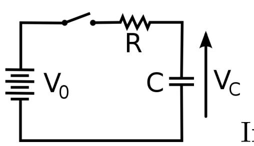
In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 558 V. If the combined external and internal resistance is 198 Ω and the capacitance is 80 mF, how long will it take for the capacitor's voltage to reach 345.0 V?

A. 1.146E+01 s
B. 1.261E+01 s
C. 1.387E+01 s
D. 1.525E+01 s
E. 1.678E+01 s

4. 

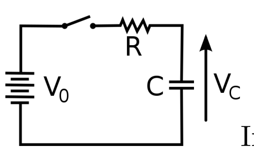
In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 213 V. If the combined external and internal resistance is 118 Ω and the capacitance is 61 mF, how long will it take for the capacitor's voltage to reach 142.0 V?

A. 5.401E+00 s
B. 5.941E+00 s
C. 6.535E+00 s
D. 7.189E+00 s
E. 7.908E+00 s

5. 

In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 543 V. If the combined external and internal resistance is 201 Ω and the capacitance is 82 mF, how long will it take for the capacitor's voltage to reach 281.0 V?

A. 9.024E+00 s
B. 9.927E+00 s
C. 1.092E+01 s
D. 1.201E+01 s
E. 1.321E+01 s

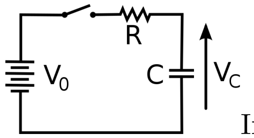
6. 

In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 554 V. If the combined external and internal resistance is 228 Ω and the capacitance is 93 mF, how long will it take for the capacitor's voltage to reach 450.0 V?

A. 3.224E+01 s
B. 3.547E+01 s
C. 3.902E+01 s
D. 4.292E+01 s

The next page might contain more answer choices for this question

E. 4.721E+01 s

7.  In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 569 V. If the combined external and internal resistance is 137 Ω and the capacitance is 76 mF, how long will it take for the capacitor's voltage to reach 419.0 V?

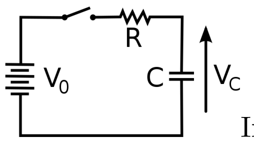
A. 1.043E+01 s

B. 1.147E+01 s

C. 1.262E+01 s

D. 1.388E+01 s

E. 1.527E+01 s

8.  In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 505 V. If the combined external and internal resistance is 189 Ω and the capacitance is 74 mF, how long will it take for the capacitor's voltage to reach 374.0 V?

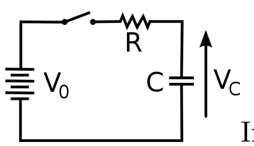
A. 1.560E+01 s

B. 1.716E+01 s

C. 1.887E+01 s

D. 2.076E+01 s

E. 2.284E+01 s

9.  In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 130 V. If the combined external and internal resistance is 109 Ω and the capacitance is 59 mF, how long will it take for the capacitor's voltage to reach 69.9 V?

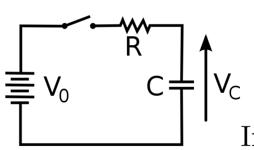
A. 3.728E+00 s

B. 4.101E+00 s

C. 4.511E+00 s

D. 4.962E+00 s

E. 5.458E+00 s

10.  In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 190 V. If the combined external and internal resistance is 255 Ω and the capacitance is 54 mF, how long will it take for the capacitor's voltage to reach 101.0 V?

A. 1.044E+01 s

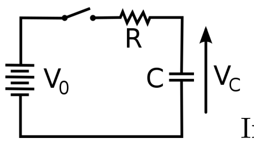
B. 1.149E+01 s

C. 1.264E+01 s

The next page might contain more answer choices for this question

D. 1.390E+01 s

E. 1.529E+01 s

11. 

In the circuit shown the voltage across the capaciator is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 466 V. If the combined external and internal resistance is 123 Ω and the capacitance is 76 mF, how long will it take for the capacitor's voltage to reach 331.0 V?

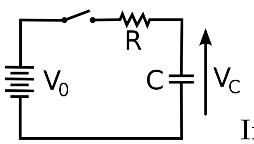
A. 9.571E+00 s

B. 1.053E+01 s

C. 1.158E+01 s

D. 1.274E+01 s

E. 1.401E+01 s

12. 

In the circuit shown the voltage across the capaciator is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 598 V. If the combined external and internal resistance is 170 Ω and the capacitance is 73 mF, how long will it take for the capacitor's voltage to reach 436.0 V?

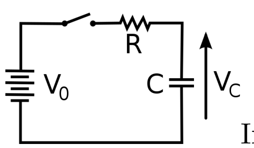
A. 1.218E+01 s

B. 1.339E+01 s

C. 1.473E+01 s

D. 1.621E+01 s

E. 1.783E+01 s

13. 

In the circuit shown the voltage across the capaciator is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 301 V. If the combined external and internal resistance is 245 Ω and the capacitance is 63 mF, how long will it take for the capacitor's voltage to reach 192.0 V?

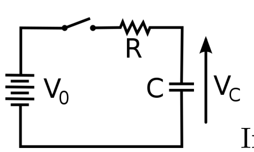
A. 1.296E+01 s

B. 1.425E+01 s

C. 1.568E+01 s

D. 1.725E+01 s

E. 1.897E+01 s

14. 

In the circuit shown the voltage across the capaciator is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 327 V. If the combined external and internal resistance is 204 Ω and the capacitance is 68 mF, how long will it take for the capacitor's voltage to reach 218.0 V?

A. 1.385E+01 s

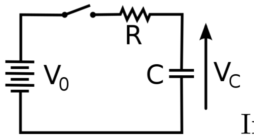
B. 1.524E+01 s

The next page might contain more answer choices for this question

C. 1.676E+01 s

D. 1.844E+01 s

E. 2.028E+01 s



15. In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 129 V. If the combined external and internal resistance is 169 Ω and the capacitance is 76 mF, how long will it take for the capacitor's voltage to reach 109.0 V?

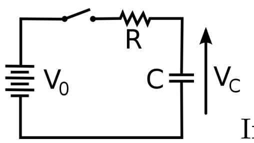
A. 2.177E+01 s

B. 2.394E+01 s

C. 2.634E+01 s

D. 2.897E+01 s

E. 3.187E+01 s



16. In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 467 V. If the combined external and internal resistance is 172 Ω and the capacitance is 74 mF, how long will it take for the capacitor's voltage to reach 258.0 V?

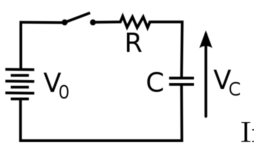
A. 7.688E+00 s

B. 8.457E+00 s

C. 9.303E+00 s

D. 1.023E+01 s

E. 1.126E+01 s



17. In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 433 V. If the combined external and internal resistance is 275 Ω and the capacitance is 61 mF, how long will it take for the capacitor's voltage to reach 223.0 V?

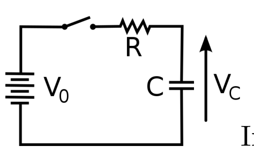
A. 1.104E+01 s

B. 1.214E+01 s

C. 1.335E+01 s

D. 1.469E+01 s

E. 1.616E+01 s



18. In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 351 V. If the combined external and internal resistance is 148 Ω and the capacitance is 60 mF, how long will it take for the capacitor's voltage to reach 227.0 V?

A. 9.240E+00 s

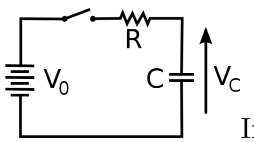
The next page might contain more answer choices for this question

B. 1.016E+01 s

C. 1.118E+01 s

D. 1.230E+01 s

E. 1.353E+01 s

19. 

In the circuit shown the voltage across the capacitor is zero at time t=0 when a switch is closed putting the capacitor into contact with a power supply of 439 V. If the combined external and internal resistance is 221 Ω and the capacitance is 54 mF, how long will it take for the capacitor's voltage to reach 350.0 V?

A. 1.905E+01 s

B. 2.095E+01 s

C. 2.304E+01 s

D. 2.535E+01 s

E. 2.788E+01 s

17 a21CircuitsBioInstDC_circAnalQuiz1

1. 3 amps flow through a 1 Ohm resistor. What is the voltage?[114]

   A. $3V$**.**

   B. $1V$.

   C. $\frac{1}{3}V$.

   D. None these are correct.

2. A 1 ohm resistor has 5 volts DC across its terminals. What is the current (I) and the power consumed?[115]

   A. I = 5A & P = 3W.

   B. I = 5A & P = 5W.

   C. I = 5A & P = 25W.

   D. I = 5A & P = 9W.

3. The voltage across two resistors in series is 10 volts. One resistor is twice as large as the other. What is the voltage across the larger resistor? What is the voltage across the smaller one? [116]

   A. $V_{Big-Resistor} = 3.33V$ and$V_{small-Resistor} = 6.67V$.

   B. $V_{small-Resistor} = 5V$ and $V_{Big-Resistor} = 5V$.

   C. $V_{Big-Resistor} = 6.67V$ **and** $V_{small-Resistor} = 3.33V$**.**

   D. None of these are true.

4. A 1 ohm, 2 ohm, and 3 ohm resistor are connected in series. What is the total resistance?[117]

   A. $R_{Total} = 0.5454\Omega$.

   B. $R_{Total} = 3\Omega$.

   C. $R_{Total} = 6\Omega$**.**

   D. None of these are true.

The next page might contain more answer choices for this question

5. Two identical resistors are connected in series. The voltage across both of them is 250 volts. What is the voltage across each one?[118]

   A. $R_1 = 150V$ and $R_2 = 100V$.

   B. None of these are true.

   C. $R_1 = 125V$ and $R_2 = 125V$.

   D. $R_1 = 250V$ and $R_2 = 0V$.

6. A 1 ohm, 2 ohm, and 3 ohm resistor are connected in "parallel". What is the total resistance?[119]

   A. $\frac{11}{6}\Omega$.

   B. $\frac{3}{6}\Omega$.

   C. $\frac{6}{11}\Omega$.

   D. $\frac{6}{3}\Omega$.

7. A 5 ohm and a 2 ohm resistor are connected in parallel. What is the total resistance?[120]

   A. $\frac{6}{10}\Omega$.

   B. $\frac{7}{10}\Omega$.

   C. $\frac{10}{6}\Omega$.

   D. $\frac{10}{7}\Omega$.

8. A 7 ohm and a 3 ohm resistor are connected in parallel. What is the total resistance?[121]

   A. $\frac{21}{10}\Omega$.

   B. $\frac{11}{7}\Omega$.

   C. $\frac{7}{11}\Omega$.

   D. $\frac{10}{21}\Omega$.

9. Three 1 ohm resistors are connected in parallel. What is the total resistance?[122]

   A. 3Ω.

   B. $\frac{1}{3}\Omega$.

   C. $\frac{3}{2}\Omega$.

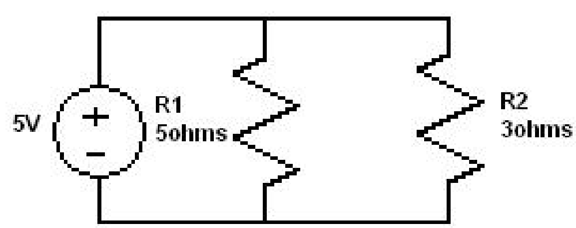
   D. $\frac{2}{3}\Omega$.

10. If you put an infinite number of resistors in paralle. Under ideal condistions (no wire or contact resistance), what would the total resistance be?[123]

    A. R_{total} would approach zero.

    B. R_{total} would approach the value of a single resistor.

    C. R_{total} would approach infinity.



[124]

11. What is the current through R1 and R2 in the figure shown?

The next page might contain more answer choices for this question

A. $I_1 = 0.1A$ and $I_2 = 0.1667A$.

B. $I_1 = 10A$ and $I_2 = 16.67A$.

C. $I_1 = 1A$ and $I_2 = 25A$.

D. $I_1 = 1A$ and $I_2 = 1.667A$.

12. Why do we say the "voltage across" or "the voltage with respect to?" Why can't we just say voltage?[125]

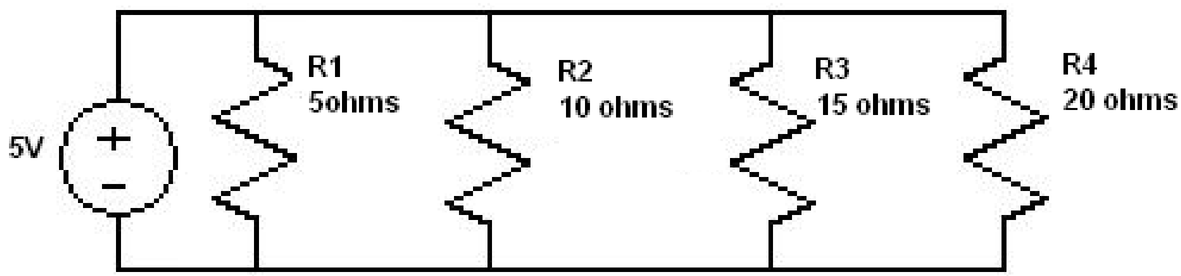
A. It's an Electrical "Cliche".

B. The other point could be Negative or positive.

C. None these are correct.

D. Voltage is a measure of Electric Potential difference between two electrical points.

13. What is the current through R1, R2, R3, and R4 in the figure shown?



126

A. $I_1 = 10A$; $I_2 = 50A$; $I_3 = 33A$; $I_4 = 25A$.

B. $I_1 = 1A$; $I_2 = 5A$; $I_3 = 3.3A$; $I_4 = 2.5A$.

C. $I_1 = 1A$; $I_2 = 0.5A$; $I_3 = 0.33A$; $I_4 = 0.25A$.

D. $I_1 = 0.25A$; $I_2 = 0.33A$; $I_3 = 0.5A$; $I_4 = 0.1A$.

14. Two resistors are in parallel with a voltage source. How do their voltages compare?[127]

A. The voltage across both resistors is the same as the source.

B. None of these are true.

C. One has full voltage, the other has none.

D. The voltage across both resistors is half the voltage of the source.

15. A resistor consumes 5 watts, and its current is 10 amps. What is its voltage?[128]

A. 2V.

B. 10V.

C. 0.5V.

D. 15V.

16. A resistor has 10 volts across it and 4 amps going through it. What is its resistance?[129]

A. None of these are true.

B. 3.5Ω.

C. 4.5Ω.

D. 2.5Ω.

17. If you plot voltage vs. current in a circuit, and you get a linear line, what is the significance of the slope? [130]

The next page might contain more answer choices for this question

A. Power.

B. Resistance.

C. Discriminant.

D. None of these are true.

18. A resistor has 3 volts across it. Its resistance is 1.5 ohms. What is the current?[131]

A. 12A.

B. 3A.

C. 2A.

D. 1.5A.

19. A resistor has 8 volts across it and 3 Amps going through it. What is the power consumed?[132]

A. 2.2 W.

B. 24 W.

C. 8 W.

D. 3 W.

20. A resistor has a voltage of 5 volts and a resistance of 15 ohms. What is the power consumed? [133]

A. None of these are ture.

B. 11.67 Joules

C. 1.67 Watts

D. 2.5 Watts

21. A resistor is on for 5 seconds. It consumes power at a rate of 5 watts. How many joules are used?[134]

A. 25 Joules

B. 3 Joules

C. 5 Joules

D. None of these are true

18 a21CircuitsBioInstDC_circuits

1. An ideal 5.2 V voltage source is connected to two resistors in series. One is $1.2k\Omega$, and the other is 2.8 $k\Omega$. What is the current through the larger resistor?[135]

A. 0.7 mA.

B. 0.9 mA.

C. 1.1 mA.

D. 1.3 mA.

E. 1.5 mA.

2. A 7.7 ohm resistor is connected in series to a pair of 5.8 ohm resistors that are in parallel. What is the net resistance?[136]

A. 6.1 ohms.

B. 7 ohms.

C. 8 ohms.

The next page might contain more answer choices for this question

D. 9.2 ohms.

E. 10.6 ohms.

3. Two 8 ohm resistors are connected in parallel. This combination is then connected in series to a 6.6 ohm resistor. What is the net resistance?[137]

A. 9.2 ohms.

B. 10.6 ohms.

C. 12.2 ohms.

D. 14 ohms.

E. 16.1 ohms.

4. An ideal 7.9 volt battery is connected to a 0.09 ohm resistor. To measure the current an ammeter with a resistance of $20m\Omega$ is used. What current does the ammeter actually read?[138]

A. 71.8 A.

B. 82.6 A.

C. 95 A.

D. 109.2 A.

E. 125.6 A.

5. A battery has an emf of 5.3 volts, and an internal resistance of 326 $k\Omega$. It is connected to a 3 $M\Omega$ resistor. What power is developed in the 3 $M\Omega$ resistor?[139]

A. 5.01 μW.

B. 5.76 μW.

C. 6.62 μW.

D. 7.62 μW.

E. 8.76 μW.

18.1 Renditions

a21CircuitsBioInstDC_circuits Q1

1. An ideal 6.1 V voltage source is connected to two resistors in series. One is $2.4k\Omega$, and the other is 4.2 $k\Omega$. What is the current through the larger resistor?

A. 0.61 mA.

B. 0.7 mA.

C. 0.8 mA.

D. 0.92 mA.

E. 1.06 mA.

2. An ideal 3.1 V voltage source is connected to two resistors in series. One is $1.5k\Omega$, and the other is 2.2 $k\Omega$. What is the current through the larger resistor?

A. 0.55 mA.

B. 0.63 mA.

C. 0.73 mA.

D. 0.84 mA.

The next page might contain more answer choices for this question

E. 0.96 mA.

3. An ideal 7.9 V voltage source is connected to two resistors in series. One is $2.4k\Omega$, and the other is $5.2\ k\Omega$. What is the current through the larger resistor?

   A. 0.68 mA.

   B. 0.79 mA.

   C. 0.9 mA.

   D. 1.04 mA.

   E. 1.2 mA.

4. An ideal 5.6 V voltage source is connected to two resistors in series. One is $2.3k\Omega$, and the other is $4.3\ k\Omega$. What is the current through the larger resistor?

   A. 0.56 mA.

   B. 0.64 mA.

   C. 0.74 mA.

   D. 0.85 mA.

   E. 0.98 mA.

5. An ideal 9.9 V voltage source is connected to two resistors in series. One is $0.9k\Omega$, and the other is $1.8\ k\Omega$. What is the current through the larger resistor?

   A. 3.67 mA.

   B. 4.22 mA.

   C. 4.85 mA.

   D. 5.58 mA.

   E. 6.41 mA.

6. An ideal 9.2 V voltage source is connected to two resistors in series. One is $1.1k\Omega$, and the other is $2.4\ k\Omega$. What is the current through the larger resistor?

   A. 2.29 mA.

   B. 2.63 mA.

   C. 3.02 mA.

   D. 3.48 mA.

   E. 4 mA.

7. An ideal 9.4 V voltage source is connected to two resistors in series. One is $2.1k\Omega$, and the other is $4.3\ k\Omega$. What is the current through the larger resistor?

   A. 1.47 mA.

   B. 1.69 mA.

   C. 1.94 mA.

   D. 2.23 mA.

   E. 2.57 mA.

8. An ideal 3.6 V voltage source is connected to two resistors in series. One is $2.2k\Omega$, and the other is $4.2\ k\Omega$. What is the current through the larger resistor?

   A. 0.43 mA.

The next page might contain more answer choices for this question

B. 0.49 mA.

C. 0.56 mA.

D. 0.65 mA.

E. 0.74 mA.

9. An ideal 8.9 V voltage source is connected to two resistors in series. One is 2.1$k\Omega$, and the other is 4.4 $k\Omega$. What is the current through the larger resistor?

A. 1.37 mA.

B. 1.57 mA.

C. 1.81 mA.

D. 2.08 mA.

E. 2.39 mA.

10. An ideal 4.2 V voltage source is connected to two resistors in series. One is 1.6$k\Omega$, and the other is 2.1 $k\Omega$. What is the current through the larger resistor?

A. 0.75 mA.

B. 0.86 mA.

C. 0.99 mA.

D. 1.14 mA.

E. 1.31 mA.

11. An ideal 5.2 V voltage source is connected to two resistors in series. One is 1.2$k\Omega$, and the other is 3.6 $k\Omega$. What is the current through the larger resistor?

A. 0.94 mA.

B. 1.08 mA.

C. 1.25 mA.

D. 1.43 mA.

E. 1.65 mA.

12. An ideal 8.8 V voltage source is connected to two resistors in series. One is 0.8$k\Omega$, and the other is 2.9 $k\Omega$. What is the current through the larger resistor?

A. 1.56 mA.

B. 1.8 mA.

C. 2.07 mA.

D. 2.38 mA.

E. 2.74 mA.

a21CircuitsBioInstDC_circuits Q2

1. A 6 ohm resistor is connected in series to a pair of 5 ohm resistors that are in parallel. What is the net resistance?

A. 7.4 ohms.

B. 8.5 ohms.

C. 9.8 ohms.

D. 11.2 ohms.

The next page might contain more answer choices for this question

E. 12.9 ohms.

2. A 8 ohm resistor is connected in series to a pair of 5.6 ohm resistors that are in parallel. What is the net resistance?

   A. 7.1 ohms.

   B. 8.2 ohms.

   C. 9.4 ohms.

   D. 10.8 ohms.

   E. 12.4 ohms.

3. A 6.6 ohm resistor is connected in series to a pair of 6.4 ohm resistors that are in parallel. What is the net resistance?

   A. 6.4 ohms.

   B. 7.4 ohms.

   C. 8.5 ohms.

   D. 9.8 ohms.

   E. 11.3 ohms.

4. A 5.9 ohm resistor is connected in series to a pair of 3 ohm resistors that are in parallel. What is the net resistance?

   A. 5.6 ohms.

   B. 6.4 ohms.

   C. 7.4 ohms.

   D. 8.5 ohms.

   E. 9.8 ohms.

5. A 5.7 ohm resistor is connected in series to a pair of 3.8 ohm resistors that are in parallel. What is the net resistance?

   A. 5 ohms.

   B. 5.7 ohms.

   C. 6.6 ohms.

   D. 7.6 ohms.

   E. 8.7 ohms.

6. A 6.4 ohm resistor is connected in series to a pair of 7.4 ohm resistors that are in parallel. What is the net resistance?

   A. 10.1 ohms.

   B. 11.6 ohms.

   C. 13.4 ohms.

   D. 15.4 ohms.

   E. 17.7 ohms.

7. A 5.6 ohm resistor is connected in series to a pair of 7.2 ohm resistors that are in parallel. What is the net resistance?

   A. 7 ohms.

The next page might contain more answer choices for this question

B. 8 ohms.

C. 9.2 ohms.

D. 10.6 ohms.

E. 12.2 ohms.

8. A 8.1 ohm resistor is connected in series to a pair of 5.2 ohm resistors that are in parallel. What is the net resistance?

A. 6.1 ohms.

B. 7 ohms.

C. 8.1 ohms.

D. 9.3 ohms.

E. 10.7 ohms.

9. A 5.8 ohm resistor is connected in series to a pair of 2.8 ohm resistors that are in parallel. What is the net resistance?

A. 7.2 ohms.

B. 8.3 ohms.

C. 9.5 ohms.

D. 11 ohms.

E. 12.6 ohms.

10. A 7 ohm resistor is connected in series to a pair of 3.4 ohm resistors that are in parallel. What is the net resistance?

A. 6.6 ohms.

B. 7.6 ohms.

C. 8.7 ohms.

D. 10 ohms.

E. 11.5 ohms.

11. A 6.3 ohm resistor is connected in series to a pair of 3.4 ohm resistors that are in parallel. What is the net resistance?

A. 5.3 ohms.

B. 6 ohms.

C. 7 ohms.

D. 8 ohms.

E. 9.2 ohms.

12. A 7.5 ohm resistor is connected in series to a pair of 7 ohm resistors that are in parallel. What is the net resistance?

A. 8.3 ohms.

B. 9.6 ohms.

C. 11 ohms.

D. 12.7 ohms.

E. 14.5 ohms.

The next page might contain more answer choices for this question

a21CircuitsBioInstDC_circuits Q3

1. Two 8.8 ohm resistors are connected in parallel. This combination is then connected in series to a 2.8 ohm resistor. What is the net resistance?
   - A. 6.3 ohms.
   - **B. 7.2 ohms.**
   - C. 8.3 ohms.
   - D. 9.5 ohms.
   - E. 11 ohms.
2. Two 6.2 ohm resistors are connected in parallel. This combination is then connected in series to a 2.4 ohm resistor. What is the net resistance?
   - A. 3.1 ohms.
   - B. 3.6 ohms.
   - C. 4.2 ohms.
   - D. 4.8 ohms.
   - **E. 5.5 ohms.**
3. Two 6.6 ohm resistors are connected in parallel. This combination is then connected in series to a 3.4 ohm resistor. What is the net resistance?
   - A. 4.4 ohms.
   - B. 5.1 ohms.
   - C. 5.8 ohms.
   - **D. 6.7 ohms.**
   - E. 7.7 ohms.
4. Two 6.2 ohm resistors are connected in parallel. This combination is then connected in series to a 2.6 ohm resistor. What is the net resistance?
   - A. 3.7 ohms.
   - B. 4.3 ohms.
   - C. 5 ohms.
   - **D. 5.7 ohms.**
   - E. 6.6 ohms.
5. Two 6.4 ohm resistors are connected in parallel. This combination is then connected in series to a 6.6 ohm resistor. What is the net resistance?
   - A. 8.5 ohms.
   - **B. 9.8 ohms.**
   - C. 11.3 ohms.
   - D. 13 ohms.
   - E. 14.9 ohms.
6. Two 8.2 ohm resistors are connected in parallel. This combination is then connected in series to a 5.8 ohm resistor. What is the net resistance?
   - **A. 9.9 ohms.**

The next page might contain more answer choices for this question

B. 11.4 ohms.

C. 13.1 ohms.

D. 15.1 ohms.

E. 17.3 ohms.

7. Two 6.2 ohm resistors are connected in parallel. This combination is then connected in series to a 3.4 ohm resistor. What is the net resistance?

A. 6.5 ohms.

B. 7.5 ohms.

C. 8.6 ohms.

D. 9.9 ohms.

E. 11.4 ohms.

8. Two 7 ohm resistors are connected in parallel. This combination is then connected in series to a 2.8 ohm resistor. What is the net resistance?

A. 5.5 ohms.

B. 6.3 ohms.

C. 7.2 ohms.

D. 8.3 ohms.

E. 9.6 ohms.

9. Two 9.4 ohm resistors are connected in parallel. This combination is then connected in series to a 2.4 ohm resistor. What is the net resistance?

A. 5.4 ohms.

B. 6.2 ohms.

C. 7.1 ohms.

D. 8.2 ohms.

E. 9.4 ohms.

10. Two 7.4 ohm resistors are connected in parallel. This combination is then connected in series to a 2.8 ohm resistor. What is the net resistance?

A. 5.7 ohms.

B. 6.5 ohms.

C. 7.5 ohms.

D. 8.6 ohms.

E. 9.9 ohms.

11. Two 8.2 ohm resistors are connected in parallel. This combination is then connected in series to a 5.8 ohm resistor. What is the net resistance?

A. 9.9 ohms.

B. 11.4 ohms.

C. 13.1 ohms.

D. 15.1 ohms.

E. 17.3 ohms.

The next page might contain more answer choices for this question

12. Two 7.8 ohm resistors are connected in parallel. This combination is then connected in series to a 5.4 ohm resistor. What is the net resistance?

 A. 9.3 ohms.

 B. 10.7 ohms.

 C. 12.3 ohms.

 D. 14.1 ohms.

 E. 16.3 ohms.

a21CircuitsBioInstDC_circuits Q4

1. An ideal 6 volt battery is connected to a 0.073 ohm resistor. To measure the current an ammeter with a resistance of $14 m\Omega$ is used. What current does the ammeter actually read?

 A. 60 A.

 B. 69 A.

 C. 79.3 A.

 D. 91.2 A.

 E. 104.9 A.

2. An ideal 7.5 volt battery is connected to a 0.06 ohm resistor. To measure the current an ammeter with a resistance of $19 m\Omega$ is used. What current does the ammeter actually read?

 A. 54.3 A.

 B. 62.4 A.

 C. 71.8 A.

 D. 82.6 A.

 E. 94.9 A.

3. An ideal 7.3 volt battery is connected to a 0.071 ohm resistor. To measure the current an ammeter with a resistance of $27 m\Omega$ is used. What current does the ammeter actually read?

 A. 49 A.

 B. 56.3 A.

 C. 64.8 A.

 D. 74.5 A.

 E. 85.7 A.

4. An ideal 6.4 volt battery is connected to a 0.071 ohm resistor. To measure the current an ammeter with a resistance of $21 m\Omega$ is used. What current does the ammeter actually read?

 A. 60.5 A.

 B. 69.6 A.

 C. 80 A.

 D. 92 A.

 E. 105.8 A.

5. An ideal 6.8 volt battery is connected to a 0.096 ohm resistor. To measure the current an ammeter with a resistance of $29 m\Omega$ is used. What current does the ammeter actually read?

The next page might contain more answer choices for this question

A. 35.8 A.
B. 41.1 A.
C. 47.3 A.
D. 54.4 A.
E. 62.6 A.

6. An ideal 6 volt battery is connected to a 0.06 ohm resistor. To measure the current an ammeter with a resistance of $25m\Omega$ is used. What current does the ammeter actually read?
A. 70.6 A.
B. 81.2 A.
C. 93.4 A.
D. 107.4 A.
E. 123.5 A.

7. An ideal 7.5 volt battery is connected to a 0.084 ohm resistor. To measure the current an ammeter with a resistance of $14m\Omega$ is used. What current does the ammeter actually read?
A. 43.8 A.
B. 50.3 A.
C. 57.9 A.
D. 66.5 A.
E. 76.5 A.

8. An ideal 7.4 volt battery is connected to a 0.074 ohm resistor. To measure the current an ammeter with a resistance of $12m\Omega$ is used. What current does the ammeter actually read?
A. 49.2 A.
B. 56.6 A.
C. 65.1 A.
D. 74.8 A.
E. 86 A.

9. An ideal 5.9 volt battery is connected to a 0.059 ohm resistor. To measure the current an ammeter with a resistance of $24m\Omega$ is used. What current does the ammeter actually read?
A. 71.1 A.
B. 81.7 A.
C. 94 A.
D. 108.1 A.
E. 124.3 A.

10. An ideal 7.8 volt battery is connected to a 0.064 ohm resistor. To measure the current an ammeter with a resistance of $17m\Omega$ is used. What current does the ammeter actually read?
A. 63.3 A.
B. 72.8 A.
C. 83.7 A.
D. 96.3 A.

The next page might contain more answer choices for this question

E. 110.7 A.

11. An ideal 5.7 volt battery is connected to a 0.091 ohm resistor. To measure the current an ammeter with a resistance of $23 m\Omega$ is used. What current does the ammeter actually read?

A. 50 A.

B. 57.5 A.

C. 66.1 A.

D. 76 A.

E. 87.5 A.

12. An ideal 5.7 volt battery is connected to a 0.054 ohm resistor. To measure the current an ammeter with a resistance of $13 m\Omega$ is used. What current does the ammeter actually read?

A. 64.3 A.

B. 74 A.

C. 85.1 A.

D. 97.8 A.

E. 112.5 A.

a21CircuitsBioInstDC_circuits Q5

1. A battery has an emf of 6.1 volts, and an internal resistance of 366 $k\Omega$. It is connected to a 3.6 $M\Omega$ resistor. What power is developed in the 3.6 $M\Omega$ resistor?

A. 6.44 μW.

B. 7.41 μW.

C. 8.52 μW.

D. 9.79 μW.

E. 11.26 μW.

2. A battery has an emf of 6.5 volts, and an internal resistance of 446 $k\Omega$. It is connected to a 3.5 $M\Omega$ resistor. What power is developed in the 3.5 $M\Omega$ resistor?

A. 8.26 μW.

B. 9.5 μW.

C. 10.92 μW.

D. 12.56 μW.

E. 14.44 μW.

3. A battery has an emf of 5.6 volts, and an internal resistance of 295 $k\Omega$. It is connected to a 4.1 $M\Omega$ resistor. What power is developed in the 4.1 $M\Omega$ resistor?

A. 3.81 μW.

B. 4.38 μW.

C. 5.03 μW.

D. 5.79 μW.

E. 6.66 μW.

The next page might contain more answer choices for this question

4. A battery has an emf of 5.3 volts, and an internal resistance of 428 $k\Omega$. It is connected to a 2.3 $M\Omega$ resistor. What power is developed in the 2.3 $M\Omega$ resistor?
   - A. 4.96 μW.
   - B. 5.71 μW.
   - C. 6.56 μW.
   - D. 7.55 μW.
   - **E. 8.68 μW.**

5. A battery has an emf of 5.5 volts, and an internal resistance of 296 $k\Omega$. It is connected to a 3.3 $M\Omega$ resistor. What power is developed in the 3.3 $M\Omega$ resistor?
   - **A. 7.72 μW.**
   - B. 8.88 μW.
   - C. 10.21 μW.
   - D. 11.74 μW.
   - E. 13.5 μW.

6. A battery has an emf of 7.8 volts, and an internal resistance of 351 $k\Omega$. It is connected to a 4.2 $M\Omega$ resistor. What power is developed in the 4.2 $M\Omega$ resistor?
   - **A. 12.34 μW.**
   - B. 14.19 μW.
   - C. 16.32 μW.
   - D. 18.76 μW.
   - E. 21.58 μW.

7. A battery has an emf of 5.6 volts, and an internal resistance of 450 $k\Omega$. It is connected to a 2.7 $M\Omega$ resistor. What power is developed in the 2.7 $M\Omega$ resistor?
   - A. 4.88 μW.
   - B. 5.61 μW.
   - C. 6.45 μW.
   - D. 7.42 μW.
   - **E. 8.53 μW.**

8. A battery has an emf of 6.7 volts, and an internal resistance of 348 $k\Omega$. It is connected to a 3.8 $M\Omega$ resistor. What power is developed in the 3.8 $M\Omega$ resistor?
   - **A. 9.91 μW.**
   - B. 11.4 μW.
   - C. 13.11 μW.
   - D. 15.08 μW.
   - E. 17.34 μW.

9. A battery has an emf of 7.1 volts, and an internal resistance of 246 $k\Omega$. It is connected to a 3.3 $M\Omega$ resistor. What power is developed in the 3.3 $M\Omega$ resistor?
   - A. 10 μW.
   - B. 11.5 μW.

The next page might contain more answer choices for this question

C. 13.23 μW.

D. 15.21 μW.

E. 17.5 μW.

10. A battery has an emf of 5.6 volts, and an internal resistance of 460 $k\Omega$. It is connected to a 2.4 $M\Omega$ resistor. What power is developed in the 2.4 $M\Omega$ resistor?

A. 6.05 μW.

B. 6.96 μW.

C. 8 μW.

D. 9.2 μW.

E. 10.58 μW.

11. A battery has an emf of 7 volts, and an internal resistance of 357 $k\Omega$. It is connected to a 2.9 $M\Omega$ resistor. What power is developed in the 2.9 $M\Omega$ resistor?

A. 13.4 μW.

B. 15.4 μW.

C. 17.72 μW.

D. 20.37 μW.

E. 23.43 μW.

12. A battery has an emf of 6.5 volts, and an internal resistance of 244 $k\Omega$. It is connected to a 4 $M\Omega$ resistor. What power is developed in the 4 $M\Omega$ resistor?

A. 7.09 μW.

B. 8.16 μW.

C. 9.38 μW.

D. 10.79 μW.

E. 12.41 μW.

19 a21CircuitsBioInstDC_RCdecaySimple

1. A 621 mF capacitor is connected in series to a 628 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^3? (where e =2.7...)[140]

A. 1.17 x 10^5 s.

B. 3.7 x 10^5 s.

C. 1.17 x 10^6 s.

D. 3.7 x 10^6 s.

E. 1.17 x 10^7 s.

2. A 784 µ F capacitor is connected in series to a 543 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^3? (where e =2.7...)[141]

A. 4.04 x 10^1 s.

B. 1.28 x 10^2 s.

C. 4.04 x 10^2 s.

D. 1.28 x 10^3 s.

The next page might contain more answer choices for this question

E. 4.04×10^3 s.

3. A 354 mF capacitor is connected in series to a 407 MΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^3? (where e =2.7...)[142]

A. 4.32×10^7 s.

B. 1.37×10^8 s.

C. 4.32×10^8 s.

D. 1.37×10^9 s.

E. 4.32×10^9 s.

4. A 10 F capacitor is connected in series to a 9Ω resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^4? (where e =2.7...)[143]

A. 3.6×10^2 s.

B. 1.14×10^3 s.

C. 3.6×10^3 s.

D. 1.14×10^4 s.

E. 3.6×10^4 s.

19.1 Renditions

a21CircuitsBioInstDC_RCdecaySimple Q1

1. A 547 mF capacitor is connected in series to a 2 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^4? (where e =2.7...)

A. 1.38×10^3 s.

B. 4.38×10^3 s.

C. 1.38×10^4 s.

D. 4.38×10^4 s.

E. 1.38×10^5 s.

2. A 819 mF capacitor is connected in series to a 798 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^4? (where e =2.7...)

A. 8.27×10^5 s.

B. 2.61×10^6 s.

C. 8.27×10^6 s.

D. 2.61×10^7 s.

E. 8.27×10^7 s.

a21CircuitsBioInstDC_RCdecaySimple Q2

1. A 665 µ F capacitor is connected in series to a 806 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^2? (where e =2.7...)

A. 3.39×10^1 s.

B. 1.07×10^2 s.

C. 3.39×10^2 s.

D. 1.07 x 10^3 s.

E. 3.39 x 10^3 s.

2. A 65 µ F capacitor is connected in series to a 414 kΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^4? (where e =2.7...)

A. 1.08 x 10^1 s.

B. 3.4 x 10^1 s.

C. 1.08 x 10^2 s.

D. 3.4 x 10^2 s.

E. 1.08 x 10^3 s.

a21CircuitsBioInstDC_RCdecaySimple Q3

1. A 206 mF capacitor is connected in series to a 990 MΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^4? (where e =2.7...)

A. 8.16 x 10^8 s.

B. 2.58 x 10^9 s.

C. 8.16 x 10^9 s.

D. 2.58 x 10^{10} s.

E. 8.16 x 10^{10} s.

2. A 727 mF capacitor is connected in series to a 860 MΩ resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^3? (where e =2.7...)

A. 1.88 x 10^9 s.

B. 5.93 x 10^9 s.

C. 1.88 x 10^{10} s.

D. 5.93 x 10^{10} s.

E. 1.88 x 10^{11} s.

a21CircuitsBioInstDC_RCdecaySimple Q4

1. A 5 F capacitor is connected in series to a 8Ω resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^4? (where e =2.7...)

A. 1.6 x 10^1 s.

B. 5.06 x 10^1 s.

C. 1.6 x 10^2 s.

D. 5.06 x 10^2 s.

E. 1.6 x 10^3 s.

2. A 10 F capacitor is connected in series to a 10Ω resistor. If the capacitor is discharged, how long does it take to fall by a factor of e^4? (where e =2.7...)

A. 4 x 10^0 s.

B. 1.26 x 10^1 s.

C. 4 x 10^1 s.

D. 1.26 x 10^2 s.

E. 4 x 10^2 s.

The next page might contain more answer choices for this question

20 d_cp2.11

1. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 1.5 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity ($2.2\,\mathbf{i} + 3.3\,\mathbf{j}\ + 1.1\,\mathbf{k}$) x 10^4 m/s?[144]
   - A. 1.440E-14 N
   - **B. 1.584E-14 N**
   - C. 1.742E-14 N
   - D. 1.917E-14 N
   - E. 2.108E-14 N

2. A charged particle in a magnetic field of 1.000E-04 T is moving perpendicular to the magnetic field with a speed of 5.000E+05 m/s. What is the period of orbit if orbital radius is 0.5 m?[145]
   - A. 4.721E-06 s
   - B. 5.193E-06 s
   - C. 5.712E-06 s
   - **D. 6.283E-06 s**
   - E. 6.912E-06 s

3. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.05 T . It emerges after being deflected by 45° from its original direction. How much time did it spend in that magnetic field?[146]
   - **A. 3.259E-07 s**
   - B. 3.585E-07 s
   - C. 3.944E-07 s
   - D. 4.338E-07 s
   - E. 4.772E-07 s

4. A 50 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 10 g, and the magnitude of the magnetic field is 0.5 T. What current is required to maintain this balance?[147]
   - **A. 3.920E-01 A**
   - B. 4.312E-01 A
   - C. 4.743E-01 A
   - D. 5.218E-01 A
   - E. 5.739E-01 A

5. A long rigid wire carries a 5 A current. What is the magnetic force per unit length on the wire if a 0.3 T magnetic field is directed 60° away from the wire?[148]
   - A. 1.074E+00 N/m
   - B. 1.181E+00 N/m
   - **C. 1.299E+00 N/m**
   - D. 1.429E+00 N/m
   - E. 1.572E+00 N/m

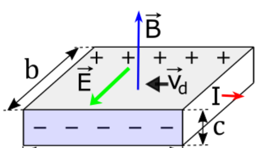
The next page might contain more answer choices for this question

6. A circular current loop of radius 2 cm carries a current of 2 mA. What is the magnitude of the torque if the dipole is oriented at 30° to a uniform magnetic fied of 0.5 T? [149]

   A. 4.292E-07 N m
   B. 4.721E-07 N m
   C. 5.193E-07 N m
   D. 5.712E-07 N m
   E. 6.283E-07 N m

7. An electron beam (m=9.1 x 10^{-31}kg, q=1.6 x 10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 2 mT and 6.000E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?[150]

   A. 2.254E+06 m/s
   B. 2.479E+06 m/s
   C. 2.727E+06 m/s
   D. 3.000E+06 m/s
   E. 3.300E+06 m/s

8. 

The silver ribbon shown are a=3.5 cm, b=2 cm, and c= 0.2 cm. The current carries a current of 100 A and it lies in a uniform magnetic field of 1.5 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.[151]

   A. 5.419E-06 V
   B. 5.961E-06 V
   C. 6.557E-06 V
   D. 7.213E-06 V
   E. 7.934E-06 V

9. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.5 m and a magneticfield of 1.8 T. What is their maximum kinetic energy?[152]

   A. 3.904E+01 MeV
   B. 4.294E+01 MeV
   C. 4.723E+01 MeV
   D. 5.196E+01 MeV
   E. 5.715E+01 MeV

20.1 Renditions

d_cp2.11 Q1

1. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 5.11 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(8.99\,\mathbf{i} + 7.56\,\mathbf{j}\ + 8.49\,\mathbf{k})$ x 10^4 m/s?

   A. 1.124E-13 N

The next page might contain more answer choices for this question

B. 1.236E-13 N

C. 1.360E-13 N

D. 1.496E-13 N

E. 1.645E-13 N

2. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 1.21 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(2.75\,\mathbf{i} + 9.06\,\mathbf{j}\ + 3.5\,\mathbf{k})$ x 10^4 m/s?

   A. 2.899E-14 N

   B. 3.189E-14 N

   C. 3.508E-14 N

   D. 3.859E-14 N

   E. 4.245E-14 N

3. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 7.22 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(2.85\,\mathbf{i} + 1.28\,\mathbf{j}\ + 8.49\,\mathbf{k})$ x 10^4 m/s?

   A. 2.222E-14 N

   B. 2.444E-14 N

   C. 2.688E-14 N

   D. 2.957E-14 N

   E. 3.253E-14 N

4. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 6.96 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(7.01\,\mathbf{i} + 5.35\,\mathbf{j}\ + 2.07\,\mathbf{k})$ x 10^4 m/s?

   A. 1.192E-13 N

   B. 1.311E-13 N

   C. 1.442E-13 N

   D. 1.586E-13 N

   E. 1.745E-13 N

5. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 3.78 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(1.43\,\mathbf{i} + 8.8\,\mathbf{j}\ + 4.16\,\mathbf{k})$ x 10^4 m/s?

   A. 1.064E-13 N

   B. 1.171E-13 N

   C. 1.288E-13 N

   D. 1.417E-13 N

   E. 1.558E-13 N

6. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 3.41 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(6.21\,\mathbf{i} + 5.39\,\mathbf{j}\ + 3.81\,\mathbf{k})$ x 10^4 m/s?

   A. 4.419E-14 N

The next page might contain more answer choices for this question

B. 4.861E-14 N
C. 5.347E-14 N
D. 5.882E-14 N
E. 6.470E-14 N

7. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 3.62 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(6.7\,\mathbf{i} + 2.31\,\mathbf{j}\ + 7.08\,\mathbf{k})$ x 10^4 m/s?
A. 1.828E-14 N
B. 2.010E-14 N
C. 2.211E-14 N
D. 2.433E-14 N
E. 2.676E-14 N

8. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 3.23 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(3.84\,\mathbf{i} + 8.79\,\mathbf{j}\ + 9.05\,\mathbf{k})$ x 10^4 m/s?
A. 7.509E-14 N
B. 8.259E-14 N
C. 9.085E-14 N
D. 9.994E-14 N
E. 1.099E-13 N

9. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 8.55 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(1.96\,\mathbf{i} + 1.68\,\mathbf{j}\ + 6.92\,\mathbf{k})$ x 10^4 m/s?
A. 4.179E-14 N
B. 4.596E-14 N
C. 5.056E-14 N
D. 5.562E-14 N
E. 6.118E-14 N

10. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 4.6 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(1.92\,\mathbf{i} + 1.55\,\mathbf{j}\ + 6.22\,\mathbf{k})$ x 10^4 m/s?
A. 2.074E-14 N
B. 2.282E-14 N
C. 2.510E-14 N
D. 2.761E-14 N
E. 3.037E-14 N

11. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 4.36 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(8.25\,\mathbf{i} + 7.71\,\mathbf{j}\ + 2.91\,\mathbf{k})$ x 10^4 m/s?
A. 8.890E-14 N

The next page might contain more answer choices for this question

- B. 9.779E-14 N
- **C. 1.076E-13 N**
- D. 1.183E-13 N
- E. 1.302E-13 N

12. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 5.75 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(1.81\,\mathbf{i} + 2.05\,\mathbf{j}\ + 4.49\,\mathbf{k})\,\mathrm{x}\,10^4$ m/s?
    - A. 2.576E-14 N
    - B. 2.834E-14 N
    - C. 3.117E-14 N
    - D. 3.429E-14 N
    - **E. 3.772E-14 N**

13. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 8.16 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(1.13\,\mathbf{i} + 3.24\,\mathbf{j}\ + 6.96\,\mathbf{k})\,\mathrm{x}\,10^4$ m/s?
    - A. 7.691E-14 N
    - **B. 8.460E-14 N**
    - C. 9.306E-14 N
    - D. 1.024E-13 N
    - E. 1.126E-13 N

14. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 7.83 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(6.16\,\mathbf{i} + 2.1\,\mathbf{j}\ + 1.74\,\mathbf{k})\,\mathrm{x}\,10^4$ m/s?
    - A. 4.783E-14 N
    - **B. 5.262E-14 N**
    - C. 5.788E-14 N
    - D. 6.367E-14 N
    - E. 7.003E-14 N

15. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 3.13 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(5.64\,\mathbf{i} + 1.93\,\mathbf{j}\ + 8.71\,\mathbf{k})\,\mathrm{x}\,10^4$ m/s?
    - A. 1.757E-14 N
    - **B. 1.933E-14 N**
    - C. 2.126E-14 N
    - D. 2.339E-14 N
    - E. 2.573E-14 N

16. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 4.91 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(4.96\,\mathbf{i} + 6.81\,\mathbf{j}\ + 8.66\,\mathbf{k})\,\mathrm{x}\,10^4$ m/s?
    - A. 9.727E-14 N

The next page might contain more answer choices for this question

B. 1.070E-13 N

C. 1.177E-13 N

D. 1.295E-13 N

E. 1.424E-13 N

17. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 9.82 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(7.64\,\mathbf{i} + 4.85\,\mathbf{j}\ + 6.02\,\mathbf{k})\,\mathrm{x}\,10^4$ m/s?

A. 1.386E-13 N

B. 1.524E-13 N

C. 1.676E-13 N

D. 1.844E-13 N

E. 2.029E-13 N

18. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 9.76 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(6.97\,\mathbf{i} + 8.52\,\mathbf{j}\ + 9.46\,\mathbf{k})\,\mathrm{x}\,10^4$ m/s?

A. 2.199E-13 N

B. 2.419E-13 N

C. 2.661E-13 N

D. 2.927E-13 N

E. 3.220E-13 N

19. An alpha-particle (q=3.2x10^{-19}C) moves through a uniform magnetic field that is parallel to the positive z-axis with magnitude 4.69 T. What is the x-component of the force on the alpha-particle if it is moving with a velocity $(8.9\,\mathbf{i} + 4.27\,\mathbf{j}\ + 7.52\,\mathbf{k})\,\mathrm{x}\,10^4$ m/s?

A. 5.296E-14 N

B. 5.826E-14 N

C. 6.408E-14 N

D. 7.049E-14 N

E. 7.754E-14 N

d_cp2.11 Q2

1. A charged particle in a magnetic field of 2.780E-04 T is moving perpendicular to the magnetic field with a speed of 6.370E+05 m/s. What is the period of orbit if orbital radius is 0.671 m?

A. 6.017E-06 s

B. 6.619E-06 s

C. 7.280E-06 s

D. 8.008E-06 s

E. 8.809E-06 s

2. A charged particle in a magnetic field of 4.130E-04 T is moving perpendicular to the magnetic field with a speed of 4.710E+05 m/s. What is the period of orbit if orbital radius is 0.458 m?

A. 6.110E-06 s

The next page might contain more answer choices for this question

B. 6.721E-06 s

C. 7.393E-06 s

D. 8.132E-06 s

E. 8.945E-06 s

3. A charged particle in a magnetic field of 3.330E-04 T is moving perpendicular to the magnetic field with a speed of 4.800E+05 m/s. What is the period of orbit if orbital radius is 0.402 m?

A. 4.784E-06 s

B. 5.262E-06 s

C. 5.788E-06 s

D. 6.367E-06 s

E. 7.004E-06 s

4. A charged particle in a magnetic field of 2.740E-04 T is moving perpendicular to the magnetic field with a speed of 1.390E+05 m/s. What is the period of orbit if orbital radius is 0.776 m?

A. 2.899E-05 s

B. 3.189E-05 s

C. 3.508E-05 s

D. 3.859E-05 s

E. 4.244E-05 s

5. A charged particle in a magnetic field of 4.910E-04 T is moving perpendicular to the magnetic field with a speed of 3.000E+05 m/s. What is the period of orbit if orbital radius is 0.507 m?

A. 1.062E-05 s

B. 1.168E-05 s

C. 1.285E-05 s

D. 1.413E-05 s

E. 1.555E-05 s

6. A charged particle in a magnetic field of 3.600E-04 T is moving perpendicular to the magnetic field with a speed of 5.960E+05 m/s. What is the period of orbit if orbital radius is 0.397 m?

A. 3.805E-06 s

B. 4.185E-06 s

C. 4.604E-06 s

D. 5.064E-06 s

E. 5.571E-06 s

7. A charged particle in a magnetic field of 3.720E-04 T is moving perpendicular to the magnetic field with a speed of 4.780E+05 m/s. What is the period of orbit if orbital radius is 0.868 m?

A. 7.793E-06 s

B. 8.572E-06 s

C. 9.429E-06 s

D. 1.037E-05 s

E. 1.141E-05 s

The next page might contain more answer choices for this question

8. A charged particle in a magnetic field of 4.480E-04 T is moving perpendicular to the magnetic field with a speed of 7.700E+05 m/s. What is the period of orbit if orbital radius is 0.368 m?
   - A. 2.730E-06 s
   - **B. 3.003E-06 s**
   - C. 3.303E-06 s
   - D. 3.633E-06 s
   - E. 3.997E-06 s
9. A charged particle in a magnetic field of 4.090E-04 T is moving perpendicular to the magnetic field with a speed of 5.980E+05 m/s. What is the period of orbit if orbital radius is 0.633 m?
   - A. 4.543E-06 s
   - B. 4.997E-06 s
   - C. 5.497E-06 s
   - D. 6.046E-06 s
   - **E. 6.651E-06 s**
10. A charged particle in a magnetic field of 3.350E-04 T is moving perpendicular to the magnetic field with a speed of 4.350E+05 m/s. What is the period of orbit if orbital radius is 0.841 m?
    - A. 1.004E-05 s
    - B. 1.104E-05 s
    - **C. 1.215E-05 s**
    - D. 1.336E-05 s
    - E. 1.470E-05 s
11. A charged particle in a magnetic field of 3.410E-04 T is moving perpendicular to the magnetic field with a speed of 5.010E+05 m/s. What is the period of orbit if orbital radius is 0.508 m?
    - A. 5.792E-06 s
    - **B. 6.371E-06 s**
    - C. 7.008E-06 s
    - D. 7.709E-06 s
    - E. 8.480E-06 s
12. A charged particle in a magnetic field of 1.750E-04 T is moving perpendicular to the magnetic field with a speed of 2.330E+05 m/s. What is the period of orbit if orbital radius is 0.893 m?
    - A. 2.189E-05 s
    - **B. 2.408E-05 s**
    - C. 2.649E-05 s
    - D. 2.914E-05 s
    - E. 3.205E-05 s
13. A charged particle in a magnetic field of 2.750E-04 T is moving perpendicular to the magnetic field with a speed of 2.120E+05 m/s. What is the period of orbit if orbital radius is 0.385 m?
    - **A. 1.141E-05 s**
    - B. 1.255E-05 s

The next page might contain more answer choices for this question

C. 1.381E-05 s
D. 1.519E-05 s
E. 1.671E-05 s

14. A charged particle in a magnetic field of 4.970E-04 T is moving perpendicular to the magnetic field with a speed of 2.950E+05 m/s. What is the period of orbit if orbital radius is 0.344 m?

A. 7.327E-06 s
B. 8.060E-06 s
C. 8.865E-06 s
D. 9.752E-06 s
E. 1.073E-05 s

15. A charged particle in a magnetic field of 1.480E-04 T is moving perpendicular to the magnetic field with a speed of 4.520E+05 m/s. What is the period of orbit if orbital radius is 0.4 m?

A. 5.560E-06 s
B. 6.116E-06 s
C. 6.728E-06 s
D. 7.401E-06 s
E. 8.141E-06 s

16. A charged particle in a magnetic field of 3.820E-04 T is moving perpendicular to the magnetic field with a speed of 3.890E+05 m/s. What is the period of orbit if orbital radius is 0.718 m?

A. 8.713E-06 s
B. 9.584E-06 s
C. 1.054E-05 s
D. 1.160E-05 s
E. 1.276E-05 s

17. A charged particle in a magnetic field of 4.660E-04 T is moving perpendicular to the magnetic field with a speed of 7.720E+05 m/s. What is the period of orbit if orbital radius is 0.747 m?

A. 6.080E-06 s
B. 6.688E-06 s
C. 7.356E-06 s
D. 8.092E-06 s
E. 8.901E-06 s

18. A charged particle in a magnetic field of 5.500E-04 T is moving perpendicular to the magnetic field with a speed of 2.930E+05 m/s. What is the period of orbit if orbital radius is 0.787 m?

A. 1.688E-05 s
B. 1.856E-05 s
C. 2.042E-05 s
D. 2.246E-05 s
E. 2.471E-05 s

The next page might contain more answer choices for this question

19. A charged particle in a magnetic field of 6.400E-04 T is moving perpendicular to the magnetic field with a speed of 1.360E+05 m/s. What is the period of orbit if orbital radius is 0.751 m?
    - A. 3.154E-05 s
    - **B. 3.470E-05 s**
    - C. 3.817E-05 s
    - D. 4.198E-05 s
    - E. 4.618E-05 s

d_cp2.11 Q3

1. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0783 T . It emerges after being deflected by 64° from its original direction. How much time did it spend in that magnetic field?
    - A. 2.224E-07 s
    - B. 2.446E-07 s
    - C. 2.691E-07 s
    - **D. 2.960E-07 s**
    - E. 3.256E-07 s
2. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0883 T . It emerges after being deflected by 74° from its original direction. How much time did it spend in that magnetic field?
    - A. 2.280E-07 s
    - B. 2.508E-07 s
    - C. 2.759E-07 s
    - **D. 3.035E-07 s**
    - E. 3.339E-07 s
3. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0393 T . It emerges after being deflected by 49° from its original direction. How much time did it spend in that magnetic field?
    - A. 4.105E-07 s
    - **B. 4.515E-07 s**
    - C. 4.967E-07 s
    - D. 5.464E-07 s
    - E. 6.010E-07 s
4. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0618 T . It emerges after being deflected by 67° from its original direction. How much time did it spend in that magnetic field?
    - A. 3.245E-07 s
    - B. 3.569E-07 s
    - **C. 3.926E-07 s**
    - D. 4.319E-07 s

The next page might contain more answer choices for this question

E. 4.751E-07 s

5. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0837 T . It emerges after being deflected by 41° from its original direction. How much time did it spend in that magnetic field?

   A. 1.212E-07 s

   B. 1.333E-07 s

   C. 1.466E-07 s

   D. 1.613E-07 s

   E. 1.774E-07 s

6. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0108 T . It emerges after being deflected by 77° from its original direction. How much time did it spend in that magnetic field?

   A. 1.940E-06 s

   B. 2.134E-06 s

   C. 2.347E-06 s

   D. 2.582E-06 s

   E. 2.840E-06 s

7. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0454 T . It emerges after being deflected by 74° from its original direction. How much time did it spend in that magnetic field?

   A. 4.878E-07 s

   B. 5.366E-07 s

   C. 5.903E-07 s

   D. 6.493E-07 s

   E. 7.143E-07 s

8. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0243 T . It emerges after being deflected by 82° from its original direction. How much time did it spend in that magnetic field?

   A. 1.222E-06 s

   B. 1.344E-06 s

   C. 1.479E-06 s

   D. 1.627E-06 s

   E. 1.789E-06 s

9. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0775 T . It emerges after being deflected by 73° from its original direction. How much time did it spend in that magnetic field?

   A. 2.819E-07 s

   B. 3.101E-07 s

   C. 3.411E-07 s

   D. 3.752E-07 s

The next page might contain more answer choices for this question

E. 4.128E-07 s

10. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0631 T . It emerges after being deflected by 44° from its original direction. How much time did it spend in that magnetic field?

A. 1.897E-07 s

B. 2.087E-07 s

C. 2.296E-07 s

D. 2.525E-07 s

E. 2.778E-07 s

11. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.061 T . It emerges after being deflected by 75° from its original direction. How much time did it spend in that magnetic field?

A. 4.453E-07 s

B. 4.898E-07 s

C. 5.388E-07 s

D. 5.927E-07 s

E. 6.519E-07 s

12. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.011 T . It emerges after being deflected by 70° from its original direction. How much time did it spend in that magnetic field?

A. 2.095E-06 s

B. 2.305E-06 s

C. 2.535E-06 s

D. 2.789E-06 s

E. 3.067E-06 s

13. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0279 T . It emerges after being deflected by 82° from its original direction. How much time did it spend in that magnetic field?

A. 7.270E-07 s

B. 7.997E-07 s

C. 8.797E-07 s

D. 9.676E-07 s

E. 1.064E-06 s

14. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0482 T . It emerges after being deflected by 82° from its original direction. How much time did it spend in that magnetic field?

A. 4.629E-07 s

B. 5.092E-07 s

C. 5.601E-07 s

D. 6.161E-07 s

The next page might contain more answer choices for this question

E. 6.777E-07 s

15. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0327 T . It emerges after being deflected by 89° from its original direction. How much time did it spend in that magnetic field?

    A. 9.857E-07 s
    B. 1.084E-06 s
    C. 1.193E-06 s
    D. 1.312E-06 s
    E. 1.443E-06 s

16. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0887 T . It emerges after being deflected by 69° from its original direction. How much time did it spend in that magnetic field?

    A. 2.561E-07 s
    B. 2.817E-07 s
    C. 3.099E-07 s
    D. 3.409E-07 s
    E. 3.750E-07 s

17. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0172 T . It emerges after being deflected by 85° from its original direction. How much time did it spend in that magnetic field?

    A. 1.627E-06 s
    B. 1.790E-06 s
    C. 1.969E-06 s
    D. 2.166E-06 s
    E. 2.382E-06 s

18. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0582 T . It emerges after being deflected by 77° from its original direction. How much time did it spend in that magnetic field?

    A. 4.791E-07 s
    B. 5.271E-07 s
    C. 5.798E-07 s
    D. 6.377E-07 s
    E. 7.015E-07 s

19. An alpha-particle (m=6.64x10^{-27}kg, q=3.2x10^{-19}C) briefly enters a uniform magnetic field of magnitude 0.0263 T . It emerges after being deflected by 65° from its original direction. How much time did it spend in that magnetic field?

    A. 8.137E-07 s
    B. 8.951E-07 s
    C. 9.846E-07 s
    D. 1.083E-06 s
    E. 1.191E-06 s

The next page might contain more answer choices for this question

d_cp2.11 Q4

1. A 18 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 8 g, and the magnitude of the magnetic field is 0.351 T. What current is required to maintain this balance?
   - **A. 1.241E+00 A**
   - B. 1.365E+00 A
   - C. 1.501E+00 A
   - D. 1.652E+00 A
   - E. 1.817E+00 A
2. A 25 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 10 g, and the magnitude of the magnetic field is 0.702 T. What current is required to maintain this balance?
   - A. 5.076E-01 A
   - **B. 5.584E-01 A**
   - C. 6.142E-01 A
   - D. 6.757E-01 A
   - E. 7.432E-01 A
3. A 17 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 8 g, and the magnitude of the magnetic field is 0.768 T. What current is required to maintain this balance?
   - A. 4.963E-01 A
   - B. 5.459E-01 A
   - **C. 6.005E-01 A**
   - D. 6.605E-01 A
   - E. 7.266E-01 A
4. A 24 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 10 g, and the magnitude of the magnetic field is 0.706 T. What current is required to maintain this balance?
   - A. 5.258E-01 A
   - **B. 5.784E-01 A**
   - C. 6.362E-01 A
   - D. 6.998E-01 A
   - E. 7.698E-01 A
5. A 96 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 10 g, and the magnitude of the magnetic field is 0.325 T. What current is required to maintain this balance?
   - A. 2.596E-01 A
   - B. 2.855E-01 A
   - **C. 3.141E-01 A**
   - D. 3.455E-01 A

The next page might contain more answer choices for this question

E. 3.801E-01 A

6. A 72 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 14 g, and the magnitude of the magnetic field is 0.54 T. What current is required to maintain this balance?

   A. 2.651E-01 A
   B. 2.916E-01 A
   C. 3.208E-01 A
   D. 3.529E-01 A
   E. 3.882E-01 A

7. A 92 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 15 g, and the magnitude of the magnetic field is 0.713 T. What current is required to maintain this balance?

   A. 2.037E-01 A
   B. 2.241E-01 A
   C. 2.465E-01 A
   D. 2.712E-01 A
   E. 2.983E-01 A

8. A 34 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 8 g, and the magnitude of the magnetic field is 0.348 T. What current is required to maintain this balance?

   A. 6.626E-01 A
   B. 7.289E-01 A
   C. 8.018E-01 A
   D. 8.819E-01 A
   E. 9.701E-01 A

9. A 82 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 11 g, and the magnitude of the magnetic field is 0.459 T. What current is required to maintain this balance?

   A. 1.956E-01 A
   B. 2.152E-01 A
   C. 2.367E-01 A
   D. 2.604E-01 A
   E. 2.864E-01 A

10. A 97 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 7 g, and the magnitude of the magnetic field is 0.753 T. What current is required to maintain this balance?

    A. 7.056E-02 A
    B. 7.762E-02 A
    C. 8.538E-02 A
    D. 9.392E-02 A

The next page might contain more answer choices for this question

E. 1.033E-01 A

11. A 14 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 11 g, and the magnitude of the magnetic field is 0.448 T. What current is required to maintain this balance?

A. 1.174E+00 A

B. 1.291E+00 A

C. 1.420E+00 A

D. 1.562E+00 A

E. 1.719E+00 A

12. A 33 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 8 g, and the magnitude of the magnetic field is 0.869 T. What current is required to maintain this balance?

A. 2.259E-01 A

B. 2.485E-01 A

C. 2.734E-01 A

D. 3.007E-01 A

E. 3.308E-01 A

13. A 11 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 13 g, and the magnitude of the magnetic field is 0.809 T. What current is required to maintain this balance?

A. 1.432E+00 A

B. 1.575E+00 A

C. 1.732E+00 A

D. 1.905E+00 A

E. 2.096E+00 A

14. A 27 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 8 g, and the magnitude of the magnetic field is 0.85 T. What current is required to maintain this balance?

A. 3.106E-01 A

B. 3.416E-01 A

C. 3.758E-01 A

D. 4.134E-01 A

E. 4.547E-01 A

15. A 44 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 7 g, and the magnitude of the magnetic field is 0.784 T. What current is required to maintain this balance?

A. 1.644E-01 A

B. 1.808E-01 A

C. 1.989E-01 A

D. 2.188E-01 A

The next page might contain more answer choices for this question

E. 2.406E-01 A

16. A 42 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 7 g, and the magnitude of the magnetic field is 0.48 T. What current is required to maintain this balance?

   A. 2.812E-01 A
   B. 3.093E-01 A
   C. 3.403E-01 A
   D. 3.743E-01 A
   E. 4.117E-01 A

17. A 62 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 13 g, and the magnitude of the magnetic field is 0.351 T. What current is required to maintain this balance?

   A. 3.999E-01 A
   B. 4.398E-01 A
   C. 4.838E-01 A
   D. 5.322E-01 A
   E. 5.854E-01 A

18. A 57 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 7 g, and the magnitude of the magnetic field is 0.447 T. What current is required to maintain this balance?

   A. 2.225E-01 A
   B. 2.448E-01 A
   C. 2.692E-01 A
   D. 2.962E-01 A
   E. 3.258E-01 A

19. A 76 cm-long horizontal wire is maintained in static equilibrium by a horizontally directed magnetic field that is perpendicular to the wire (and to Earth's gravity). The mass of the wire is 13 g, and the magnitude of the magnetic field is 0.367 T. What current is required to maintain this balance?

   A. 3.432E-01 A
   B. 3.775E-01 A
   C. 4.152E-01 A
   D. 4.568E-01 A
   E. 5.024E-01 A

d_cp2.11 Q5

1. A long rigid wire carries a 8 A current. What is the magnetic force per unit length on the wire if a 0.899 T magnetic field is directed 43° away from the wire?

   A. 3.685E+00 N/m
   B. 4.054E+00 N/m
   C. 4.459E+00 N/m

The next page might contain more answer choices for this question

D. 4.905E+00 N/m
E. 5.395E+00 N/m

2. A long rigid wire carries a 7 A current. What is the magnetic force per unit length on the wire if a 0.851 T magnetic field is directed 65° away from the wire?
   A. 4.908E+00 N/m
   B. 5.399E+00 N/m
   C. 5.939E+00 N/m
   D. 6.533E+00 N/m
   E. 7.186E+00 N/m

3. A long rigid wire carries a 7 A current. What is the magnetic force per unit length on the wire if a 0.88 T magnetic field is directed 47° away from the wire?
   A. 4.096E+00 N/m
   B. 4.505E+00 N/m
   C. 4.956E+00 N/m
   D. 5.451E+00 N/m
   E. 5.996E+00 N/m

4. A long rigid wire carries a 8 A current. What is the magnetic force per unit length on the wire if a 0.578 T magnetic field is directed 38° away from the wire?
   A. 2.847E+00 N/m
   B. 3.132E+00 N/m
   C. 3.445E+00 N/m
   D. 3.789E+00 N/m
   E. 4.168E+00 N/m

5. A long rigid wire carries a 6 A current. What is the magnetic force per unit length on the wire if a 0.222 T magnetic field is directed 23° away from the wire?
   A. 5.205E-01 N/m
   B. 5.725E-01 N/m
   C. 6.297E-01 N/m
   D. 6.927E-01 N/m
   E. 7.620E-01 N/m

6. A long rigid wire carries a 4 A current. What is the magnetic force per unit length on the wire if a 0.893 T magnetic field is directed 66° away from the wire?
   A. 2.697E+00 N/m
   B. 2.967E+00 N/m
   C. 3.263E+00 N/m
   D. 3.590E+00 N/m
   E. 3.948E+00 N/m

7. A long rigid wire carries a 8 A current. What is the magnetic force per unit length on the wire if a 0.559 T magnetic field is directed 46° away from the wire?

The next page might contain more answer choices for this question

A. 2.417E+00 N/m
B. 2.659E+00 N/m
C. 2.924E+00 N/m
D. 3.217E+00 N/m
E. 3.539E+00 N/m

8. A long rigid wire carries a 7 A current. What is the magnetic force per unit length on the wire if a 0.783 T magnetic field is directed 77° away from the wire?
A. 3.648E+00 N/m
B. 4.012E+00 N/m
C. 4.414E+00 N/m
D. 4.855E+00 N/m
E. 5.341E+00 N/m

9. A long rigid wire carries a 3 A current. What is the magnetic force per unit length on the wire if a 0.534 T magnetic field is directed 18° away from the wire?
A. 4.950E-01 N/m
B. 5.445E-01 N/m
C. 5.990E-01 N/m
D. 6.589E-01 N/m
E. 7.248E-01 N/m

10. A long rigid wire carries a 4 A current. What is the magnetic force per unit length on the wire if a 0.265 T magnetic field is directed 26° away from the wire?
A. 3.840E-01 N/m
B. 4.224E-01 N/m
C. 4.647E-01 N/m
D. 5.111E-01 N/m
E. 5.623E-01 N/m

11. A long rigid wire carries a 5 A current. What is the magnetic force per unit length on the wire if a 0.61 T magnetic field is directed 33° away from the wire?
A. 1.510E+00 N/m
B. 1.661E+00 N/m
C. 1.827E+00 N/m
D. 2.010E+00 N/m
E. 2.211E+00 N/m

12. A long rigid wire carries a 4 A current. What is the magnetic force per unit length on the wire if a 0.379 T magnetic field is directed 53° away from the wire?
A. 1.001E+00 N/m
B. 1.101E+00 N/m
C. 1.211E+00 N/m
D. 1.332E+00 N/m

The next page might contain more answer choices for this question

E. 1.465E+00 N/m

13. A long rigid wire carries a 8 A current. What is the magnetic force per unit length on the wire if a 0.394 T magnetic field is directed 14° away from the wire?

A. 6.302E-01 N/m

B. 6.932E-01 N/m

C. 7.625E-01 N/m

D. 8.388E-01 N/m

E. 9.227E-01 N/m

14. A long rigid wire carries a 6 A current. What is the magnetic force per unit length on the wire if a 0.504 T magnetic field is directed 70° away from the wire?

A. 2.348E+00 N/m

B. 2.583E+00 N/m

C. 2.842E+00 N/m

D. 3.126E+00 N/m

E. 3.438E+00 N/m

15. A long rigid wire carries a 6 A current. What is the magnetic force per unit length on the wire if a 0.623 T magnetic field is directed 73° away from the wire?

A. 3.575E+00 N/m

B. 3.932E+00 N/m

C. 4.325E+00 N/m

D. 4.758E+00 N/m

E. 5.234E+00 N/m

16. A long rigid wire carries a 7 A current. What is the magnetic force per unit length on the wire if a 0.761 T magnetic field is directed 44° away from the wire?

A. 2.527E+00 N/m

B. 2.780E+00 N/m

C. 3.058E+00 N/m

D. 3.364E+00 N/m

E. 3.700E+00 N/m

17. A long rigid wire carries a 5 A current. What is the magnetic force per unit length on the wire if a 0.83 T magnetic field is directed 22° away from the wire?

A. 1.062E+00 N/m

B. 1.168E+00 N/m

C. 1.285E+00 N/m

D. 1.413E+00 N/m

E. 1.555E+00 N/m

18. A long rigid wire carries a 4 A current. What is the magnetic force per unit length on the wire if a 0.355 T magnetic field is directed 53° away from the wire?

A. 8.520E-01 N/m

The next page might contain more answer choices for this question

B. 9.372E-01 N/m

C. 1.031E+00 N/m

D. 1.134E+00 N/m

E. 1.247E+00 N/m

19. A long rigid wire carries a 5 A current. What is the magnetic force per unit length on the wire if a 0.405 T magnetic field is directed 48° away from the wire?

A. 1.131E+00 N/m

B. 1.244E+00 N/m

C. 1.368E+00 N/m

D. 1.505E+00 N/m

E. 1.655E+00 N/m

d_cp2.11 Q6

1. A circular current loop of radius 2.86 cm carries a current of 1.7 mA. What is the magnitude of the torque if the dipole is oriented at 43 ° to a uniform magnetic fied of 0.729 T?

A. 1.483E-06 N m

B. 1.632E-06 N m

C. 1.795E-06 N m

D. 1.974E-06 N m

E. 2.172E-06 N m

2. A circular current loop of radius 3.0 cm carries a current of 1.58 mA. What is the magnitude of the torque if the dipole is oriented at 63 ° to a uniform magnetic fied of 0.408 T?

A. 1.476E-06 N m

B. 1.624E-06 N m

C. 1.786E-06 N m

D. 1.965E-06 N m

E. 2.162E-06 N m

3. A circular current loop of radius 1.17 cm carries a current of 3.68 mA. What is the magnitude of the torque if the dipole is oriented at 55 ° to a uniform magnetic fied of 0.179 T?

A. 1.585E-07 N m

B. 1.743E-07 N m

C. 1.918E-07 N m

D. 2.110E-07 N m

E. 2.321E-07 N m

4. A circular current loop of radius 1.29 cm carries a current of 1.75 mA. What is the magnitude of the torque if the dipole is oriented at 24 ° to a uniform magnetic fied of 0.156 T?

A. 5.805E-08 N m

B. 6.386E-08 N m

C. 7.024E-08 N m

The next page might contain more answer choices for this question

- D. 7.727E-08 N m
- E. 8.499E-08 N m

5. A circular current loop of radius 2.21 cm carries a current of 1.43 mA. What is the magnitude of the torque if the dipole is oriented at 67 ° to a uniform magnetic fied of 0.276 T?
   - A. 4.188E-07 N m
   - B. 4.607E-07 N m
   - C. 5.068E-07 N m
   - **D. 5.574E-07 N m**
   - E. 6.132E-07 N m
6. A circular current loop of radius 1.11 cm carries a current of 4.0 mA. What is the magnitude of the torque if the dipole is oriented at 68 ° to a uniform magnetic fied of 0.173 T?
   - A. 1.866E-07 N m
   - B. 2.052E-07 N m
   - C. 2.258E-07 N m
   - **D. 2.484E-07 N m**
   - E. 2.732E-07 N m
7. A circular current loop of radius 2.48 cm carries a current of 3.67 mA. What is the magnitude of the torque if the dipole is oriented at 21 ° to a uniform magnetic fied of 0.402 T?
   - **A. 1.022E-06 N m**
   - B. 1.124E-06 N m
   - C. 1.236E-06 N m
   - D. 1.360E-06 N m
   - E. 1.496E-06 N m
8. A circular current loop of radius 1.63 cm carries a current of 2.38 mA. What is the magnitude of the torque if the dipole is oriented at 54 ° to a uniform magnetic fied of 0.125 T?
   - **A. 2.009E-07 N m**
   - B. 2.210E-07 N m
   - C. 2.431E-07 N m
   - D. 2.674E-07 N m
   - E. 2.941E-07 N m
9. A circular current loop of radius 2.84 cm carries a current of 3.01 mA. What is the magnitude of the torque if the dipole is oriented at 63 ° to a uniform magnetic fied of 0.174 T?
   - A. 1.075E-06 N m
   - **B. 1.182E-06 N m**
   - C. 1.301E-06 N m
   - D. 1.431E-06 N m
   - E. 1.574E-06 N m
10. A circular current loop of radius 2.16 cm carries a current of 1.72 mA. What is the magnitude of the torque if the dipole is oriented at 52 ° to a uniform magnetic fied of 0.24 T?

The next page might contain more answer choices for this question

- A. 3.582E-07 N m
- B. 3.940E-07 N m
- C. 4.334E-07 N m
- **D. 4.768E-07 N m**
- E. 5.245E-07 N m

11. A circular current loop of radius 3.04 cm carries a current of 1.94 mA. What is the magnitude of the torque if the dipole is oriented at 50 ° to a uniform magnetic fied of 0.193 T?
    - A. 6.257E-07 N m
    - B. 6.882E-07 N m
    - C. 7.570E-07 N m
    - **D. 8.327E-07 N m**
    - E. 9.160E-07 N m

12. A circular current loop of radius 1.67 cm carries a current of 3.81 mA. What is the magnitude of the torque if the dipole is oriented at 40 ° to a uniform magnetic fied of 0.884 T?
    - A. 1.568E-06 N m
    - B. 1.724E-06 N m
    - **C. 1.897E-06 N m**
    - D. 2.087E-06 N m
    - E. 2.295E-06 N m

13. A circular current loop of radius 1.56 cm carries a current of 2.57 mA. What is the magnitude of the torque if the dipole is oriented at 38 ° to a uniform magnetic fied of 0.79 T?
    - A. 7.898E-07 N m
    - B. 8.688E-07 N m
    - **C. 9.557E-07 N m**
    - D. 1.051E-06 N m
    - E. 1.156E-06 N m

14. A circular current loop of radius 1.59 cm carries a current of 1.13 mA. What is the magnitude of the torque if the dipole is oriented at 41 ° to a uniform magnetic fied of 0.189 T?
    - **A. 1.113E-07 N m**
    - B. 1.224E-07 N m
    - C. 1.347E-07 N m
    - D. 1.481E-07 N m
    - E. 1.629E-07 N m

15. A circular current loop of radius 1.94 cm carries a current of 1.83 mA. What is the magnitude of the torque if the dipole is oriented at 43 ° to a uniform magnetic fied of 0.156 T?
    - A. 1.903E-07 N m
    - B. 2.093E-07 N m
    - **C. 2.302E-07 N m**
    - D. 2.532E-07 N m

The next page might contain more answer choices for this question

E. 2.785E-07 N m

16. A circular current loop of radius 1.88 cm carries a current of 3.41 mA. What is the magnitude of the torque if the dipole is oriented at 62 ° to a uniform magnetic fied of 0.415 T?
    A. 1.387E-06 N m
    B. 1.526E-06 N m
    C. 1.679E-06 N m
    D. 1.847E-06 N m
    E. 2.031E-06 N m

17. A circular current loop of radius 2.1 cm carries a current of 5.02 mA. What is the magnitude of the torque if the dipole is oriented at 26 ° to a uniform magnetic fied of 0.184 T?
    A. 5.610E-07 N m
    B. 6.171E-07 N m
    C. 6.788E-07 N m
    D. 7.467E-07 N m
    E. 8.213E-07 N m

18. A circular current loop of radius 2.99 cm carries a current of 4.54 mA. What is the magnitude of the torque if the dipole is oriented at 34 ° to a uniform magnetic fied of 0.107 T?
    A. 7.629E-07 N m
    B. 8.392E-07 N m
    C. 9.232E-07 N m
    D. 1.015E-06 N m
    E. 1.117E-06 N m

19. A circular current loop of radius 3.25 cm carries a current of 2.78 mA. What is the magnitude of the torque if the dipole is oriented at 55 ° to a uniform magnetic fied of 0.523 T?
    A. 2.699E-06 N m
    B. 2.969E-06 N m
    C. 3.266E-06 N m
    D. 3.593E-06 N m
    E. 3.952E-06 N m

d_cp2.11 Q7

1. An electron beam (m=9.1×10^{-31}kg, q=1.6×10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 5.53 mT and 7.210E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?
    A. 8.905E+05 m/s
    B. 9.796E+05 m/s
    C. 1.078E+06 m/s
    D. 1.185E+06 m/s
    E. 1.304E+06 m/s

The next page might contain more answer choices for this question

2. An electron beam (m=9.1 x 10^{-31}kg, q=1.6 x 10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 5.85 mT and 3.760E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 4.829E+05 m/s
   B. 5.312E+05 m/s
   C. 5.843E+05 m/s
   D. 6.427E+05 m/s
   E. 7.070E+05 m/s

3. An electron beam (m=9.1 x 10^{-31}kg, q=1.6 x 10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 4.66 mT and 2.860E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 5.072E+05 m/s
   B. 5.579E+05 m/s
   C. 6.137E+05 m/s
   D. 6.751E+05 m/s
   E. 7.426E+05 m/s

4. An electron beam (m=9.1 x 10^{-31}kg, q=1.6 x 10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 4.13 mT and 2.810E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 6.804E+05 m/s
   B. 7.484E+05 m/s
   C. 8.233E+05 m/s
   D. 9.056E+05 m/s
   E. 9.962E+05 m/s

5. An electron beam (m=9.1 x 10^{-31}kg, q=1.6 x 10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 6.97 mT and 2.240E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 2.656E+05 m/s
   B. 2.922E+05 m/s
   C. 3.214E+05 m/s
   D. 3.535E+05 m/s
   E. 3.889E+05 m/s

6. An electron beam (m=9.1 x 10^{-31}kg, q=1.6 x 10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 1.85 mT and 5.080E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 2.746E+06 m/s
   B. 3.021E+06 m/s
   C. 3.323E+06 m/s
   D. 3.655E+06 m/s
   E. 4.020E+06 m/s

The next page might contain more answer choices for this question

7. An electron beam (m=9.1×10^{-31}kg, q=1.6×10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 5.49 mT and 5.570E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 9.223E+05 m/s
   B. 1.015E+06 m/s
   C. 1.116E+06 m/s
   D. 1.228E+06 m/s
   E. 1.350E+06 m/s

8. An electron beam (m=9.1×10^{-31}kg, q=1.6×10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 4.15 mT and 4.440E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 1.070E+06 m/s
   B. 1.177E+06 m/s
   C. 1.295E+06 m/s
   D. 1.424E+06 m/s
   E. 1.566E+06 m/s

9. An electron beam (m=9.1×10^{-31}kg, q=1.6×10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 9.23 mT and 6.120E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 4.982E+05 m/s
   B. 5.480E+05 m/s
   C. 6.028E+05 m/s
   D. 6.631E+05 m/s
   E. 7.294E+05 m/s

10. An electron beam (m=9.1×10^{-31}kg, q=1.6×10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 2.68 mT and 3.200E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 8.971E+05 m/s
   B. 9.868E+05 m/s
   C. 1.085E+06 m/s
   D. 1.194E+06 m/s
   E. 1.313E+06 m/s

11. An electron beam (m=9.1×10^{-31}kg, q=1.6×10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 3.43 mT and 4.670E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

   A. 1.362E+06 m/s
   B. 1.498E+06 m/s
   C. 1.647E+06 m/s
   D. 1.812E+06 m/s
   E. 1.993E+06 m/s

The next page might contain more answer choices for this question

12. An electron beam ($m=9.1\times10^{-31}$kg, $q=1.6\times10^{-19}$C) enters a crossed-field velocity selector with magnetic and electric fields of 4.88 mT and 7.340E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

    A. 1.504E+06 m/s
    B. 1.655E+06 m/s
    C. 1.820E+06 m/s
    D. 2.002E+06 m/s
    E. 2.202E+06 m/s

13. An electron beam ($m=9.1\times10^{-31}$kg, $q=1.6\times10^{-19}$C) enters a crossed-field velocity selector with magnetic and electric fields of 4.96 mT and 2.010E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

    A. 2.768E+05 m/s
    B. 3.045E+05 m/s
    C. 3.349E+05 m/s
    D. 3.684E+05 m/s
    E. 4.052E+05 m/s

14. An electron beam ($m=9.1\times10^{-31}$kg, $q=1.6\times10^{-19}$C) enters a crossed-field velocity selector with magnetic and electric fields of 3.34 mT and 7.430E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

    A. 1.671E+06 m/s
    B. 1.838E+06 m/s
    C. 2.022E+06 m/s
    D. 2.225E+06 m/s
    E. 2.447E+06 m/s

15. An electron beam ($m=9.1\times10^{-31}$kg, $q=1.6\times10^{-19}$C) enters a crossed-field velocity selector with magnetic and electric fields of 5.04 mT and 7.820E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

    A. 1.060E+06 m/s
    B. 1.166E+06 m/s
    C. 1.282E+06 m/s
    D. 1.411E+06 m/s
    E. 1.552E+06 m/s

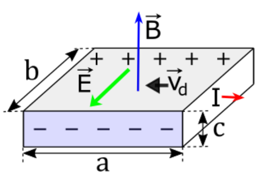
16. An electron beam ($m=9.1\times10^{-31}$kg, $q=1.6\times10^{-19}$C) enters a crossed-field velocity selector with magnetic and electric fields of 2.62 mT and 2.120E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?

    A. 8.092E+05 m/s
    B. 8.901E+05 m/s
    C. 9.791E+05 m/s
    D. 1.077E+06 m/s
    E. 1.185E+06 m/s

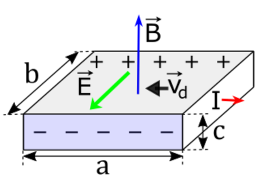
The next page might contain more answer choices for this question

17. An electron beam (m=9.1×10^{-31}kg, q=1.6×10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 5.46 mT and 1.710E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?
    - **A. 3.132E+05 m/s**
    - B. 3.445E+05 m/s
    - C. 3.790E+05 m/s
    - D. 4.169E+05 m/s
    - E. 4.585E+05 m/s
18. An electron beam (m=9.1×10^{-31}kg, q=1.6×10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 7.67 mT and 4.260E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?
    - **A. 5.554E+05 m/s**
    - B. 6.110E+05 m/s
    - C. 6.720E+05 m/s
    - D. 7.393E+05 m/s
    - E. 8.132E+05 m/s
19. An electron beam (m=9.1×10^{-31}kg, q=1.6×10^{-19}C) enters a crossed-field velocity selector with magnetic and electric fields of 2.59 mT and 4.340E+03 N/C, respectively. What must the velocity of the electron beam be to transverse the crossed fields undeflected ?
    - **A. 1.676E+06 m/s**
    - B. 1.843E+06 m/s
    - C. 2.028E+06 m/s
    - D. 2.230E+06 m/s
    - E. 2.453E+06 m/s

d_cp2.11 Q8



1. The silver ribbon shown are a=4.65 cm, b=3.92 cm, and c= 1.23 cm. The current carries a current of 89 A and it lies in a uniform magnetic field of 2.4 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.
    - A. 1.255E-06 V
    - B. 1.380E-06 V
    - C. 1.518E-06 V
    - D. 1.670E-06 V
    - **E. 1.837E-06 V**



2. The silver ribbon shown are a=4.72 cm, b=4.17 cm, and c= 1.53 cm. The current carries a current of 235 A and it lies in a uniform magnetic field of 1.35 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

The next page might contain more answer choices for this question

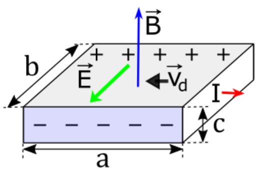
A. 1.648E-06 V

B. 1.813E-06 V

C. 1.994E-06 V

D. 2.194E-06 V

E. 2.413E-06 V

3. 

The silver ribbon shown are a=3.89 cm, b=2.94 cm, and c= 0.58 cm. The current carries a current of 242 A and it lies in a uniform magnetic field of 2.47 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

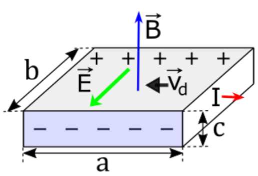
A. 9.911E-06 V

B. 1.090E-05 V

C. 1.199E-05 V

D. 1.319E-05 V

E. 1.451E-05 V

4. 

The silver ribbon shown are a=4.23 cm, b=3.7 cm, and c= 0.721 cm. The current carries a current of 144 A and it lies in a uniform magnetic field of 1.21 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

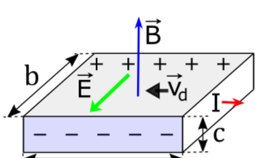
A. 1.746E-06 V

B. 1.921E-06 V

C. 2.113E-06 V

D. 2.324E-06 V

E. 2.557E-06 V

5. 

The silver ribbon shown are a=4.81 cm, b=3.96 cm, and c= 1.3 cm. The current carries a current of 274 A and it lies in a uniform magnetic field of 3.23 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

A. 7.202E-06 V

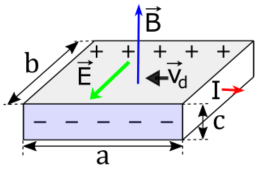
B. 7.922E-06 V

C. 8.714E-06 V

D. 9.586E-06 V

E. 1.054E-05 V

The next page might contain more answer choices for this question

6. 

The silver ribbon shown are a=3.68 cm, b=2.66 cm, and c= 0.505 cm. The current carries a current of 113 A and it lies in a uniform magnetic field of 3.12 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

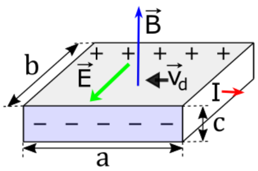
A. 6.104E-06 V

B. 6.714E-06 V

C. 7.385E-06 V

D. 8.124E-06 V

E. 8.936E-06 V

7. 

The silver ribbon shown are a=3.52 cm, b=2.88 cm, and c= 0.515 cm. The current carries a current of 137 A and it lies in a uniform magnetic field of 2.02 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

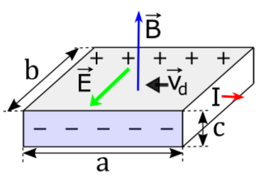
A. 5.685E-06 V

B. 6.253E-06 V

C. 6.878E-06 V

D. 7.566E-06 V

E. 8.323E-06 V

8. 

The silver ribbon shown are a=4.14 cm, b=3.69 cm, and c= 1.13 cm. The current carries a current of 291 A and it lies in a uniform magnetic field of 3.32 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

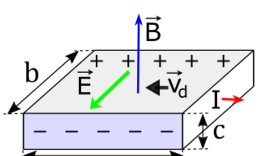
A. 6.795E-06 V

B. 7.475E-06 V

C. 8.222E-06 V

D. 9.045E-06 V

E. 9.949E-06 V

9. 

The silver ribbon shown are a=3.96 cm, b=3.35 cm, and c= 1.07 cm. The current carries a current of 295 A and it lies in a uniform magnetic field of 3.4 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

A. 9.015E-06 V

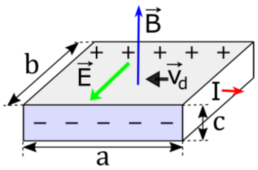
The next page might contain more answer choices for this question

B. 9.916E-06 V

C. 1.091E-05 V

D. 1.200E-05 V

E. 1.320E-05 V

10. 

The silver ribbon shown are a=3.47 cm, b=2.98 cm, and c= 0.681 cm. The current carries a current of 289 A and it lies in a uniform magnetic field of 3.37 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

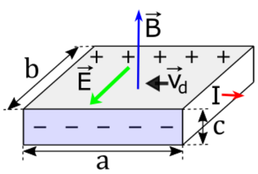
A. 1.375E-05 V

B. 1.513E-05 V

C. 1.664E-05 V

D. 1.831E-05 V

E. 2.014E-05 V

11. 

The silver ribbon shown are a=4.26 cm, b=3.62 cm, and c= 1.5 cm. The current carries a current of 181 A and it lies in a uniform magnetic field of 1.96 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

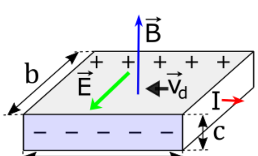
A. 2.275E-06 V

B. 2.502E-06 V

C. 2.752E-06 V

D. 3.027E-06 V

E. 3.330E-06 V

12. 

The silver ribbon shown are a=3.6 cm, b=2.68 cm, and c= 1.13 cm. The current carries a current of 97 A and it lies in a uniform magnetic field of 1.89 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

A. 1.560E-06 V

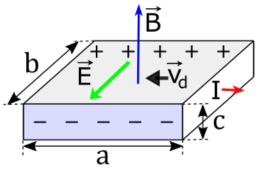
B. 1.716E-06 V

C. 1.888E-06 V

D. 2.077E-06 V

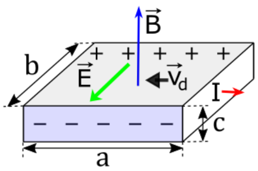
E. 2.284E-06 V

The next page might contain more answer choices for this question

13. 

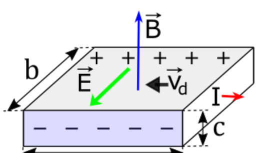
The silver ribbon shown are a=3.32 cm, b=2.81 cm, and c= 0.996 cm. The current carries a current of 121 A and it lies in a uniform magnetic field of 1.23 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

A. 1.080E-06 V
B. 1.188E-06 V
C. 1.306E-06 V
D. 1.437E-06 V
E. 1.581E-06 V

14. 

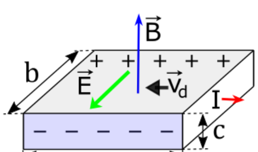
The silver ribbon shown are a=3.55 cm, b=2.99 cm, and c= 1.03 cm. The current carries a current of 135 A and it lies in a uniform magnetic field of 1.26 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

A. 1.193E-06 V
B. 1.313E-06 V
C. 1.444E-06 V
D. 1.588E-06 V
E. 1.747E-06 V

15. 

The silver ribbon shown are a=3.89 cm, b=3.43 cm, and c= 1.21 cm. The current carries a current of 77 A and it lies in a uniform magnetic field of 2.16 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

A. 1.322E-06 V
B. 1.454E-06 V
C. 1.600E-06 V
D. 1.759E-06 V
E. 1.935E-06 V

16. 

The silver ribbon shown are a=4.12 cm, b=3.32 cm, and c= 1.46 cm. The current carries a current of 120 A and it lies in a uniform magnetic field of 1.39 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

A. 1.209E-06 V

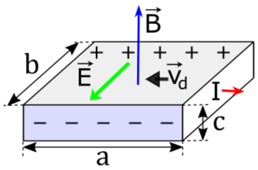
The next page might contain more answer choices for this question

B. 1.329E-06 V

C. 1.462E-06 V

D. 1.609E-06 V

E. 1.770E-06 V

17. 

The silver ribbon shown are a=3.74 cm, b=2.68 cm, and c= 0.415 cm. The current carries a current of 228 A and it lies in a uniform magnetic field of 1.49 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

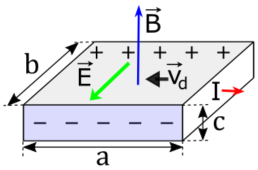
A. 8.660E-06 V

B. 9.526E-06 V

C. 1.048E-05 V

D. 1.153E-05 V

E. 1.268E-05 V

18. 

The silver ribbon shown are a=3.84 cm, b=3.45 cm, and c= 1.38 cm. The current carries a current of 92 A and it lies in a uniform magnetic field of 1.35 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

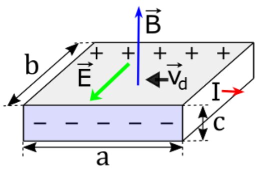
A. 7.153E-07 V

B. 7.869E-07 V

C. 8.655E-07 V

D. 9.521E-07 V

E. 1.047E-06 V

19. 

The silver ribbon shown are a=4.65 cm, b=3.43 cm, and c= 1.15 cm. The current carries a current of 279 A and it lies in a uniform magnetic field of 3.48 T. Using the density of 5.900E+28 electrons per cubic meter for silver, find the Hall potential between the edges of the ribbon.

A. 6.100E-06 V

B. 6.710E-06 V

C. 7.381E-06 V

D. 8.120E-06 V

E. 8.931E-06 V

The next page might contain more answer choices for this question

d_cp2.11 Q9

1. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.398 m and a magneticfield of 0.855 T. What is their maximum kinetic energy?
   - **A. 5.581E+00 MeV**
   - B. 6.139E+00 MeV
   - C. 6.753E+00 MeV
   - D. 7.428E+00 MeV
   - E. 8.171E+00 MeV
2. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.378 m and a magneticfield of 0.835 T. What is their maximum kinetic energy?
   - A. 4.365E+00 MeV
   - **B. 4.801E+00 MeV**
   - C. 5.281E+00 MeV
   - D. 5.809E+00 MeV
   - E. 6.390E+00 MeV
3. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.388 m and a magneticfield of 1.19 T. What is their maximum kinetic energy?
   - A. 8.491E+00 MeV
   - B. 9.340E+00 MeV
   - **C. 1.027E+01 MeV**
   - D. 1.130E+01 MeV
   - E. 1.243E+01 MeV
4. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.355 m and a magneticfield of 1.28 T. What is their maximum kinetic energy?
   - A. 7.476E+00 MeV
   - B. 8.224E+00 MeV
   - C. 9.046E+00 MeV
   - **D. 9.951E+00 MeV**
   - E. 1.095E+01 MeV
5. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.145 m and a magneticfield of 1.03 T. What is their maximum kinetic energy?
   - A. 7.342E-01 MeV
   - B. 8.076E-01 MeV
   - C. 8.884E-01 MeV
   - D. 9.772E-01 MeV
   - **E. 1.075E+00 MeV**
6. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.419 m and a magneticfield of 1.45 T. What is their maximum kinetic energy?
   - A. 1.336E+01 MeV

The next page might contain more answer choices for this question

B. 1.470E+01 MeV
C. 1.617E+01 MeV
D. 1.779E+01 MeV
E. 1.957E+01 MeV

7. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.118 m and a magneticfield of 1.48 T. What is their maximum kinetic energy?
   A. 1.004E+00 MeV
   B. 1.104E+00 MeV
   C. 1.215E+00 MeV
   D. 1.336E+00 MeV
   E. 1.470E+00 MeV

8. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.295 m and a magneticfield of 1.44 T. What is their maximum kinetic energy?
   A. 6.534E+00 MeV
   B. 7.187E+00 MeV
   C. 7.906E+00 MeV
   D. 8.697E+00 MeV
   E. 9.566E+00 MeV

9. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.44 m and a magneticfield of 1.31 T. What is their maximum kinetic energy?
   A. 1.323E+01 MeV
   B. 1.456E+01 MeV
   C. 1.601E+01 MeV
   D. 1.761E+01 MeV
   E. 1.937E+01 MeV

10. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.436 m and a magneticfield of 0.881 T. What is their maximum kinetic energy?
    A. 5.342E+00 MeV
    B. 5.877E+00 MeV
    C. 6.464E+00 MeV
    D. 7.111E+00 MeV
    E. 7.822E+00 MeV

11. A cyclotron used to accelerate alpha particlesm=6.64 x 10^{-27}kg, q=3.2 x 10^{-19}C) has a radius of 0.448 m and a magneticfield of 0.812 T. What is their maximum kinetic energy?
    A. 5.798E+00 MeV
    B. 6.377E+00 MeV
    C. 7.015E+00 MeV
    D. 7.717E+00 MeV
    E. 8.488E+00 MeV

The next page might contain more answer choices for this question

12. A cyclotron used to accelerate alpha particlesm=6.64×10^{-27}kg, q=3.2×10^{-19}C) has a radius of 0.409 m and a magneticfield of 1.27 T. What is their maximum kinetic energy?

    A. 8.881E+00 MeV
    B. 9.769E+00 MeV
    C. 1.075E+01 MeV
    D. 1.182E+01 MeV
    E. 1.300E+01 MeV

13. A cyclotron used to accelerate alpha particlesm=6.64×10^{-27}kg, q=3.2×10^{-19}C) has a radius of 0.125 m and a magneticfield of 0.932 T. What is their maximum kinetic energy?

    A. 4.914E-01 MeV
    B. 5.406E-01 MeV
    C. 5.946E-01 MeV
    D. 6.541E-01 MeV
    E. 7.195E-01 MeV

14. A cyclotron used to accelerate alpha particlesm=6.64×10^{-27}kg, q=3.2×10^{-19}C) has a radius of 0.232 m and a magneticfield of 1.1 T. What is their maximum kinetic energy?

    A. 2.853E+00 MeV
    B. 3.139E+00 MeV
    C. 3.453E+00 MeV
    D. 3.798E+00 MeV
    E. 4.178E+00 MeV

15. A cyclotron used to accelerate alpha particlesm=6.64×10^{-27}kg, q=3.2×10^{-19}C) has a radius of 0.449 m and a magneticfield of 0.81 T. What is their maximum kinetic energy?

    A. 5.795E+00 MeV
    B. 6.374E+00 MeV
    C. 7.012E+00 MeV
    D. 7.713E+00 MeV
    E. 8.484E+00 MeV

16. A cyclotron used to accelerate alpha particlesm=6.64×10^{-27}kg, q=3.2×10^{-19}C) has a radius of 0.157 m and a magneticfield of 0.512 T. What is their maximum kinetic energy?

    A. 2.574E-01 MeV
    B. 2.831E-01 MeV
    C. 3.114E-01 MeV
    D. 3.425E-01 MeV
    E. 3.768E-01 MeV

17. A cyclotron used to accelerate alpha particlesm=6.64×10^{-27}kg, q=3.2×10^{-19}C) has a radius of 0.157 m and a magneticfield of 1.03 T. What is their maximum kinetic energy?

    A. 8.608E-01 MeV
    B. 9.468E-01 MeV

The next page might contain more answer choices for this question

C. 1.042E+00 MeV
D. 1.146E+00 MeV
E. 1.260E+00 MeV

18. A cyclotron used to accelerate alpha particlesm=6.64×10^{-27}kg, q=3.2×10^{-19}C) has a radius of 0.376 m and a magneticfield of 0.786 T. What is their maximum kinetic energy?
A. 2.875E+00 MeV
B. 3.162E+00 MeV
C. 3.479E+00 MeV
D. 3.827E+00 MeV
E. 4.209E+00 MeV

19. A cyclotron used to accelerate alpha particlesm=6.64×10^{-27}kg, q=3.2×10^{-19}C) has a radius of 0.413 m and a magneticfield of 0.988 T. What is their maximum kinetic energy?
A. 6.029E+00 MeV
B. 6.631E+00 MeV
C. 7.295E+00 MeV
D. 8.024E+00 MeV
E. 8.827E+00 MeV

21 a22Magnetism_forces

1. A cosmic ray alpha particle encounters Earth's magnetic field at right angles to a field of 5.7 µ T. The kinetic energy is 361 keV. What is the radius of particle's orbit?[153]
A. 1.5 x 10^2 m.
B. 4.8 x 10^2 m.
C. 1.5 x 10^3 m.
D. 4.8 x 10^3 m.
E. 1.5 x 10^4 m.

2. Two parallel wires are 7.2 meters long, and are separated by 6.9 mm. What is the force if both wires carry a current of 13.7 amps?[154]
A. 1.24 x 10^{-2} newtons
B. 3.92 x 10^{-2} newtons
C. 1.24 x 10^{-1} newtons
D. 3.92 x 10^{-1} newtons
E. 1.24 x 10^0 newtons

3. Blood is flowing at an average rate of 21.5 cm/s in an artery that has an inner diameter of 3.5 mm. What is the voltage across a hall probe placed across the inner diameter of the artery if the perpendicular magnetic field is 0.11 Tesla?[155]
A. 8.28 x 10^{-6} Volts
B. 2.62 x 10^{-5} Volts
C. 8.28 x 10^{-5} Volts

The next page might contain more answer choices for this question

- D. 2.62×10^{-4} Volts
- E. 8.28×10^{-4} Volts

4. An electron tube on Earth's surface is oriented horizontally towards magnetic north. The electron is traveling at 0.07c, and Earth's magnetic field makes an angle of 22.5 degrees with respect to the horizontal. To counter the magnetic force, a voltage is applied between two large parallel plates that are 54 mm apart. What must be the applied voltage if the magnetic field is 45μ T?[156]
   - A. 2×10^{-1} volts
   - B. 6.2×10^{-1} volts
   - C. 2×10^{0} volts
   - D. 6.2×10^{0} volts
   - **E. 2×10^{1} volts**

21.1 Renditions

a22Magnetism_forces Q1

1. A cosmic ray alpha particle encounters Earth's magnetic field at right angles to a field of 11.4 μ T. The kinetic energy is 307 keV. What is the radius of particle's orbit?
   - A. 7×10^{1} m.
   - B. 2.2×10^{2} m.
   - C. 7×10^{2} m.
   - D. 2.2×10^{3} m.
   - **E. 7×10^{3} m.**
2. A cosmic ray alpha particle encounters Earth's magnetic field at right angles to a field of 7.4 μ T. The kinetic energy is 437 keV. What is the radius of particle's orbit?
   - A. 1.3×10^{2} m.
   - B. 4.1×10^{2} m.
   - C. 1.3×10^{3} m.
   - D. 4.1×10^{3} m.
   - **E. 1.3×10^{4} m.**

a22Magnetism_forces Q2

1. Two parallel wires are 6.7 meters long, and are separated by 5.7 mm. What is the force if both wires carry a current of 13.3 amps?
   - A. 4.16×10^{-4} newtons
   - B. 1.32×10^{-3} newtons
   - C. 4.16×10^{-3} newtons
   - D. 1.32×10^{-2} newtons
   - **E. 4.16×10^{-2} newtons**
2. Two parallel wires are 7.5 meters long, and are separated by 4.4 mm. What is the force if both wires carry a current of 14.8 amps?
   - A. 2.36×10^{-3} newtons

The next page might contain more answer choices for this question

B. 7.47 x 10^{-3} newtons
C. 2.36 x 10^{-2} newtons
D. 7.47 x 10^{-2} newtons
E. 2.36 x 10^{-1} newtons

a22Magnetism_forces Q3

1. Blood is flowing at an average rate of 20.5 cm/s in an artery that has an inner diameter of 4.5 mm. What is the voltage across a hall probe placed across the inner diameter of the artery if the perpendicular magnetic field is 0.12 Tesla?
   A. 3.5 x 10^{-5} Volts
   B. 1.11 x 10^{-4} Volts
   C. 3.5 x 10^{-4} Volts
   D. 1.11 x 10^{-3} Volts
   E. 3.5 x 10^{-3} Volts

2. Blood is flowing at an average rate of 24.5 cm/s in an artery that has an inner diameter of 3.9 mm. What is the voltage across a hall probe placed across the inner diameter of the artery if the perpendicular magnetic field is 0.17 Tesla?
   A. 5.14 x 10^{-5} Volts
   B. 1.62 x 10^{-4} Volts
   C. 5.14 x 10^{-4} Volts
   D. 1.62 x 10^{-3} Volts
   E. 5.14 x 10^{-3} Volts

a22Magnetism_forces Q4

1. An electron tube on Earth's surface is oriented horizontally towards magnetic north. The electron is traveling at 0.07c, and Earth's magnetic field makes an angle of 47.5 degrees with respect to the horizontal. To counter the magnetic force, a voltage is applied between two large parallel plates that are 57 mm apart. What must be the applied voltage if the magnetic field is 46µ T?
   A. 4.1 x 10^{0} volts
   B. 1.3 x 10^{1} volts
   C. 4.1 x 10^{1} volts
   D. 1.3 x 10^{2} volts
   E. 4.1 x 10^{2} volts

2. An electron tube on Earth's surface is oriented horizontally towards magnetic north. The electron is traveling at 0.06c, and Earth's magnetic field makes an angle of 48.5 degrees with respect to the horizontal. To counter the magnetic force, a voltage is applied between two large parallel plates that are 59 mm apart. What must be the applied voltage if the magnetic field is 45µ T?
   A. 1.1 x 10^{0} volts
   B. 3.6 x 10^{0} volts
   C. 1.1 x 10^{1} volts
   D. 3.6 x 10^{1} volts
   E. 1.1 x 10^{2} volts

The next page might contain more answer choices for this question

22 d_cp2.12

1. A wire carries a current of 200 A in a circular arc with radius 2 cm swept through 40 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?[157]

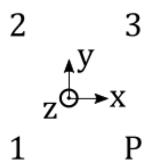
   A. 2.083E+00 Tesla

   B. 2.292E+00 Tesla

   C. 2.521E+00 Tesla

   D. 2.773E+00 Tesla

   E. 3.050E+00 Tesla

2. 

Three wires sit at the corners of a square of length 1 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.9 A, 2.0 A, 2.1 A), respectively. What is the x-component of the magnetic field at point P?[158]

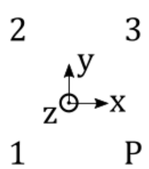
   A. B_x= 5.124E-05 T

   B. B_x= 5.636E-05 T

   C. B_x= 6.200E-05 T

   D. B_x= 6.820E-05 T

   E. B_x= 7.502E-05 T

3. 

Three wires sit at the corners of a square of length 1 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.9 A, 2.0 A, 2.1 A), respectively. What is the y-component of the magnetic field at point P?[159]

   A. B_y= 5.273E-05 T

   B. B_y= 5.800E-05 T

   C. B_y= 6.380E-05 T

   D. B_y= 7.018E-05 T

   E. B_y= 7.720E-05 T

4. Two parallel wires each carry a 5.0 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.0 cm, 0.9 cm), while the other is located at (0.000E+00 cm, 4.0 cm). What is the force per unit length between the wires?[160]

   A. 7.916E-11 N/m

   B. 8.708E-11 N/m

   C. 9.579E-11 N/m

   D. 1.054E-10 N/m

   E. 1.159E-10 N/m

The next page might contain more answer choices for this question

5. Two loops of wire carry the same current of 10 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.5 m while the other has a radius of 1.0 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.25 m from the first (smaller) loopif the disance between the loops is 1.0 m?[161]

   A. 1.110E-02 T

   B. 1.221E-02 T

   C. 1.343E-02 T

   D. 1.477E-02 T

   E. 1.625E-02 T

6. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 0.8 mm from the center of a wire of radius 2 mm if the current is 1A?[162]

   A. 2.732E-05 T

   B. 3.005E-05 T

   C. 3.306E-05 T

   D. 3.636E-05 T

   E. 4.000E-05 T

7. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.5$ m and $B_{max} = 0.3$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.25$ m that is centered on the axis with its plane perpendicular to the axis?[163]

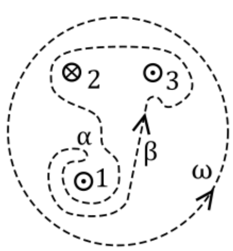
   A. 2.812E+05 A

   B. 3.094E+05 A

   C. 3.403E+05 A

   D. 3.743E+05 A

   E. 4.118E+05 A



8. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.5 kA, I_2=0.75 kA, and I_3=1.5 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:[164]

   A. 6.437E-04 T-m

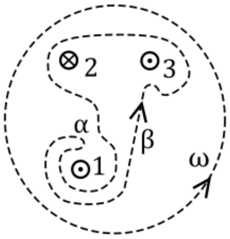
   B. 7.081E-04 T-m

   C. 7.789E-04 T-m

   D. 8.568E-04 T-m

   E. 9.425E-04 T-m

The next page might contain more answer choices for this question



9. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.5 kA, I_2=0.75 kA, and I_3=1.5 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:[165]
   - A. 3.713E-03 T-m
   - **B. 4.084E-03 T-m**
   - C. 4.492E-03 T-m
   - D. 4.942E-03 T-m
   - E. 5.436E-03 T-m

10. A solenoid has 3.000E+04 turns wound around a cylinder of diameter 1.2 cm and length 14 m. The current through the coils is 0.41 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-2 cm to z=+8 cm [166]
    - A. 7.541E-05 T-m
    - B. 8.295E-05 T-m
    - C. 9.124E-05 T-m
    - D. 1.004E-04 T-m
    - **E. 1.104E-04 T-m**

11. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 20 turns per centimeter and the current applied to the solenoid is 200 mA, the net magnetic field is measured to be 1.4 T. What is the magnetic susceptibility for this case?[167]
    - A. χ (chi) = 2.301E+03
    - B. χ (chi) = 2.531E+03
    - **C. χ (chi) = 2.784E+03**
    - D. χ (chi) = 3.063E+03
    - E. χ (chi) = 3.369E+03

22.1 Renditions

d_cp2.12 Q1

1. A wire carries a current of 316 A in a circular arc with radius 1.55 cm swept through 76 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
   - A. 8.070E+00 Tesla
   - **B. 8.878E+00 Tesla**
   - C. 9.765E+00 Tesla
   - D. 1.074E+01 Tesla
   - E. 1.182E+01 Tesla

2. A wire carries a current of 303 A in a circular arc with radius 2.2 cm swept through 72 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?

The next page might contain more answer choices for this question

- A. 3.881E+00 Tesla
- B. 4.269E+00 Tesla
- C. 4.696E+00 Tesla
- D. 5.165E+00 Tesla
- **E. 5.682E+00 Tesla**

3. A wire carries a current of 306 A in a circular arc with radius 2.04 cm swept through 55 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
   - A. 3.551E+00 Tesla
   - B. 3.907E+00 Tesla
   - C. 4.297E+00 Tesla
   - **D. 4.727E+00 Tesla**
   - E. 5.200E+00 Tesla

4. A wire carries a current of 109 A in a circular arc with radius 1.26 cm swept through 71 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
   - A. 2.908E+00 Tesla
   - B. 3.199E+00 Tesla
   - **C. 3.519E+00 Tesla**
   - D. 3.871E+00 Tesla
   - E. 4.258E+00 Tesla

5. A wire carries a current of 266 A in a circular arc with radius 2.21 cm swept through 73 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
   - **A. 5.034E+00 Tesla**
   - B. 5.538E+00 Tesla
   - C. 6.091E+00 Tesla
   - D. 6.701E+00 Tesla
   - E. 7.371E+00 Tesla

6. A wire carries a current of 202 A in a circular arc with radius 2.17 cm swept through 51 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
   - A. 2.473E+00 Tesla
   - **B. 2.720E+00 Tesla**
   - C. 2.992E+00 Tesla
   - D. 3.291E+00 Tesla
   - E. 3.620E+00 Tesla

7. A wire carries a current of 106 A in a circular arc with radius 1.32 cm swept through 38 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
   - A. 1.589E+00 Tesla
   - **B. 1.748E+00 Tesla**
   - C. 1.923E+00 Tesla
   - D. 2.116E+00 Tesla

The next page might contain more answer choices for this question

E. 2.327E+00 Tesla

8. A wire carries a current of 193 A in a circular arc with radius 3.13 cm swept through 40 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?

A. 1.285E+00 Tesla

B. 1.413E+00 Tesla

C. 1.554E+00 Tesla

D. 1.710E+00 Tesla

E. 1.881E+00 Tesla

9. A wire carries a current of 385 A in a circular arc with radius 1.53 cm swept through 58 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?

A. 5.711E+00 Tesla

B. 6.283E+00 Tesla

C. 6.911E+00 Tesla

D. 7.602E+00 Tesla

E. 8.362E+00 Tesla

10. A wire carries a current of 353 A in a circular arc with radius 2.44 cm swept through 86 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?

A. 5.891E+00 Tesla

B. 6.481E+00 Tesla

C. 7.129E+00 Tesla

D. 7.841E+00 Tesla

E. 8.626E+00 Tesla

11. A wire carries a current of 280 A in a circular arc with radius 2.48 cm swept through 46 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?

A. 2.032E+00 Tesla

B. 2.236E+00 Tesla

C. 2.459E+00 Tesla

D. 2.705E+00 Tesla

E. 2.976E+00 Tesla

12. A wire carries a current of 332 A in a circular arc with radius 2.47 cm swept through 44 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?

A. 3.389E+00 Tesla

B. 3.727E+00 Tesla

C. 4.100E+00 Tesla

D. 4.510E+00 Tesla

E. 4.961E+00 Tesla

13. A wire carries a current of 297 A in a circular arc with radius 2.31 cm swept through 75 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?

A. 3.774E+00 Tesla

The next page might contain more answer choices for this question

- B. 4.151E+00 Tesla
- C. 4.566E+00 Tesla
- D. 5.023E+00 Tesla
- **E. 5.525E+00 Tesla**

14. A wire carries a current of 343 A in a circular arc with radius 2.95 cm swept through 38 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
    - A. 1.902E+00 Tesla
    - B. 2.092E+00 Tesla
    - C. 2.301E+00 Tesla
    - **D. 2.532E+00 Tesla**
    - E. 2.785E+00 Tesla

15. A wire carries a current of 269 A in a circular arc with radius 2.35 cm swept through 36 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
    - A. 1.613E+00 Tesla
    - B. 1.774E+00 Tesla
    - C. 1.951E+00 Tesla
    - D. 2.146E+00 Tesla
    - **E. 2.361E+00 Tesla**

16. A wire carries a current of 293 A in a circular arc with radius 1.75 cm swept through 71 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
    - A. 4.652E+00 Tesla
    - B. 5.117E+00 Tesla
    - C. 5.629E+00 Tesla
    - D. 6.192E+00 Tesla
    - **E. 6.811E+00 Tesla**

17. A wire carries a current of 148 A in a circular arc with radius 1.44 cm swept through 73 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
    - **A. 4.299E+00 Tesla**
    - B. 4.729E+00 Tesla
    - C. 5.202E+00 Tesla
    - D. 5.722E+00 Tesla
    - E. 6.294E+00 Tesla

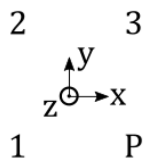
18. A wire carries a current of 250 A in a circular arc with radius 2.17 cm swept through 53 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?
    - **A. 3.498E+00 Tesla**
    - B. 3.848E+00 Tesla
    - C. 4.233E+00 Tesla
    - D. 4.656E+00 Tesla
    - E. 5.122E+00 Tesla

The next page might contain more answer choices for this question

19. A wire carries a current of 338 A in a circular arc with radius 2.62 cm swept through 79 degrees. Assuming that the rest of the current is 100% shielded by mu-metal, what is the magnetic field at the center of the arc?

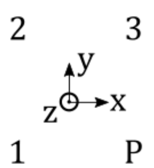
   A. 4.387E+00 Tesla
   B. 4.826E+00 Tesla
   C. 5.309E+00 Tesla
   D. 5.839E+00 Tesla
   E. 6.423E+00 Tesla

d_cp2.12 Q2

1. 

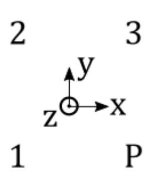
Three wires sit at the corners of a square of length 0.811 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.18 A, 1.44 A, 1.46 A), respectively. What is the x-component of the magnetic field at point P?

   A. B_x= 4.887E-05 T
   B. B_x= 5.376E-05 T
   C. B_x= 5.914E-05 T
   D. B_x= 6.505E-05 T
   E. B_x= 7.156E-05 T

2. 

Three wires sit at the corners of a square of length 0.785 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.23 A, 1.52 A, 1.86 A), respectively. What is the x-component of the magnetic field at point P?

   A. B_x= 4.559E-05 T
   B. B_x= 5.015E-05 T
   C. B_x= 5.517E-05 T
   D. B_x= 6.068E-05 T
   E. B_x= 6.675E-05 T

3. 

Three wires sit at the corners of a square of length 0.467 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.29 A, 1.77 A, 1.48 A), respectively. What is the x-component of the magnetic field at point P?

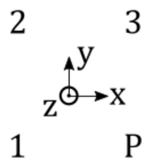
   A. B_x= 8.371E-05 T
   B. B_x= 9.208E-05 T

The next page might contain more answer choices for this question

C. B_x= 1.013E-04 T

D. B_x= 1.114E-04 T

E. B_x= 1.226E-04 T



4. Three wires sit at the corners of a square of length 0.64 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.76 A, 1.02 A, 1.08 A), respectively. What is the x-component of the magnetic field at point P?

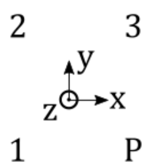
A. B_x= 3.394E-05 T

B. B_x= 3.733E-05 T

C. B_x= 4.106E-05 T

D. B_x= 4.517E-05 T

E. B_x= 4.969E-05 T



5. Three wires sit at the corners of a square of length 0.533 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.17 A, 2.25 A, 2.22 A), respectively. What is the x-component of the magnetic field at point P?

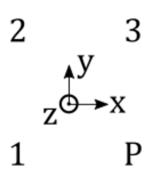
A. B_x= 1.037E-04 T

B. B_x= 1.141E-04 T

C. B_x= 1.255E-04 T

D. B_x= 1.381E-04 T

E. B_x= 1.519E-04 T



6. Three wires sit at the corners of a square of length 0.51 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.16 A, 2.46 A, 2.15 A), respectively. What is the x-component of the magnetic field at point P?

A. B_x= 9.053E-05 T

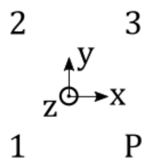
B. B_x= 9.959E-05 T

C. B_x= 1.095E-04 T

D. B_x= 1.205E-04 T

E. B_x= 1.325E-04 T

The next page might contain more answer choices for this question



7. Three wires sit at the corners of a square of length 0.78 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.13 A, 1.35 A, 2.02 A), respectively. What is the x-component of the magnetic field at point P?

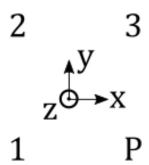
A. B_x= 6.282E-05 T

B. B_x= 6.910E-05 T

C. B_x= 7.601E-05 T

D. B_x= 8.361E-05 T

E. B_x= 9.198E-05 T



8. Three wires sit at the corners of a square of length 0.796 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.48 A, 1.4 A, 1.47 A), respectively. What is the x-component of the magnetic field at point P?

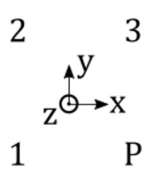
A. B_x= 4.506E-05 T

B. B_x= 4.957E-05 T

C. B_x= 5.452E-05 T

D. B_x= 5.997E-05 T

E. B_x= 6.597E-05 T



9. Three wires sit at the corners of a square of length 0.75 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.1 A, 1.11 A, 2.26 A), respectively. What is the x-component of the magnetic field at point P?

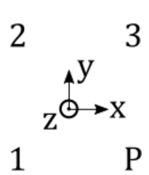
A. B_x= 7.507E-05 T

B. B_x= 8.257E-05 T

C. B_x= 9.083E-05 T

D. B_x= 9.991E-05 T

E. B_x= 1.099E-04 T



10. Three wires sit at the corners of a square of length 0.705 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.92 A, 1.14 A, 1.11 A), respectively. What is the x-component of the magnetic field at point P?

The next page might contain more answer choices for this question

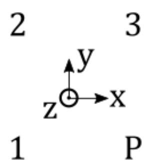
A. B_x= 4.333E-05 T

B. B_x= 4.766E-05 T

C. B_x= 5.243E-05 T

D. B_x= 5.767E-05 T

E. B_x= 6.343E-05 T



11. Three wires sit at the corners of a square of length 0.518 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.31 A, 1.32 A, 1.62 A), respectively. What is the x-component of the magnetic field at point P?

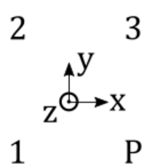
A. B_x= 6.013E-05 T

B. B_x= 6.614E-05 T

C. B_x= 7.275E-05 T

D. B_x= 8.003E-05 T

E. B_x= 8.803E-05 T



12. Three wires sit at the corners of a square of length 0.784 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.19 A, 1.51 A, 2.18 A), respectively. What is the x-component of the magnetic field at point P?

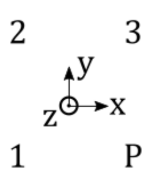
A. B_x= 7.487E-05 T

B. B_x= 8.236E-05 T

C. B_x= 9.060E-05 T

D. B_x= 9.966E-05 T

E. B_x= 1.096E-04 T



13. Three wires sit at the corners of a square of length 0.739 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.93 A, 2.48 A, 1.36 A), respectively. What is the x-component of the magnetic field at point P?

A. B_x= 6.397E-05 T

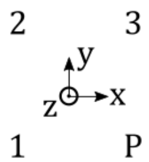
B. B_x= 7.037E-05 T

C. B_x= 7.740E-05 T

D. B_x= 8.514E-05 T

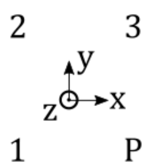
E. B_x= 9.366E-05 T

The next page might contain more answer choices for this question



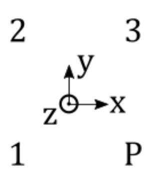
14. Three wires sit at the corners of a square of length 0.687 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.38 A, 1.87 A, 2.03 A), respectively. What is the x-component of the magnetic field at point P?

   A. B_x= 7.134E-05 T
   B. B_x= 7.847E-05 T
   C. B_x= 8.632E-05 T
   D. B_x= 9.495E-05 T
   E. B_x= 1.044E-04 T



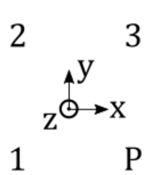
15. Three wires sit at the corners of a square of length 0.466 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.4 A, 2.42 A, 1.9 A), respectively. What is the x-component of the magnetic field at point P?

   A. B_x= 1.335E-04 T
   B. B_x= 1.468E-04 T
   C. B_x= 1.615E-04 T
   D. B_x= 1.777E-04 T
   E. B_x= 1.954E-04 T



16. Three wires sit at the corners of a square of length 0.774 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.57 A, 2.03 A, 2.08 A), respectively. What is the x-component of the magnetic field at point P?

   A. B_x= 7.270E-05 T
   B. B_x= 7.997E-05 T
   C. B_x= 8.797E-05 T
   D. B_x= 9.677E-05 T
   E. B_x= 1.064E-04 T



17. Three wires sit at the corners of a square of length 0.688 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.73 A, 1.37 A, 1.65 A), respectively. What is the x-component of the magnetic field at point P?

The next page might contain more answer choices for this question

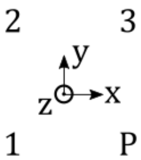
A. B_x= 6.171E-05 T

B. B_x= 6.788E-05 T

C. B_x= 7.467E-05 T

D. B_x= 8.213E-05 T

E. B_x= 9.035E-05 T



18. Three wires sit at the corners of a square of length 0.832 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.03 A, 1.95 A, 2.02 A), respectively. What is the x-component of the magnetic field at point P?

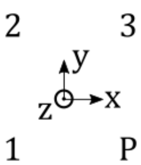
A. B_x= 6.545E-05 T

B. B_x= 7.200E-05 T

C. B_x= 7.919E-05 T

D. B_x= 8.711E-05 T

E. B_x= 9.583E-05 T



19. Three wires sit at the corners of a square of length 0.686 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.28 A, 1.27 A, 1.61 A), respectively. What is the x-component of the magnetic field at point P?

A. B_x= 5.409E-05 T

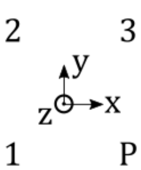
B. B_x= 5.950E-05 T

C. B_x= 6.545E-05 T

D. B_x= 7.200E-05 T

E. B_x= 7.920E-05 T

d_cp2.12 Q3



1. Three wires sit at the corners of a square of length 0.762 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.69 A, 1.7 A, 1.02 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 5.510E-05 T

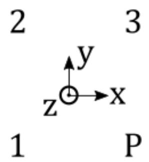
B. B_y= 6.061E-05 T

C. B_y= 6.667E-05 T

D. B_y= 7.333E-05 T

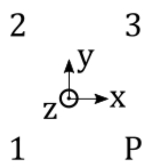
The next page might contain more answer choices for this question

E. B_y= 8.067E-05 T



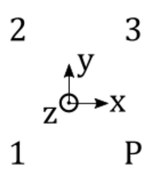
2. Three wires sit at the corners of a square of length 0.787 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.68 A, 2.44 A, 2.47 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 6.091E-05 T
B. B_y= 6.700E-05 T
C. B_y= 7.370E-05 T
D. B_y= 8.107E-05 T
E. B_y= 8.917E-05 T



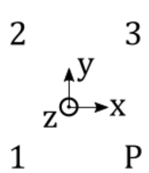
3. Three wires sit at the corners of a square of length 0.819 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.01 A, 1.09 A, 1.56 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 4.688E-05 T
B. B_y= 5.156E-05 T
C. B_y= 5.672E-05 T
D. B_y= 6.239E-05 T
E. B_y= 6.863E-05 T



4. Three wires sit at the corners of a square of length 0.76 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.91 A, 1.34 A, 1.05 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 5.611E-05 T
B. B_y= 6.172E-05 T
C. B_y= 6.789E-05 T
D. B_y= 7.468E-05 T
E. B_y= 8.215E-05 T



5. Three wires sit at the corners of a square of length 0.859 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.07 A, 1.32 A, 2.03 A), respectively. What is the y-component of the magnetic field at point P?

The next page might contain more answer choices for this question

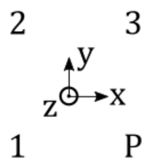
A. B_y= 4.028E-05 T

B. B_y= 4.431E-05 T

C. B_y= 4.874E-05 T

D. B_y= 5.361E-05 T

E. B_y= 5.897E-05 T



6. Three wires sit at the corners of a square of length 0.547 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.78 A, 1.34 A, 1.64 A), respectively. What is the y-component of the magnetic field at point P?

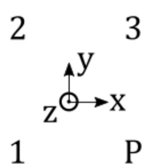
A. B_y= 6.118E-05 T

B. B_y= 6.730E-05 T

C. B_y= 7.403E-05 T

D. B_y= 8.144E-05 T

E. B_y= 8.958E-05 T



7. Three wires sit at the corners of a square of length 0.793 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.32 A, 1.4 A, 2.27 A), respectively. What is the y-component of the magnetic field at point P?

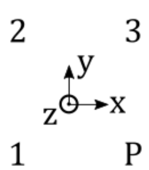
A. B_y= 3.480E-05 T

B. B_y= 3.828E-05 T

C. B_y= 4.210E-05 T

D. B_y= 4.631E-05 T

E. B_y= 5.095E-05 T



8. Three wires sit at the corners of a square of length 0.591 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.47 A, 2.1 A, 2.24 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 1.191E-04 T

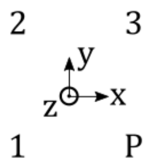
B. B_y= 1.310E-04 T

C. B_y= 1.441E-04 T

D. B_y= 1.585E-04 T

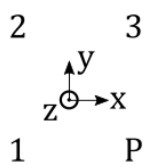
E. B_y= 1.744E-04 T

The next page might contain more answer choices for this question



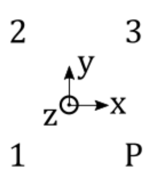
9. Three wires sit at the corners of a square of length 0.66 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.18 A, 1.82 A, 1.35 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 7.035E-05 T
B. B_y= 7.739E-05 T
C. B_y= 8.512E-05 T
D. B_y= 9.364E-05 T
E. B_y= 1.030E-04 T



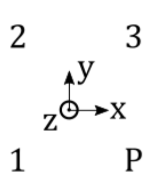
10. Three wires sit at the corners of a square of length 0.532 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.11 A, 1.25 A, 2.27 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 5.930E-05 T
B. B_y= 6.523E-05 T
C. B_y= 7.175E-05 T
D. B_y= 7.892E-05 T
E. B_y= 8.682E-05 T



11. Three wires sit at the corners of a square of length 0.703 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.49 A, 1.32 A, 1.75 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 8.962E-05 T
B. B_y= 9.858E-05 T
C. B_y= 1.084E-04 T
D. B_y= 1.193E-04 T
E. B_y= 1.312E-04 T



12. Three wires sit at the corners of a square of length 0.865 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.62 A, 2.13 A, 2.2 A), respectively. What is the y-component of the magnetic field at point P?

The next page might contain more answer choices for this question

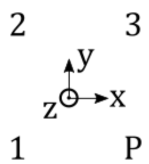
A. B_y= 5.131E-05 T

B. B_y= 5.644E-05 T

C. B_y= 6.208E-05 T

D. B_y= 6.829E-05 T

E. B_y= 7.512E-05 T



13. Three wires sit at the corners of a square of length 0.534 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.45 A, 2.44 A, 1.61 A), respectively. What is the y-component of the magnetic field at point P?

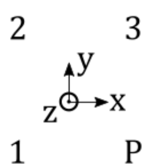
A. B_y= 9.388E-05 T

B. B_y= 1.033E-04 T

C. B_y= 1.136E-04 T

D. B_y= 1.250E-04 T

E. B_y= 1.375E-04 T



14. Three wires sit at the corners of a square of length 0.699 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.87 A, 2.18 A, 1.34 A), respectively. What is the y-component of the magnetic field at point P?

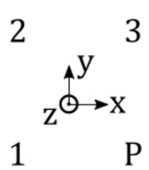
A. B_y= 6.999E-05 T

B. B_y= 7.699E-05 T

C. B_y= 8.469E-05 T

D. B_y= 9.316E-05 T

E. B_y= 1.025E-04 T



15. Three wires sit at the corners of a square of length 0.834 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.26 A, 1.75 A, 2.47 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 7.518E-05 T

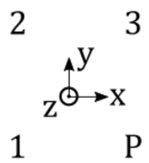
B. B_y= 8.270E-05 T

C. B_y= 9.097E-05 T

D. B_y= 1.001E-04 T

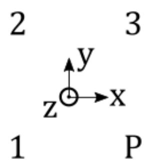
E. B_y= 1.101E-04 T

The next page might contain more answer choices for this question



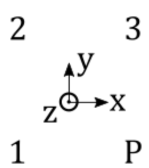
16. Three wires sit at the corners of a square of length 0.716 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (1.94 A, 2.04 A, 2.41 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 6.833E-05 T
B. B_y= 7.517E-05 T
C. B_y= 8.268E-05 T
D. B_y= 9.095E-05 T
E. B_y= 1.000E-04 T



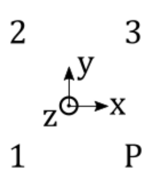
17. Three wires sit at the corners of a square of length 0.495 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.45 A, 1.66 A, 1.63 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 1.205E-04 T
B. B_y= 1.325E-04 T
C. B_y= 1.458E-04 T
D. B_y= 1.604E-04 T
E. B_y= 1.764E-04 T



18. Three wires sit at the corners of a square of length 0.702 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.24 A, 1.37 A, 2.3 A), respectively. What is the y-component of the magnetic field at point P?

A. B_y= 7.576E-05 T
B. B_y= 8.333E-05 T
C. B_y= 9.167E-05 T
D. B_y= 1.008E-04 T
E. B_y= 1.109E-04 T



19. Three wires sit at the corners of a square of length 0.823 cm. The currents all are in the positive-z direction (i.e. all come out of the paper in the figure shown.) The currents (I_1, I_2, I_2) are (2.41 A, 1.87 A, 2.21 A), respectively. What is the y-component of the magnetic field at point P?

The next page might contain more answer choices for this question

A. B_y= 6.718E-05 T

C. B_y= 8.129E-05 T

B. B_y= 7.390E-05 T

D. B_y= 8.942E-05 T

E. B_y= 9.836E-05 T

d_cp2.12 Q4

1. Two parallel wires each carry a 5.0 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (4.48 cm, 0.973 cm), while the other is located at (3.32 cm, 4.79 cm). What is the force per unit length between the wires?

   A. 1.139E-10 N/m

   B. 1.253E-10 N/m

   C. 1.379E-10 N/m

   D. 1.517E-10 N/m

   E. 1.668E-10 N/m

2. Two parallel wires each carry a 9.68 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (4.55 cm, 1.79 cm), while the other is located at (3.16 cm, 4.78 cm). What is the force per unit length between the wires?

   A. 3.882E-10 N/m

   B. 4.270E-10 N/m

   C. 4.697E-10 N/m

   D. 5.167E-10 N/m

   E. 5.684E-10 N/m

3. Two parallel wires each carry a 9.08 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (4.17 cm, 1.32 cm), while the other is located at (5.72 cm, 4.47 cm). What is the force per unit length between the wires?

   A. 3.882E-10 N/m

   B. 4.270E-10 N/m

   C. 4.697E-10 N/m

   D. 5.167E-10 N/m

   E. 5.683E-10 N/m

4. Two parallel wires each carry a 8.75 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.66 cm, 1.4 cm), while the other is located at (5.64 cm, 5.66 cm). What is the force per unit length between the wires?

   A. 2.449E-10 N/m

   B. 2.694E-10 N/m

   C. 2.963E-10 N/m

   D. 3.260E-10 N/m

   E. 3.586E-10 N/m

The next page might contain more answer choices for this question

5. Two parallel wires each carry a 7.75 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (4.62 cm, 1.31 cm), while the other is located at (4.63 cm, 5.53 cm). What is the force per unit length between the wires?
   - A. 2.588E-10 N/m
   - **B. 2.847E-10 N/m**
   - C. 3.131E-10 N/m
   - D. 3.444E-10 N/m
   - E. 3.789E-10 N/m

6. Two parallel wires each carry a 7.48 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.13 cm, 0.955 cm), while the other is located at (5.37 cm, 5.48 cm). What is the force per unit length between the wires?
   - A. 2.015E-10 N/m
   - **B. 2.216E-10 N/m**
   - C. 2.438E-10 N/m
   - D. 2.682E-10 N/m
   - E. 2.950E-10 N/m

7. Two parallel wires each carry a 2.58 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (4.79 cm, 1.03 cm), while the other is located at (5.64 cm, 5.12 cm). What is the force per unit length between the wires?
   - A. 2.634E-11 N/m
   - B. 2.897E-11 N/m
   - **C. 3.187E-11 N/m**
   - D. 3.506E-11 N/m
   - E. 3.856E-11 N/m

8. Two parallel wires each carry a 2.83 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.15 cm, 1.13 cm), while the other is located at (5.14 cm, 4.22 cm). What is the force per unit length between the wires?
   - A. 2.977E-11 N/m
   - B. 3.274E-11 N/m
   - C. 3.602E-11 N/m
   - D. 3.962E-11 N/m
   - **E. 4.358E-11 N/m**

9. Two parallel wires each carry a 6.53 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.82 cm, 1.17 cm), while the other is located at (4.07 cm, 5.5 cm). What is the force per unit length between the wires?
   - A. 1.788E-10 N/m
   - **B. 1.966E-10 N/m**
   - C. 2.163E-10 N/m
   - D. 2.379E-10 N/m
   - E. 2.617E-10 N/m

The next page might contain more answer choices for this question

10. Two parallel wires each carry a 3.8 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (4.74 cm, 1.47 cm), while the other is located at (5.26 cm, 5.87 cm). What is the force per unit length between the wires?
    - A. 5.926E-11 N/m
    - **B. 6.518E-11 N/m**
    - C. 7.170E-11 N/m
    - D. 7.887E-11 N/m
    - E. 8.676E-11 N/m

11. Two parallel wires each carry a 1.65 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (4.59 cm, 1.81 cm), while the other is located at (5.78 cm, 4.43 cm). What is the force per unit length between the wires?
    - A. 1.422E-11 N/m
    - B. 1.564E-11 N/m
    - C. 1.720E-11 N/m
    - **D. 1.892E-11 N/m**
    - E. 2.081E-11 N/m

12. Two parallel wires each carry a 3.51 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (4.14 cm, 1.43 cm), while the other is located at (4.14 cm, 5.23 cm). What is the force per unit length between the wires?
    - **A. 6.484E-11 N/m**
    - B. 7.133E-11 N/m
    - C. 7.846E-11 N/m
    - D. 8.631E-11 N/m
    - E. 9.494E-11 N/m

13. Two parallel wires each carry a 9.59 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.97 cm, 1.4 cm), while the other is located at (4.02 cm, 5.19 cm). What is the force per unit length between the wires?
    - A. 4.412E-10 N/m
    - **B. 4.853E-10 N/m**
    - C. 5.338E-10 N/m
    - D. 5.872E-10 N/m
    - E. 6.459E-10 N/m

14. Two parallel wires each carry a 2.12 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.67 cm, 1.25 cm), while the other is located at (4.69 cm, 4.27 cm). What is the force per unit length between the wires?
    - A. 2.119E-11 N/m
    - B. 2.331E-11 N/m
    - C. 2.564E-11 N/m
    - **D. 2.820E-11 N/m**
    - E. 3.102E-11 N/m

The next page might contain more answer choices for this question

15. Two parallel wires each carry a 7.59 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.98 cm, 0.969 cm), while the other is located at (5.13 cm, 5.53 cm). What is the force per unit length between the wires?
    - A. 1.840E-10 N/m
    - B. 2.024E-10 N/m
    - C. 2.227E-10 N/m
    - **D. 2.449E-10 N/m**
    - E. 2.694E-10 N/m

16. Two parallel wires each carry a 7.68 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.36 cm, 1.58 cm), while the other is located at (5.29 cm, 5.18 cm). What is the force per unit length between the wires?
    - A. 1.973E-10 N/m
    - B. 2.170E-10 N/m
    - C. 2.387E-10 N/m
    - D. 2.625E-10 N/m
    - **E. 2.888E-10 N/m**

17. Two parallel wires each carry a 4.15 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.19 cm, 1.78 cm), while the other is located at (3.73 cm, 4.12 cm). What is the force per unit length between the wires?
    - **A. 1.434E-10 N/m**
    - B. 1.578E-10 N/m
    - C. 1.736E-10 N/m
    - D. 1.909E-10 N/m
    - E. 2.100E-10 N/m

18. Two parallel wires each carry a 6.26 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.4 cm, 1.42 cm), while the other is located at (5.56 cm, 4.99 cm). What is the force per unit length between the wires?
    - A. 1.283E-10 N/m
    - B. 1.411E-10 N/m
    - C. 1.552E-10 N/m
    - D. 1.708E-10 N/m
    - **E. 1.878E-10 N/m**

19. Two parallel wires each carry a 3.38 mA current and are oriented in the z direction. The first wire is located in the x-y plane at (3.46 cm, 1.76 cm), while the other is located at (5.13 cm, 5.5 cm). What is the force per unit length between the wires?
    - A. 3.810E-11 N/m
    - B. 4.191E-11 N/m
    - C. 4.610E-11 N/m
    - D. 5.071E-11 N/m
    - **E. 5.578E-11 N/m**

The next page might contain more answer choices for this question

d_cp2.12 Q5

1. Two loops of wire carry the same current of 62 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.584 m while the other has a radius of 1.38 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.341 m from the first (smaller) loopif the disance between the loops is 1.21 m?

   A. 4.102E-02 T

   B. 4.513E-02 T

   C. 4.964E-02 T

   D. 5.460E-02 T

   E. 6.006E-02 T

2. Two loops of wire carry the same current of 18 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.848 m while the other has a radius of 1.42 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.625 m from the first (smaller) loopif the disance between the loops is 1.55 m?

   A. 7.952E-03 T

   B. 8.747E-03 T

   C. 9.622E-03 T

   D. 1.058E-02 T

   E. 1.164E-02 T

3. Two loops of wire carry the same current of 85 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.854 m while the other has a radius of 1.18 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.5 m from the first (smaller) loopif the disance between the loops is 1.66 m?

   A. 4.253E-02 T

   B. 4.678E-02 T

   C. 5.146E-02 T

   D. 5.661E-02 T

   E. 6.227E-02 T

4. Two loops of wire carry the same current of 67 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.847 m while the other has a radius of 1.15 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.408 m from the first (smaller) loopif the disance between the loops is 1.15 m?

   A. 4.799E-02 T

   B. 5.278E-02 T

   C. 5.806E-02 T

   D. 6.387E-02 T

   E. 7.026E-02 T

5. Two loops of wire carry the same current of 12 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.751 m while the other has a radius of 1.42 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.493 m from the first (smaller) loopif the disance between the loops is 1.26 m?

The next page might contain more answer choices for this question

A. 7.836E-03 T

B. 8.620E-03 T

C. 9.482E-03 T

D. 1.043E-02 T

E. 1.147E-02 T

6. Two loops of wire carry the same current of 88 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.655 m while the other has a radius of 1.11 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.531 m from the first (smaller) loopif the disance between the loops is 1.72 m?

   A. 4.162E-02 T

   B. 4.578E-02 T

   C. 5.036E-02 T

   D. 5.540E-02 T

   E. 6.094E-02 T

7. Two loops of wire carry the same current of 29 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.76 m while the other has a radius of 1.12 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.544 m from the first (smaller) loopif the disance between the loops is 1.56 m?

   A. 1.950E-02 T

   B. 2.145E-02 T

   C. 2.360E-02 T

   D. 2.596E-02 T

   E. 2.855E-02 T

8. Two loops of wire carry the same current of 64 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.838 m while the other has a radius of 1.17 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.528 m from the first (smaller) loopif the disance between the loops is 1.62 m?

   A. 3.863E-02 T

   B. 4.249E-02 T

   C. 4.674E-02 T

   D. 5.141E-02 T

   E. 5.655E-02 T

9. Two loops of wire carry the same current of 24 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.53 m while the other has a radius of 1.38 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.485 m from the first (smaller) loopif the disance between the loops is 1.78 m?

   A. 1.294E-02 T

   B. 1.424E-02 T

   C. 1.566E-02 T

   D. 1.723E-02 T

The next page might contain more answer choices for this question

E. 1.895E-02 T

10. Two loops of wire carry the same current of 20 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.776 m while the other has a radius of 1.2 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.517 m from the first (smaller) loopif the disance between the loops is 1.37 m?

    A. 1.127E-02 T
    B. 1.240E-02 T
    C. 1.364E-02 T
    D. 1.500E-02 T
    E. 1.650E-02 T

11. Two loops of wire carry the same current of 99 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.798 m while the other has a radius of 1.29 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.394 m from the first (smaller) loopif the disance between the loops is 1.29 m?

    A. 8.291E-02 T
    B. 9.120E-02 T
    C. 1.003E-01 T
    D. 1.104E-01 T
    E. 1.214E-01 T

12. Two loops of wire carry the same current of 21 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.753 m while the other has a radius of 1.47 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.406 m from the first (smaller) loopif the disance between the loops is 1.38 m?

    A. 1.559E-02 T
    B. 1.715E-02 T
    C. 1.886E-02 T
    D. 2.075E-02 T
    E. 2.283E-02 T

13. Two loops of wire carry the same current of 97 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.595 m while the other has a radius of 1.1 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.63 m from the first (smaller) loopif the disance between the loops is 1.72 m?

    A. 5.302E-02 T
    B. 5.832E-02 T
    C. 6.415E-02 T
    D. 7.056E-02 T
    E. 7.762E-02 T

14. Two loops of wire carry the same current of 11 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.424 m while the other has a radius of 1.32 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.52 m from the first (smaller) loopif the disance between the loops is 1.25 m?

The next page might contain more answer choices for this question

A. 7.623E-03 T

B. 8.385E-03 T

C. 9.223E-03 T

D. 1.015E-02 T

E. 1.116E-02 T

15. Two loops of wire carry the same current of 66 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.485 m while the other has a radius of 1.27 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.507 m from the first (smaller) loopif the disance between the loops is 1.76 m?

A. 2.733E-02 T

B. 3.007E-02 T

C. 3.307E-02 T

D. 3.638E-02 T

E. 4.002E-02 T

16. Two loops of wire carry the same current of 44 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.678 m while the other has a radius of 1.14 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.508 m from the first (smaller) loopif the disance between the loops is 1.16 m?

A. 3.342E-02 T

B. 3.676E-02 T

C. 4.044E-02 T

D. 4.448E-02 T

E. 4.893E-02 T

17. Two loops of wire carry the same current of 43 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.516 m while the other has a radius of 1.22 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.565 m from the first (smaller) loopif the disance between the loops is 1.78 m?

A. 1.798E-02 T

B. 1.978E-02 T

C. 2.176E-02 T

D. 2.394E-02 T

E. 2.633E-02 T

18. Two loops of wire carry the same current of 39 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.49 m while the other has a radius of 1.11 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.552 m from the first (smaller) loopif the disance between the loops is 1.62 m?

A. 1.564E-02 T

B. 1.720E-02 T

C. 1.892E-02 T

D. 2.081E-02 T

The next page might contain more answer choices for this question

E. 2.289E-02 T

19. Two loops of wire carry the same current of 14 kA, and flow in the same direction. They share a common axis and orientation. One loop has a radius of 0.835 m while the other has a radius of 1.29 m. What is the magnitude of the magnetic field at a point on the axis of both loops, situated between the loops at a distance 0.607 m from the first (smaller) loopif the disance between the loops is 1.61 m?

    A. 6.099E-03 T

    B. 6.709E-03 T

    C. 7.380E-03 T

    D. 8.118E-03 T

    E. 8.930E-03 T

d_cp2.12 Q6

1. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.34 mm from the center of a wire of radius 3 mm if the current is 1A?

    A. 2.237E-05 T

    B. 2.461E-05 T

    C. 2.707E-05 T

    D. 2.978E-05 T

    E. 3.276E-05 T

2. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.86 mm from the center of a wire of radius 3 mm if the current is 1A?

    A. 3.416E-05 T

    B. 3.758E-05 T

    C. 4.133E-05 T

    D. 4.547E-05 T

    E. 5.001E-05 T

3. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 2.64 mm from the center of a wire of radius 5 mm if the current is 1A?

    A. 1.920E-05 T

    B. 2.112E-05 T

    C. 2.323E-05 T

    D. 2.556E-05 T

    E. 2.811E-05 T

4. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 2.66 mm from the center of a wire of radius 4 mm if the current is 1A?

    A. 3.325E-05 T

    B. 3.658E-05 T

    C. 4.023E-05 T

    D. 4.426E-05 T

The next page might contain more answer choices for this question

E. 4.868E-05 T

5. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 2.59 mm from the center of a wire of radius 5 mm if the current is 1A?

   A. 2.072E-05 T

   B. 2.279E-05 T

   C. 2.507E-05 T

   D. 2.758E-05 T

   E. 3.034E-05 T

6. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.51 mm from the center of a wire of radius 5 mm if the current is 1A?

   A. 1.208E-05 T

   B. 1.329E-05 T

   C. 1.462E-05 T

   D. 1.608E-05 T

   E. 1.769E-05 T

7. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.03 mm from the center of a wire of radius 3 mm if the current is 1A?

   A. 1.720E-05 T

   B. 1.892E-05 T

   C. 2.081E-05 T

   D. 2.289E-05 T

   E. 2.518E-05 T

8. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 2.43 mm from the center of a wire of radius 5 mm if the current is 1A?

   A. 1.944E-05 T

   B. 2.138E-05 T

   C. 2.352E-05 T

   D. 2.587E-05 T

   E. 2.846E-05 T

9. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.9 mm from the center of a wire of radius 4 mm if the current is 1A?

   A. 1.784E-05 T

   B. 1.963E-05 T

   C. 2.159E-05 T

   D. 2.375E-05 T

   E. 2.613E-05 T

10. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 3.33 mm from the center of a wire of radius 5 mm if the current is 1A?

    A. 2.202E-05 T

The next page might contain more answer choices for this question

B. 2.422E-05 T

C. 2.664E-05 T

D. 2.930E-05 T

E. 3.223E-05 T

11. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.81 mm from the center of a wire of radius 3 mm if the current is 1A?

A. 3.324E-05 T

B. 3.657E-05 T

C. 4.022E-05 T

D. 4.424E-05 T

E. 4.867E-05 T

12. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 3.07 mm from the center of a wire of radius 5 mm if the current is 1A?

A. 1.677E-05 T

B. 1.845E-05 T

C. 2.030E-05 T

D. 2.233E-05 T

E. 2.456E-05 T

13. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 2.04 mm from the center of a wire of radius 5 mm if the current is 1A?

A. 1.115E-05 T

B. 1.226E-05 T

C. 1.349E-05 T

D. 1.484E-05 T

E. 1.632E-05 T

14. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.86 mm from the center of a wire of radius 5 mm if the current is 1A?

A. 1.488E-05 T

B. 1.637E-05 T

C. 1.800E-05 T

D. 1.981E-05 T

E. 2.179E-05 T

15. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 2.26 mm from the center of a wire of radius 5 mm if the current is 1A?

A. 1.494E-05 T

B. 1.644E-05 T

C. 1.808E-05 T

D. 1.989E-05 T

E. 2.188E-05 T

The next page might contain more answer choices for this question

16. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 2.66 mm from the center of a wire of radius 5 mm if the current is 1A?
    - A. 1.935E-05 T
    - **B. 2.128E-05 T**
    - C. 2.341E-05 T
    - D. 2.575E-05 T
    - E. 2.832E-05 T

17. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.14 mm from the center of a wire of radius 3 mm if the current is 1A?
    - **A. 2.533E-05 T**
    - B. 2.787E-05 T
    - C. 3.065E-05 T
    - D. 3.372E-05 T
    - E. 3.709E-05 T

18. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.18 mm from the center of a wire of radius 3 mm if the current is 1A?
    - A. 1.791E-05 T
    - B. 1.970E-05 T
    - C. 2.167E-05 T
    - D. 2.384E-05 T
    - **E. 2.622E-05 T**

19. Under most conditions the current is distributed uniformly over the cross section of the wire. What is the magnetic field 1.51 mm from the center of a wire of radius 5 mm if the current is 1A?
    - A. 1.098E-05 T
    - **B. 1.208E-05 T**
    - C. 1.329E-05 T
    - D. 1.462E-05 T
    - E. 1.608E-05 T

d_cp2.12 Q7

1. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.703$ m and $B_{max} = 0.521$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.165$ m that is centered on the axis with its plane perpendicular to the axis?
    - A. 1.338E+05 A
    - B. 1.472E+05 A
    - C. 1.619E+05 A
    - **D. 1.781E+05 A**
    - E. 1.959E+05 A

The next page might contain more answer choices for this question

2. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.259$ m and $B_{max} = 0.575$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.191$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 3.492E+05 A
   B. 3.841E+05 A
   C. 4.225E+05 A
   D. 4.648E+05 A
   E. 5.113E+05 A

3. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.353$ m and $B_{max} = 0.697$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.196$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 5.479E+05 A
   B. 6.027E+05 A
   C. 6.630E+05 A
   D. 7.293E+05 A
   E. 8.022E+05 A

4. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.52$ m and $B_{max} = 0.657$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.295$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 7.876E+05 A
   B. 8.664E+05 A
   C. 9.530E+05 A
   D. 1.048E+06 A
   E. 1.153E+06 A

5. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.248$ m and $B_{max} = 0.459$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.152$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 2.228E+05 A
   B. 2.451E+05 A
   C. 2.696E+05 A
   D. 2.966E+05 A
   E. 3.262E+05 A

The next page might contain more answer choices for this question

6. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.51$ m and $B_{max} = 0.649$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.376$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 9.388E+05 A
   B. 1.033E+06 A
   C. 1.136E+06 A
   D. 1.249E+06 A
   E. 1.374E+06 A

7. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.549$ m and $B_{max} = 0.599$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.29$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 5.581E+05 A
   B. 6.139E+05 A
   C. 6.752E+05 A
   D. 7.428E+05 A
   E. 8.170E+05 A

8. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.37$ m and $B_{max} = 0.556$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.14$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 2.171E+05 A
   B. 2.388E+05 A
   C. 2.627E+05 A
   D. 2.890E+05 A
   E. 3.179E+05 A

9. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.547$ m and $B_{max} = 0.597$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.158$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 1.751E+05 A
   B. 1.927E+05 A
   C. 2.119E+05 A
   D. 2.331E+05 A
   E. 2.564E+05 A

The next page might contain more answer choices for this question

10. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.568$ m and $B_{max} = 0.214$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.387$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 3.382E+05 A

   B. 3.720E+05 A

   C. 4.092E+05 A

   D. 4.502E+05 A

   E. 4.952E+05 A

11. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.619$ m and $B_{max} = 0.215$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.351$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 2.534E+05 A

   B. 2.787E+05 A

   C. 3.066E+05 A

   D. 3.373E+05 A

   E. 3.710E+05 A

12. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.736$ m and $B_{max} = 0.204$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.532$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 3.764E+05 A

   B. 4.140E+05 A

   C. 4.554E+05 A

   D. 5.010E+05 A

   E. 5.510E+05 A

13. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.253$ m and $B_{max} = 0.489$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.112$ m that is centered on the axis with its plane perpendicular to the axis?

   A. 1.289E+05 A

   B. 1.418E+05 A

   C. 1.560E+05 A

   D. 1.716E+05 A

   E. 1.888E+05 A

The next page might contain more answer choices for this question

14. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.852$ m and $B_{max} = 0.476$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.212$ m that is centered on the axis with its plane perpendicular to the axis?

A. 1.502E+05 A

B. 1.652E+05 A

C. 1.817E+05 A

D. 1.999E+05 A

E. 2.199E+05 A

15. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.571$ m and $B_{max} = 0.331$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.321$ m that is centered on the axis with its plane perpendicular to the axis?

A. 3.226E+05 A

B. 3.549E+05 A

C. 3.904E+05 A

D. 4.294E+05 A

E. 4.724E+05 A

16. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.645$ m and $B_{max} = 0.469$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.26$ m that is centered on the axis with its plane perpendicular to the axis?

A. 2.949E+05 A

B. 3.244E+05 A

C. 3.568E+05 A

D. 3.925E+05 A

E. 4.317E+05 A

17. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.871$ m and $B_{max} = 0.427$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.688$ m that is centered on the axis with its plane perpendicular to the axis?

A. 1.404E+06 A

B. 1.544E+06 A

C. 1.699E+06 A

D. 1.869E+06 A

E. 2.056E+06 A

The next page might contain more answer choices for this question

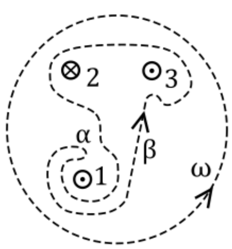
18. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.432$ m and $B_{max} = 0.402$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.275$ m that is centered on the axis with its plane perpendicular to the axis?

    A. 3.277E+05 A
    B. 3.604E+05 A
    C. 3.965E+05 A
    D. 4.361E+05 A
    E. 4.797E+05 A

19. The Z-pinch is an (often unstable) cylindrical plasma in which a aximuthal magnetic field is produced by a current in the z direction. A simple model for the magnetic field, valid for $r < a$ is, $B_\theta(r) = \left(\frac{2r}{a} - \frac{r^2}{a^2}\right) B_{max}$, where B_{max} is the maximum magnetic field (at $r = a$). If $a = 0.407$ m and $B_{max} = 0.605$ T, then how much current (in the z-direction) flows through a circle of radius $r = 0.196$ m that is centered on the axis with its plane perpendicular to the axis?

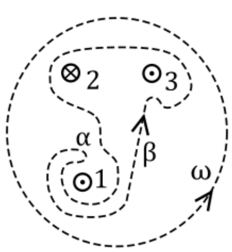
    A. 3.583E+05 A
    B. 3.941E+05 A
    C. 4.335E+05 A
    D. 4.769E+05 A
    E. 5.246E+05 A

d_cp2.12 Q8

1. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.39 kA, I_2=2.19 kA, and I_3=3.68 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

    A. 1.547E-03 T-m
    B. 1.702E-03 T-m
    C. 1.872E-03 T-m
    D. 2.060E-03 T-m
    E. 2.266E-03 T-m

2. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.32 kA, I_2=2.0 kA, and I_3=3.66 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

The next page might contain more answer choices for this question

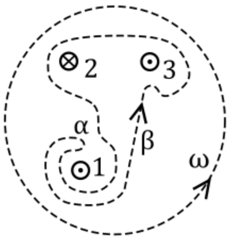
A. 1.724E-03 T-m

B. 1.896E-03 T-m

C. 2.086E-03 T-m

D. 2.295E-03 T-m

E. 2.524E-03 T-m

3. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.55 kA, I_2=1.02 kA, and I_3=1.81 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

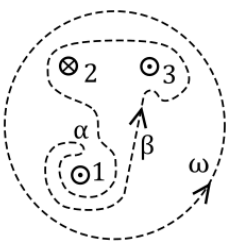
A. 8.204E-04 T-m

B. 9.025E-04 T-m

C. 9.927E-04 T-m

D. 1.092E-03 T-m

E. 1.201E-03 T-m

4. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.44 kA, I_2=1.1 kA, and I_3=1.99 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

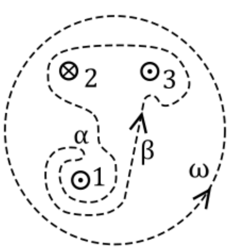
A. 1.017E-03 T-m

B. 1.118E-03 T-m

C. 1.230E-03 T-m

D. 1.353E-03 T-m

E. 1.489E-03 T-m

5. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.82 kA, I_2=0.964 kA, and I_3=2.21 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 1.069E-03 T-m

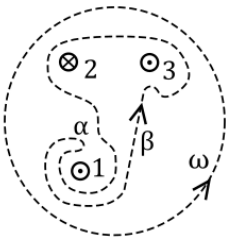
B. 1.176E-03 T-m

The next page might contain more answer choices for this question

C. 1.294E-03 T-m

D. 1.423E-03 T-m

E. 1.566E-03 T-m



6. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.4 kA, I_2=2.64 kA, and I_3=3.96 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

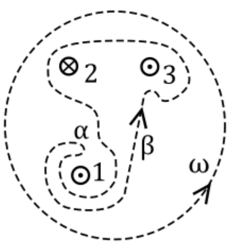
A. 1.133E-03 T-m

B. 1.246E-03 T-m

C. 1.371E-03 T-m

D. 1.508E-03 T-m

E. 1.659E-03 T-m



7. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.51 kA, I_2=1.32 kA, and I_3=2.73 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

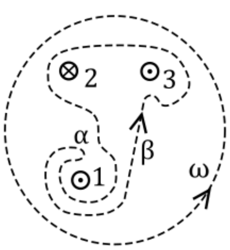
A. 1.331E-03 T-m

B. 1.464E-03 T-m

C. 1.611E-03 T-m

D. 1.772E-03 T-m

E. 1.949E-03 T-m



8. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.49 kA, I_2=0.996 kA, and I_3=2.61 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 1.385E-03 T-m

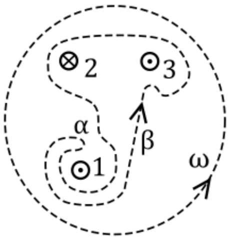
B. 1.524E-03 T-m

C. 1.676E-03 T-m

D. 1.844E-03 T-m

The next page might contain more answer choices for this question

E. 2.028E-03 T-m

9. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.5 kA, I_2=1.53 kA, and I_3=2.34 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

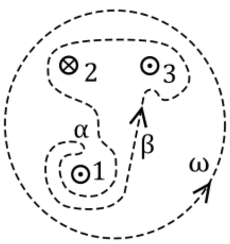
A. 1.018E-03 T-m

B. 1.120E-03 T-m

C. 1.232E-03 T-m

D. 1.355E-03 T-m

E. 1.490E-03 T-m

10. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.66 kA, I_2=1.25 kA, and I_3=2.74 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

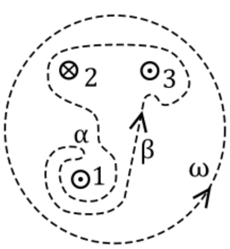
A. 1.547E-03 T-m

B. 1.702E-03 T-m

C. 1.872E-03 T-m

D. 2.060E-03 T-m

E. 2.266E-03 T-m

11. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.61 kA, I_2=2.2 kA, and I_3=5.1 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 3.644E-03 T-m

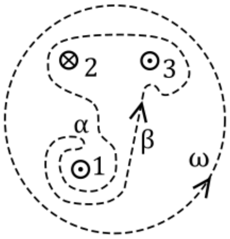
B. 4.009E-03 T-m

C. 4.410E-03 T-m

D. 4.850E-03 T-m

E. 5.336E-03 T-m

The next page might contain more answer choices for this question

12. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.48 kA, I_2=1.47 kA, and I_3=2.6 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

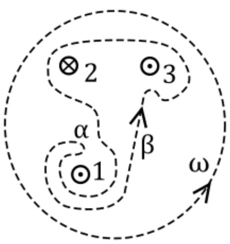
A. 1.420E-03 T-m

B. 1.562E-03 T-m

C. 1.718E-03 T-m

D. 1.890E-03 T-m

E. 2.079E-03 T-m

13. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.51 kA, I_2=2.33 kA, and I_3=5.35 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

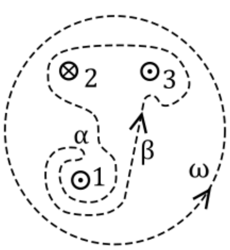
A. 3.795E-03 T-m

B. 4.175E-03 T-m

C. 4.592E-03 T-m

D. 5.051E-03 T-m

E. 5.556E-03 T-m

14. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.85 kA, I_2=1.8 kA, and I_3=4.89 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 3.530E-03 T-m

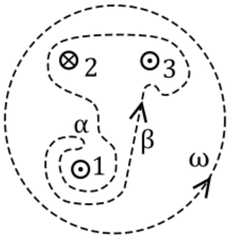
B. 3.883E-03 T-m

C. 4.271E-03 T-m

D. 4.698E-03 T-m

E. 5.168E-03 T-m

The next page might contain more answer choices for this question



15. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.31 kA, I_2=1.08 kA, and I_3=1.77 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

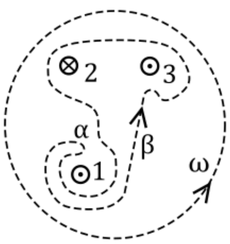
A. 7.166E-04 T-m

B. 7.883E-04 T-m

C. 8.671E-04 T-m

D. 9.538E-04 T-m

E. 1.049E-03 T-m



16. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.43 kA, I_2=1.64 kA, and I_3=4.81 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

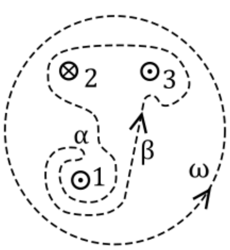
A. 2.721E-03 T-m

B. 2.993E-03 T-m

C. 3.292E-03 T-m

D. 3.621E-03 T-m

E. 3.984E-03 T-m



17. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.45 kA, I_2=2.68 kA, and I_3=5.5 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 3.544E-03 T-m

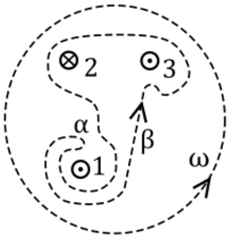
B. 3.898E-03 T-m

C. 4.288E-03 T-m

D. 4.717E-03 T-m

E. 5.188E-03 T-m

The next page might contain more answer choices for this question



18. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.43 kA, I_2=1.81 kA, and I_3=3.23 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

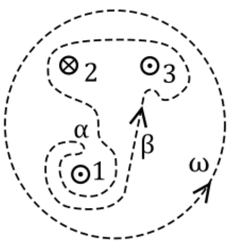
A. 1.622E-03 T-m

B. 1.784E-03 T-m

C. 1.963E-03 T-m

D. 2.159E-03 T-m

E. 2.375E-03 T-m



19. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.84 kA, I_2=0.476 kA, and I_3=1.57 kA, take the β path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 1.250E-03 T-m

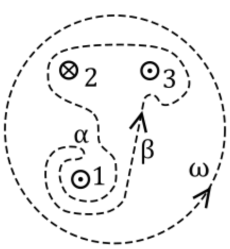
B. 1.375E-03 T-m

C. 1.512E-03 T-m

D. 1.663E-03 T-m

E. 1.830E-03 T-m

d_cp2.12 Q9



1. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.37 kA, I_2=1.05 kA, and I_3=2.99 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 4.069E-03 T-m

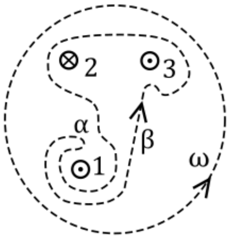
B. 4.476E-03 T-m

C. 4.924E-03 T-m

D. 5.416E-03 T-m

E. 5.958E-03 T-m

The next page might contain more answer choices for this question



2. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.39 kA, I_2=0.414 kA, and I_3=1.3 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

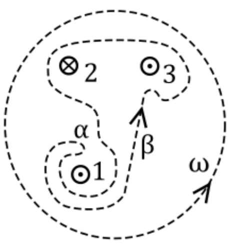
A. 2.812E-03 T-m

B. 3.093E-03 T-m

C. 3.402E-03 T-m

D. 3.742E-03 T-m

E. 4.117E-03 T-m



3. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.84 kA, I_2=3.3 kA, and I_3=5.85 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

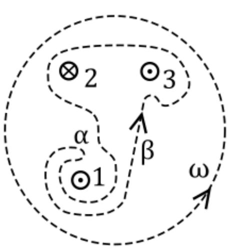
A. 5.598E-03 T-m

B. 6.158E-03 T-m

C. 6.773E-03 T-m

D. 7.451E-03 T-m

E. 8.196E-03 T-m



4. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.38 kA, I_2=0.839 kA, and I_3=2.27 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 4.354E-03 T-m

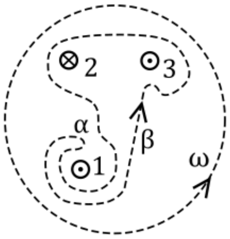
B. 4.789E-03 T-m

C. 5.268E-03 T-m

D. 5.795E-03 T-m

E. 6.374E-03 T-m

The next page might contain more answer choices for this question



5. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.81 kA, I_2=1.2 kA, and I_3=1.84 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

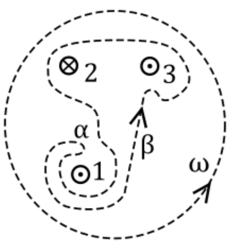
A. 3.583E-03 T-m

B. 3.941E-03 T-m

C. 4.335E-03 T-m

D. 4.769E-03 T-m

E. 5.246E-03 T-m



6. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.35 kA, I_2=0.809 kA, and I_3=2.34 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

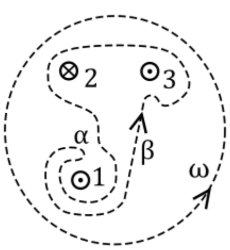
A. 4.031E-03 T-m

B. 4.434E-03 T-m

C. 4.877E-03 T-m

D. 5.365E-03 T-m

E. 5.901E-03 T-m



7. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.58 kA, I_2=1.27 kA, and I_3=1.99 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 3.770E-03 T-m

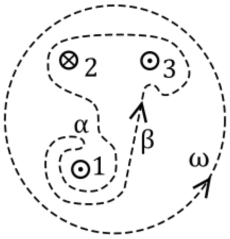
B. 4.147E-03 T-m

C. 4.562E-03 T-m

D. 5.018E-03 T-m

E. 5.520E-03 T-m

The next page might contain more answer choices for this question



8. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.89 kA, I_2=1.19 kA, and I_3=3.5 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

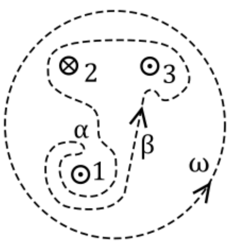
A. 6.535E-03 T-m

B. 7.188E-03 T-m

C. 7.907E-03 T-m

D. 8.697E-03 T-m

E. 9.567E-03 T-m



9. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.46 kA, I_2=2.14 kA, and I_3=4.44 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

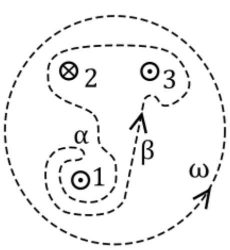
A. 4.943E-03 T-m

B. 5.438E-03 T-m

C. 5.982E-03 T-m

D. 6.580E-03 T-m

E. 7.238E-03 T-m



10. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.33 kA, I_2=0.741 kA, and I_3=2.21 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 3.261E-03 T-m

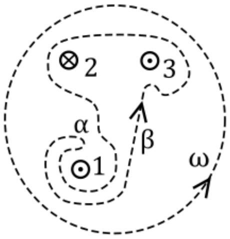
B. 3.587E-03 T-m

C. 3.945E-03 T-m

D. 4.340E-03 T-m

E. 4.774E-03 T-m

The next page might contain more answer choices for this question

11. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.58 kA, I_2=1.11 kA, and I_3=2.47 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

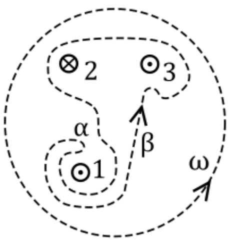
A. 4.092E-03 T-m

B. 4.501E-03 T-m

C. 4.951E-03 T-m

D. 5.446E-03 T-m

E. 5.991E-03 T-m

12. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.42 kA, I_2=0.904 kA, and I_3=1.34 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

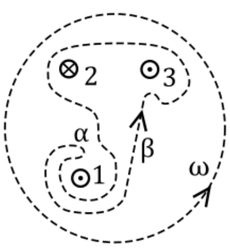
A. 2.696E-03 T-m

B. 2.966E-03 T-m

C. 3.263E-03 T-m

D. 3.589E-03 T-m

E. 3.948E-03 T-m

13. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.84 kA, I_2=2.02 kA, and I_3=4.24 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 5.255E-03 T-m

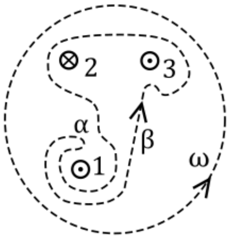
B. 5.781E-03 T-m

C. 6.359E-03 T-m

D. 6.994E-03 T-m

E. 7.694E-03 T-m

The next page might contain more answer choices for this question

14. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.38 kA, I_2=1.58 kA, and I_3=4.31 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

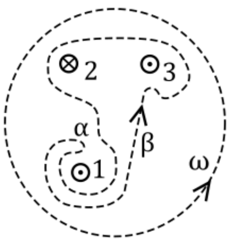
A. 4.386E-03 T-m

B. 4.825E-03 T-m

C. 5.307E-03 T-m

D. 5.838E-03 T-m

E. 6.421E-03 T-m

15. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.5 kA, I_2=1.28 kA, and I_3=3.4 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

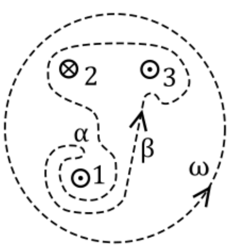
A. 4.362E-03 T-m

B. 4.798E-03 T-m

C. 5.278E-03 T-m

D. 5.806E-03 T-m

E. 6.386E-03 T-m

16. 

The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.78 kA, I_2=2.61 kA, and I_3=3.76 kA, take the ω path and evalulate the line integral, $\oint \vec{B} \cdot d\vec{\ell}$:

A. 4.939E-03 T-m

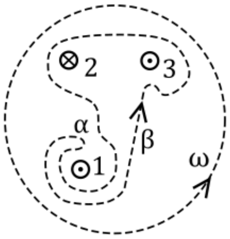
B. 5.432E-03 T-m

C. 5.976E-03 T-m

D. 6.573E-03 T-m

E. 7.231E-03 T-m

The next page might contain more answer choices for this question



17. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.72 kA, I_2=2.17 kA, and I_3=3.21 kA, take the ω path and evalulate the line integral, $\oint \vec{B}\cdot d\vec{\ell}$:

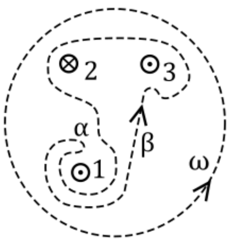
A. 3.905E-03 T-m

B. 4.295E-03 T-m

C. 4.725E-03 T-m

D. 5.197E-03 T-m

E. 5.717E-03 T-m



18. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.57 kA, I_2=0.708 kA, and I_3=1.48 kA, take the ω path and evalulate the line integral, $\oint \vec{B}\cdot d\vec{\ell}$:

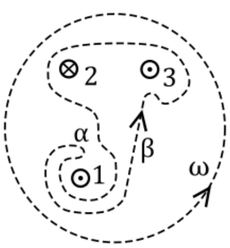
A. 4.200E-03 T-m

B. 4.620E-03 T-m

C. 5.082E-03 T-m

D. 5.590E-03 T-m

E. 6.149E-03 T-m



19. The numbers (1,2,3) in the figure shown represent three currents flowing in or out of the page: I_1 and I_3 flow out of the page, and I_2 flows into the page, as shown. Two closed paths are shown, labeled β and ω. If I_1=2.31 kA, I_2=1.16 kA, and I_3=2.13 kA, take the ω path and evalulate the line integral, $\oint \vec{B}\cdot d\vec{\ell}$:

A. 2.815E-03 T-m

B. 3.097E-03 T-m

C. 3.406E-03 T-m

D. 3.747E-03 T-m

E. 4.122E-03 T-m

The next page might contain more answer choices for this question

d_cp2.12 Q10

1. A solenoid has 8.230E+04 turns wound around a cylinder of diameter 1.5 cm and length 18 m. The current through the coils is 0.633 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-3.74 cm to z=+3.23 cm

   A. 1.731E-04 T-m

   B. 1.905E-04 T-m

   C. 2.095E-04 T-m

   D. 2.305E-04 T-m

   E. 2.535E-04 T-m

2. A solenoid has 9.350E+04 turns wound around a cylinder of diameter 1.85 cm and length 18 m. The current through the coils is 0.872 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-4.55 cm to z=+1.58 cm

   A. 2.383E-04 T-m

   B. 2.621E-04 T-m

   C. 2.884E-04 T-m

   D. 3.172E-04 T-m

   E. 3.489E-04 T-m

3. A solenoid has 7.690E+04 turns wound around a cylinder of diameter 1.63 cm and length 11 m. The current through the coils is 0.728 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-2.76 cm to z=+1.99 cm

   A. 2.762E-04 T-m

   B. 3.038E-04 T-m

   C. 3.342E-04 T-m

   D. 3.676E-04 T-m

   E. 4.043E-04 T-m

4. A solenoid has 7.920E+04 turns wound around a cylinder of diameter 1.45 cm and length 11 m. The current through the coils is 0.702 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-4.27 cm to z=+1.36 cm

   A. 2.687E-04 T-m

   B. 2.955E-04 T-m

   C. 3.251E-04 T-m

   D. 3.576E-04 T-m

   E. 3.934E-04 T-m

5. A solenoid has 4.900E+04 turns wound around a cylinder of diameter 1.74 cm and length 19 m. The current through the coils is 0.432 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-4.18 cm to z=+1.77 cm

   A. 6.884E-05 T-m

   B. 7.573E-05 T-m

   C. 8.330E-05 T-m

   D. 9.163E-05 T-m

The next page might contain more answer choices for this question

E. 1.008E-04 T-m

6. A solenoid has 9.160E+04 turns wound around a cylinder of diameter 1.64 cm and length 16 m. The current through the coils is 0.873 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-1.74 cm to z=+4.75 cm
   - A. 3.369E-04 T-m
   - B. 3.706E-04 T-m
   - **C. 4.076E-04 T-m**
   - D. 4.484E-04 T-m
   - E. 4.932E-04 T-m

7. A solenoid has 9.560E+04 turns wound around a cylinder of diameter 1.18 cm and length 12 m. The current through the coils is 0.664 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-4.49 cm to z=+3.61 cm
   - A. 4.895E-04 T-m
   - **B. 5.384E-04 T-m**
   - C. 5.923E-04 T-m
   - D. 6.515E-04 T-m
   - E. 7.167E-04 T-m

8. A solenoid has 7.540E+04 turns wound around a cylinder of diameter 1.36 cm and length 14 m. The current through the coils is 0.807 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-2.75 cm to z=+3.28 cm
   - A. 2.722E-04 T-m
   - B. 2.994E-04 T-m
   - **C. 3.293E-04 T-m**
   - D. 3.623E-04 T-m
   - E. 3.985E-04 T-m

9. A solenoid has 5.640E+04 turns wound around a cylinder of diameter 1.35 cm and length 16 m. The current through the coils is 0.912 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-1.11 cm to z=+2.76 cm
   - A. 1.068E-04 T-m
   - B. 1.175E-04 T-m
   - C. 1.292E-04 T-m
   - D. 1.421E-04 T-m
   - **E. 1.563E-04 T-m**

10. A solenoid has 4.380E+04 turns wound around a cylinder of diameter 1.77 cm and length 16 m. The current through the coils is 0.916 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-4.39 cm to z=+4.26 cm
   - A. 2.478E-04 T-m
   - **B. 2.726E-04 T-m**
   - C. 2.998E-04 T-m
   - D. 3.298E-04 T-m

The next page might contain more answer choices for this question

E. 3.628E-04 T-m

11. A solenoid has 7.170E+04 turns wound around a cylinder of diameter 1.56 cm and length 9 m. The current through the coils is 0.391 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-2.73 cm to z=+2.56 cm
    - A. 1.414E-04 T-m
    - B. 1.556E-04 T-m
    - C. 1.711E-04 T-m
    - D. 1.882E-04 T-m
    - **E. 2.071E-04 T-m**

12. A solenoid has 5.500E+04 turns wound around a cylinder of diameter 1.45 cm and length 15 m. The current through the coils is 0.395 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-4.19 cm to z=+2.16 cm
    - A. 7.894E-05 T-m
    - B. 8.683E-05 T-m
    - C. 9.551E-05 T-m
    - D. 1.051E-04 T-m
    - **E. 1.156E-04 T-m**

13. A solenoid has 8.890E+04 turns wound around a cylinder of diameter 1.32 cm and length 15 m. The current through the coils is 0.297 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-1.41 cm to z=+2.56 cm
    - A. 7.257E-05 T-m
    - B. 7.983E-05 T-m
    - **C. 8.781E-05 T-m**
    - D. 9.660E-05 T-m
    - E. 1.063E-04 T-m

14. A solenoid has 9.880E+04 turns wound around a cylinder of diameter 1.5 cm and length 15 m. The current through the coils is 0.981 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-1.56 cm to z=+3.22 cm
    - A. 2.916E-04 T-m
    - B. 3.208E-04 T-m
    - C. 3.528E-04 T-m
    - **D. 3.881E-04 T-m**
    - E. 4.269E-04 T-m

15. A solenoid has 3.950E+04 turns wound around a cylinder of diameter 1.64 cm and length 16 m. The current through the coils is 0.441 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-2.05 cm to z=+3.97 cm
    - A. 6.807E-05 T-m
    - B. 7.487E-05 T-m
    - **C. 8.236E-05 T-m**
    - D. 9.060E-05 T-m

The next page might contain more answer choices for this question

E. 9.966E-05 T-m

16. A solenoid has 5.160E+04 turns wound around a cylinder of diameter 1.55 cm and length 18 m. The current through the coils is 0.57 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-2.88 cm to z=+1.52 cm

   A. 6.788E-05 T-m

   B. 7.467E-05 T-m

   C. 8.213E-05 T-m

   D. 9.035E-05 T-m

   E. 9.938E-05 T-m

17. A solenoid has 5.980E+04 turns wound around a cylinder of diameter 1.8 cm and length 17 m. The current through the coils is 0.933 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-3.68 cm to z=+1.29 cm

   A. 1.863E-04 T-m

   B. 2.050E-04 T-m

   C. 2.255E-04 T-m

   D. 2.480E-04 T-m

   E. 2.728E-04 T-m

18. A solenoid has 7.610E+04 turns wound around a cylinder of diameter 1.21 cm and length 9 m. The current through the coils is 0.696 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-1.52 cm to z=+2.04 cm

   A. 2.176E-04 T-m

   B. 2.393E-04 T-m

   C. 2.633E-04 T-m

   D. 2.896E-04 T-m

   E. 3.186E-04 T-m

19. A solenoid has 4.730E+04 turns wound around a cylinder of diameter 1.46 cm and length 15 m. The current through the coils is 0.754 A. Define the origin to be the center of the solenoid and neglect end effects as you calculate the line integral $\int \vec{B} \cdot \vec{\ell}$ alongthe axis from z=-3.4 cm to z=+1.14 cm

   A. 1.121E-04 T-m

   B. 1.233E-04 T-m

   C. 1.356E-04 T-m

   D. 1.492E-04 T-m

   E. 1.641E-04 T-m

d_cp2.12 Q11

1. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 20 turns per centimeter and the current applied to the solenoid is 598 mA, the net magnetic field is measured to be 1.38 T. What is the magnetic susceptibility for this case?

   A. χ (chi) = 8.338E+02

   B. χ (chi) = 9.172E+02

The next page might contain more answer choices for this question

C. χ (chi) $= 1.009E+03$
D. χ (chi) $= 1.110E+03$
E. χ (chi) $= 1.221E+03$

2. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 20 turns per centimeter and the current applied to the solenoid is 344 mA, the net magnetic field is measured to be 1.24 T. What is the magnetic susceptibility for this case?
   A. χ (chi) $= 1.185E+03$
   B. χ (chi) $= 1.303E+03$
   C. χ (chi) $= 1.433E+03$
   D. χ (chi) $= 1.577E+03$
   E. χ (chi) $= 1.734E+03$
3. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 18 turns per centimeter and the current applied to the solenoid is 582 mA, the net magnetic field is measured to be 1.15 T. What is the magnetic susceptibility for this case?
   A. χ (chi) $= 7.211E+02$
   B. χ (chi) $= 7.932E+02$
   C. χ (chi) $= 8.726E+02$
   D. χ (chi) $= 9.598E+02$
   E. χ (chi) $= 1.056E+03$
4. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 22 turns per centimeter and the current applied to the solenoid is 568 mA, the net magnetic field is measured to be 1.29 T. What is the magnetic susceptibility for this case?
   A. χ (chi) $= 8.205E+02$
   B. χ (chi) $= 9.026E+02$
   C. χ (chi) $= 9.928E+02$
   D. χ (chi) $= 1.092E+03$
   E. χ (chi) $= 1.201E+03$
5. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 20 turns per centimeter and the current applied to the solenoid is 525 mA, the net magnetic field is measured to be 1.45 T. What is the magnetic susceptibility for this case?
   A. χ (chi) $= 8.249E+02$
   B. χ (chi) $= 9.074E+02$
   C. χ (chi) $= 9.981E+02$
   D. χ (chi) $= 1.098E+03$
   E. χ (chi) $= 1.208E+03$
6. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 22 turns per centimeter and the current applied to the solenoid is 265 mA, the net magnetic field is measured to be 1.11 T. What is the magnetic susceptibility for this case?
   A. χ (chi) $= 1.376E+03$
   B. χ (chi) $= 1.514E+03$

The next page might contain more answer choices for this question

C. χ (chi) $= 1.666E+03$
D. χ (chi) $= 1.832E+03$
E. χ (chi) $= 2.015E+03$

7. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 27 turns per centimeter and the current applied to the solenoid is 344 mA, the net magnetic field is measured to be 1.12 T. What is the magnetic susceptibility for this case?
A. χ (chi) $= 7.922E+02$
B. χ (chi) $= 8.714E+02$
C. χ (chi) $= 9.586E+02$
D. χ (chi) $= 1.054E+03$
E. χ (chi) $= 1.160E+03$

8. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 19 turns per centimeter and the current applied to the solenoid is 421 mA, the net magnetic field is measured to be 1.31 T. What is the magnetic susceptibility for this case?
A. χ (chi) $= 1.302E+03$
B. χ (chi) $= 1.432E+03$
C. χ (chi) $= 1.576E+03$
D. χ (chi) $= 1.733E+03$
E. χ (chi) $= 1.907E+03$

9. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 24 turns per centimeter and the current applied to the solenoid is 595 mA, the net magnetic field is measured to be 1.46 T. What is the magnetic susceptibility for this case?
A. χ (chi) $= 6.716E+02$
B. χ (chi) $= 7.387E+02$
C. χ (chi) $= 8.126E+02$
D. χ (chi) $= 8.939E+02$
E. χ (chi) $= 9.833E+02$

10. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 23 turns per centimeter and the current applied to the solenoid is 534 mA, the net magnetic field is measured to be 1.48 T. What is the magnetic susceptibility for this case?
A. χ (chi) $= 7.917E+02$
B. χ (chi) $= 8.708E+02$
C. χ (chi) $= 9.579E+02$
D. χ (chi) $= 1.054E+03$
E. χ (chi) $= 1.159E+03$

11. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 24 turns per centimeter and the current applied to the solenoid is 242 mA, the net magnetic field is measured to be 1.38 T. What is the magnetic susceptibility for this case?
A. χ (chi) $= 1.718E+03$
B. χ (chi) $= 1.890E+03$

The next page might contain more answer choices for this question

C. χ (chi) $= 2.079E+03$

D. χ (chi) $= 2.287E+03$

E. χ (chi) $= 2.515E+03$

12. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 17 turns per centimeter and the current applied to the solenoid is 455 mA, the net magnetic field is measured to be 1.14 T. What is the magnetic susceptibility for this case?

   A. χ (chi) $= 8.804E+02$

   B. χ (chi) $= 9.685E+02$

   C. χ (chi) $= 1.065E+03$

   D. χ (chi) $= 1.172E+03$

   E. χ (chi) $= 1.289E+03$

13. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 16 turns per centimeter and the current applied to the solenoid is 536 mA, the net magnetic field is measured to be 1.47 T. What is the magnetic susceptibility for this case?

   A. χ (chi) $= 9.310E+02$

   B. χ (chi) $= 1.024E+03$

   C. χ (chi) $= 1.126E+03$

   D. χ (chi) $= 1.239E+03$

   E. χ (chi) $= 1.363E+03$

14. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 17 turns per centimeter and the current applied to the solenoid is 331 mA, the net magnetic field is measured to be 1.24 T. What is the magnetic susceptibility for this case?

   A. χ (chi) $= 1.593E+03$

   B. χ (chi) $= 1.753E+03$

   C. χ (chi) $= 1.928E+03$

   D. χ (chi) $= 2.121E+03$

   E. χ (chi) $= 2.333E+03$

15. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 27 turns per centimeter and the current applied to the solenoid is 280 mA, the net magnetic field is measured to be 1.13 T. What is the magnetic susceptibility for this case?

   A. χ (chi) $= 1.188E+03$

   B. χ (chi) $= 1.307E+03$

   C. χ (chi) $= 1.438E+03$

   D. χ (chi) $= 1.582E+03$

   E. χ (chi) $= 1.740E+03$

16. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 27 turns per centimeter and the current applied to the solenoid is 525 mA, the net magnetic field is measured to be 1.44 T. What is the magnetic susceptibility for this case?

   A. χ (chi) $= 5.515E+02$

   B. χ (chi) $= 6.066E+02$

The next page might contain more answer choices for this question

C. χ (chi) $= 6.673E+02$

D. χ (chi) $= 7.340E+02$

E. χ (chi) $= 8.074E+02$

17. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 16 turns per centimeter and the current applied to the solenoid is 424 mA, the net magnetic field is measured to be 1.24 T. What is the magnetic susceptibility for this case?

A. χ (chi) $= 1.092E+03$

B. χ (chi) $= 1.201E+03$

C. χ (chi) $= 1.321E+03$

D. χ (chi) $= 1.454E+03$

E. χ (chi) $= 1.599E+03$

18. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 26 turns per centimeter and the current applied to the solenoid is 533 mA, the net magnetic field is measured to be 1.31 T. What is the magnetic susceptibility for this case?

A. χ (chi) $= 7.512E+02$

B. χ (chi) $= 8.264E+02$

C. χ (chi) $= 9.090E+02$

D. χ (chi) $= 9.999E+02$

E. χ (chi) $= 1.100E+03$

19. A long coil is tightly wound around a (hypothetical) ferromagnetic cylinder. If n= 26 turns per centimeter and the current applied to the solenoid is 359 mA, the net magnetic field is measured to be 1.32 T. What is the magnetic susceptibility for this case?

A. χ (chi) $= 1.124E+03$

B. χ (chi) $= 1.237E+03$

C. χ (chi) $= 1.360E+03$

D. χ (chi) $= 1.497E+03$

E. χ (chi) $= 1.646E+03$

23 c22Magnetism_ampereLaw

1. Amphere's law for a magnetostatic current is, $\oint \vec{H}\cdot d\vec{\ell} = \int \vec{J}\cdot d\vec{A}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 8.5A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B}\cdot d\vec{\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.7m.[168]

A. 2.69E+01 m

B. 2.95E+01 m

C. 3.24E+01 m

D. 3.55E+01 m

E. 3.89E+01 m

2. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 4.7m from a wire carrying a current of 8.5A?[169]

The next page might contain more answer choices for this question

A. 2.63E-01 A/m

B. 2.88E-01 A/m

C. 3.16E-01 A/m

D. 3.46E-01 A/m

E. 3.79E-01 A/m

3. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (3.4389,3.2037) if a current of 8.5A flows through a wire that runs along the z axis?[170]

A. 1.46E-01 A/m

B. 1.60E-01 A/m

C. 1.75E-01 A/m

D. 1.92E-01 A/m

E. 2.11E-01 A/m

4. A very long and thin solenoid has 1331 turns and is 140 meters long. The wire carrys a current of 9.6A. What is the magnetic field in the center?[171]

A. 8.70E-05 Tesla

B. 9.54E-05 Tesla

C. 1.05E-04 Tesla

D. 1.15E-04 Tesla

E. 1.26E-04 Tesla

5. A very long and thin solenoid has 1770 turns and is 140 meters long. The wire carrys a current of 9.6A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 25 meters from the center and stops 98 meters from the center?[172]

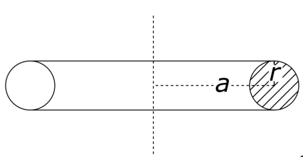
A. 4.54E+03 A

B. 4.98E+03 A

C. 5.46E+03 A

D. 5.99E+03 A

E. 6.57E+03 A



6. A torus is centered around the x-y plane, with major radius, a = 1.56 m, and minor radius, r = 0.65m. A wire carrying 4.4A is uniformly wrapped with 890 turns. If B=μ_0H is the magnetic field, what is H inside the torus, at a point on the xy plane that is 0.26m from the outermost edge of the torus?[173]

A. 2.22E+02 amps per meter

B. 2.40E+02 amps per meter

C. 2.59E+02 amps per meter

D. 2.79E+02 amps per meter

E. 3.02E+02 amps per meter

The next page might contain more answer choices for this question

23.1 Renditions

c22Magnetism_ampereLaw Q1

1. Amphere's law for a magnetostatic current is, $\oint \vec{H}\cdot d\vec{\ell} = \int \vec{J}\cdot d\vec{A}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 8.2A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B}\cdot d\vec{\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.6m.
   - **A. 6.03E+01 m**
   - B. 6.61E+01 m
   - C. 7.25E+01 m
   - D. 7.95E+01 m
   - E. 8.72E+01 m

2. Amphere's law for a magnetostatic current is, $\oint \vec{H}\cdot d\vec{\ell} = \int \vec{J}\cdot d\vec{A}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 7.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B}\cdot d\vec{\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.2m.
   - A. 1.83E+01 m
   - B. 2.00E+01 m
   - C. 2.19E+01 m
   - D. 2.41E+01 m
   - **E. 2.64E+01 m**

3. Amphere's law for a magnetostatic current is, $\oint \vec{H}\cdot d\vec{\ell} = \int \vec{J}\cdot d\vec{A}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 6.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B}\cdot d\vec{\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.9m.
   - **A. 6.22E+01 m**
   - B. 6.82E+01 m
   - C. 7.48E+01 m
   - D. 8.20E+01 m
   - E. 8.99E+01 m

4. Amphere's law for a magnetostatic current is, $\oint \vec{H}\cdot d\vec{\ell} = \int \vec{J}\cdot d\vec{A}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 7.3A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B}\cdot d\vec{\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 8.3m.
   - A. 4.76E+01 m
   - **B. 5.22E+01 m**
   - C. 5.72E+01 m
   - D. 6.27E+01 m
   - E. 6.87E+01 m

5. Amphere's law for a magnetostatic current is, $\oint \vec{H}\cdot d\vec{\ell} = \int \vec{J}\cdot d\vec{A}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 9.6A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B}\cdot d\vec{\ell} = B\oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.8m.
   - A. 4.26E+01 m
   - B. 4.67E+01 m
   - C. 5.12E+01 m

The next page might contain more answer choices for this question

D. 5.62E+01 m

E. 6.16E+01 m

6. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 7.2A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 8.2m.

   A. 4.70E+01 m

   B. 5.15E+01 m

   C. 5.65E+01 m

   D. 6.19E+01 m

   E. 6.79E+01 m

7. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 8.6A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 8.8m.

   A. 3.83E+01 m

   B. 4.19E+01 m

   C. 4.60E+01 m

   D. 5.04E+01 m

   E. 5.53E+01 m

8. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 7.4A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.3m.

   A. 2.74E+01 m

   B. 3.00E+01 m

   C. 3.29E+01 m

   D. 3.61E+01 m

   E. 3.96E+01 m

9. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 6.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.8m.

   A. 6.16E+01 m

   B. 6.75E+01 m

   C. 7.40E+01 m

   D. 8.12E+01 m

   E. 8.90E+01 m

10. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 9.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.6m.

    A. 2.89E+01 m

    B. 3.17E+01 m

    C. 3.47E+01 m

The next page might contain more answer choices for this question

D. 3.81E+01 m

E. 4.18E+01 m

11. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 5.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.4m.

A. 2.30E+01 m

B. 2.52E+01 m

C. 2.76E+01 m

D. 3.03E+01 m

E. 3.32E+01 m

12. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 4.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 7.7m.

A. 4.84E+01 m

B. 5.30E+01 m

C. 5.82E+01 m

D. 6.38E+01 m

E. 6.99E+01 m

13. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 4.7A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.5m.

A. 3.10E+01 m

B. 3.40E+01 m

C. 3.72E+01 m

D. 4.08E+01 m

E. 4.48E+01 m

14. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 5A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 5.4m.

A. 3.09E+01 m

B. 3.39E+01 m

C. 3.72E+01 m

D. 4.08E+01 m

E. 4.47E+01 m

15. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 6.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 7.9m.

A. 4.96E+01 m

B. 5.44E+01 m

C. 5.97E+01 m

The next page might contain more answer choices for this question

D. 6.54E+01 m

E. 7.17E+01 m

16. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 4.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.2m.

A. 2.00E+01 m

B. 2.19E+01 m

C. 2.41E+01 m

D. 2.64E+01 m

E. 2.89E+01 m

17. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 6.9A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.4m.

A. 2.10E+01 m

B. 2.30E+01 m

C. 2.52E+01 m

D. 2.76E+01 m

E. 3.03E+01 m

18. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 5.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.1m.

A. 3.83E+01 m

B. 4.20E+01 m

C. 4.61E+01 m

D. 5.05E+01 m

E. 5.54E+01 m

19. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 6.7A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 4.1m.

A. 2.58E+01 m

B. 2.82E+01 m

C. 3.10E+01 m

D. 3.40E+01 m

E. 3.72E+01 m

20. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 4.8A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.2m.

A. 2.70E+01 m

B. 2.96E+01 m

C. 3.24E+01 m

The next page might contain more answer choices for this question

D. 3.55E+01 m

E. 3.90E+01 m

21. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 5.7A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 9.2m.

A. 4.38E+01 m

B. 4.81E+01 m

C. 5.27E+01 m

D. 5.78E+01 m

E. 6.34E+01 m

22. Amphere's law for a magnetostatic current is, $\oint \vec{H} \cdot \vec{d\ell} = \int \vec{J} \cdot \vec{dA}$, which equals the current enclosed by the closed loop, and $B = \mu_0 H$ is the magnetic field. A current of 6.5A flows upward along the z axis. Noting that for this geometry, $\oint \vec{B} \cdot \vec{d\ell} = B \oint d\ell$, calculate the line integral $\oint d\ell$ for a circle of radius 6.8m.

A. 4.27E+01 m

B. 4.68E+01 m

C. 5.14E+01 m

D. 5.63E+01 m

E. 6.18E+01 m

c22Magnetism_ampereLaw Q2

1. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 9.6m from a wire carrying a current of 8.2A?

A. 1.24E-01 A/m

B. 1.36E-01 A/m

C. 1.49E-01 A/m

D. 1.63E-01 A/m

E. 1.79E-01 A/m

2. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 4.2m from a wire carrying a current of 7.9A?

A. 2.73E-01 A/m

B. 2.99E-01 A/m

C. 3.28E-01 A/m

D. 3.60E-01 A/m

E. 3.95E-01 A/m

3. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 9.9m from a wire carrying a current of 6.9A?

A. 1.11E-01 A/m

B. 1.22E-01 A/m

C. 1.33E-01 A/m

D. 1.46E-01 A/m

E. 1.60E-01 A/m

4. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 8.3m from a wire carrying a current of 7.3A?

The next page might contain more answer choices for this question

A. 1.40E-01 A/m
B. 1.53E-01 A/m
C. 1.68E-01 A/m
D. 1.85E-01 A/m
E. 2.02E-01 A/m

5. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 9.8m from a wire carrying a current of 9.6A?
A. 1.30E-01 A/m
B. 1.42E-01 A/m
C. 1.56E-01 A/m
D. 1.71E-01 A/m
E. 1.87E-01 A/m

6. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 8.2m from a wire carrying a current of 7.2A?
A. 9.67E-02 A/m
B. 1.06E-01 A/m
C. 1.16E-01 A/m
D. 1.27E-01 A/m
E. 1.40E-01 A/m

7. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 8.8m from a wire carrying a current of 8.6A?
A. 1.56E-01 A/m
B. 1.71E-01 A/m
C. 1.87E-01 A/m
D. 2.05E-01 A/m
E. 2.25E-01 A/m

8. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 6.3m from a wire carrying a current of 7.4A?
A. 1.87E-01 A/m
B. 2.05E-01 A/m
C. 2.25E-01 A/m
D. 2.46E-01 A/m
E. 2.70E-01 A/m

9. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 9.8m from a wire carrying a current of 6.9A?
A. 1.02E-01 A/m
B. 1.12E-01 A/m
C. 1.23E-01 A/m
D. 1.35E-01 A/m
E. 1.48E-01 A/m

10. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 4.6m from a wire carrying a current of 9.8A?
A. 2.57E-01 A/m

The next page might contain more answer choices for this question

B. 2.82E-01 A/m
C. 3.09E-01 A/m
D. 3.39E-01 A/m
E. 3.72E-01 A/m

11. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 4.4m from a wire carrying a current of 5.8A?
A. 1.91E-01 A/m
B. 2.10E-01 A/m
C. 2.30E-01 A/m
D. 2.52E-01 A/m
E. 2.77E-01 A/m

12. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 7.7m from a wire carrying a current of 4.8A?
A. 9.92E-02 A/m
B. 1.09E-01 A/m
C. 1.19E-01 A/m
D. 1.31E-01 A/m
E. 1.43E-01 A/m

13. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 6.5m from a wire carrying a current of 4.7A?
A. 7.96E-02 A/m
B. 8.73E-02 A/m
C. 9.57E-02 A/m
D. 1.05E-01 A/m
E. 1.15E-01 A/m

14. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 5.4m from a wire carrying a current of 5A?
A. 1.34E-01 A/m
B. 1.47E-01 A/m
C. 1.62E-01 A/m
D. 1.77E-01 A/m
E. 1.94E-01 A/m

15. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 7.9m from a wire carrying a current of 6.8A?
A. 1.14E-01 A/m
B. 1.25E-01 A/m
C. 1.37E-01 A/m
D. 1.50E-01 A/m
E. 1.65E-01 A/m

16. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 4.2m from a wire carrying a current of 4.9A?
A. 1.28E-01 A/m
B. 1.41E-01 A/m

The next page might contain more answer choices for this question

C. 1.54E-01 A/m
D. 1.69E-01 A/m
E. 1.86E-01 A/m

17. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 4.4m from a wire carrying a current of 6.9A?
A. 2.28E-01 A/m
B. 2.50E-01 A/m
C. 2.74E-01 A/m
D. 3.00E-01 A/m
E. 3.29E-01 A/m

18. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 6.1m from a wire carrying a current of 5.8A?
A. 1.38E-01 A/m
B. 1.51E-01 A/m
C. 1.66E-01 A/m
D. 1.82E-01 A/m
E. 1.99E-01 A/m

19. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 4.1m from a wire carrying a current of 6.7A?
A. 2.60E-01 A/m
B. 2.85E-01 A/m
C. 3.13E-01 A/m
D. 3.43E-01 A/m
E. 3.76E-01 A/m

20. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 6.2m from a wire carrying a current of 4.8A?
A. 9.35E-02 A/m
B. 1.02E-01 A/m
C. 1.12E-01 A/m
D. 1.23E-01 A/m
E. 1.35E-01 A/m

21. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 9.2m from a wire carrying a current of 5.7A?
A. 7.48E-02 A/m
B. 8.20E-02 A/m
C. 8.99E-02 A/m
D. 9.86E-02 A/m
E. 1.08E-01 A/m

22. If $H = B/\mu_0$, where B is magnetic field, what is H at a distance of 6.8m from a wire carrying a current of 6.5A?
A. 1.39E-01 A/m
B. 1.52E-01 A/m
C. 1.67E-01 A/m
D. 1.83E-01 A/m
E. 2.01E-01 A/m

The next page might contain more answer choices for this question

c22Magnetism_ampereLaw Q3

1. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (8.6443,4.1757) if a current of 8.2A flows through a wire that runs along the z axis?
   - A. 8.47E-02 A/m
   - B. 9.29E-02 A/m
   - C. 1.02E-01 A/m
   - D. 1.12E-01 A/m
   - **E. 1.22E-01 A/m**
2. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (2.0898,3.6432) if a current of 7.9A flows through a wire that runs along the z axis?
   - A. 1.36E-01 A/m
   - **B. 1.49E-01 A/m**
   - C. 1.63E-01 A/m
   - D. 1.79E-01 A/m
   - E. 1.96E-01 A/m
3. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (6.1539,7.7549) if a current of 6.9A flows through a wire that runs along the z axis?
   - A. 5.23E-02 A/m
   - B. 5.74E-02 A/m
   - C. 6.29E-02 A/m
   - **D. 6.90E-02 A/m**
   - E. 7.56E-02 A/m
4. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (7.9293,2.4528) if a current of 7.3A flows through a wire that runs along the z axis?
   - A. 1.11E-01 A/m
   - B. 1.22E-01 A/m
   - **C. 1.34E-01 A/m**
   - D. 1.47E-01 A/m
   - E. 1.61E-01 A/m
5. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (8.0883,5.5335) if a current of 9.6A flows through a wire that runs along the z axis?
   - A. 8.90E-02 A/m
   - B. 9.76E-02 A/m
   - C. 1.07E-01 A/m
   - D. 1.17E-01 A/m
   - **E. 1.29E-01 A/m**
6. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (7.8338,2.4233) if a current of 7.2A flows through a wire that runs along the z axis?
   - A. 1.01E-01 A/m

The next page might contain more answer choices for this question

B. 1.11E-01 A/m
C. 1.22E-01 A/m
D. 1.34E-01 A/m
E. 1.46E-01 A/m

7. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (8.407,2.6006) if a current of 8.6A flows through a wire that runs along the z axis?
   A. 1.13E-01 A/m
   B. 1.24E-01 A/m
   C. 1.36E-01 A/m
   D. 1.49E-01 A/m
   E. 1.63E-01 A/m

8. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (5.6728,2.7403) if a current of 7.4A flows through a wire that runs along the z axis?
   A. 1.28E-01 A/m
   B. 1.40E-01 A/m
   C. 1.54E-01 A/m
   D. 1.68E-01 A/m
   E. 1.85E-01 A/m

9. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (9.3623,2.8961) if a current of 6.9A flows through a wire that runs along the z axis?
   A. 8.90E-02 A/m
   B. 9.76E-02 A/m
   C. 1.07E-01 A/m
   D. 1.17E-01 A/m
   E. 1.29E-01 A/m

10. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (2.8594,3.6033) if a current of 9.8A flows through a wire that runs along the z axis?
    A. 1.75E-01 A/m
    B. 1.92E-01 A/m
    C. 2.11E-01 A/m
    D. 2.31E-01 A/m
    E. 2.53E-01 A/m

11. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (3.2194,2.9992) if a current of 5.8A flows through a wire that runs along the z axis?
    A. 1.06E-01 A/m
    B. 1.16E-01 A/m
    C. 1.28E-01 A/m
    D. 1.40E-01 A/m
    E. 1.54E-01 A/m

The next page might contain more answer choices for this question

12. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (6.3551,4.3477) if a current of 4.8A flows through a wire that runs along the z axis?

    A. 8.19E-02 A/m

    B. 8.98E-02 A/m

    C. 9.84E-02 A/m

    D. 1.08E-01 A/m

    E. 1.18E-01 A/m

13. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (6.2097,1.9209) if a current of 4.7A flows through a wire that runs along the z axis?

    A. 8.34E-02 A/m

    B. 9.14E-02 A/m

    C. 1.00E-01 A/m

    D. 1.10E-01 A/m

    E. 1.21E-01 A/m

14. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (5.1588,1.5958) if a current of 5A flows through a wire that runs along the z axis?

    A. 1.41E-01 A/m

    B. 1.54E-01 A/m

    C. 1.69E-01 A/m

    D. 1.86E-01 A/m

    E. 2.03E-01 A/m

15. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (5.7803,5.3849) if a current of 6.8A flows through a wire that runs along the z axis?

    A. 6.93E-02 A/m

    B. 7.60E-02 A/m

    C. 8.34E-02 A/m

    D. 9.14E-02 A/m

    E. 1.00E-01 A/m

16. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (2.0898,3.6432) if a current of 4.9A flows through a wire that runs along the z axis?

    A. 6.39E-02 A/m

    B. 7.01E-02 A/m

    C. 7.68E-02 A/m

    D. 8.43E-02 A/m

    E. 9.24E-02 A/m

17. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (1.5944,4.101) if a current of 6.9A flows through a wire that runs along the z axis?

    A. 6.86E-02 A/m

    B. 7.52E-02 A/m

The next page might contain more answer choices for this question

C. 8.25E-02 A/m

D. 9.04E-02 A/m

E. 9.92E-02 A/m

18. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (2.2104,5.6854) if a current of 5.8A flows through a wire that runs along the z axis?

A. 4.16E-02 A/m

B. 4.56E-02 A/m

C. 5.00E-02 A/m

D. 5.48E-02 A/m

E. 6.01E-02 A/m

19. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (2.5486,3.2116) if a current of 6.7A flows through a wire that runs along the z axis?

A. 1.23E-01 A/m

B. 1.34E-01 A/m

C. 1.47E-01 A/m

D. 1.62E-01 A/m

E. 1.77E-01 A/m

20. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (3.854,4.8566) if a current of 4.8A flows through a wire that runs along the z axis?

A. 6.37E-02 A/m

B. 6.99E-02 A/m

C. 7.66E-02 A/m

D. 8.40E-02 A/m

E. 9.21E-02 A/m

21. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (5.7188,7.2066) if a current of 5.7A flows through a wire that runs along the z axis?

A. 6.13E-02 A/m

B. 6.72E-02 A/m

C. 7.37E-02 A/m

D. 8.08E-02 A/m

E. 8.86E-02 A/m

22. If $H = B/\mu_0$, where B is magnetic field, what is H_y at the point (6.4963,2.0095) if a current of 6.5A flows through a wire that runs along the z axis?

A. 1.33E-01 A/m

B. 1.45E-01 A/m

C. 1.59E-01 A/m

D. 1.75E-01 A/m

E. 1.92E-01 A/m

The next page might contain more answer choices for this question

c22Magnetism_ampereLaw Q4

1. A very long and thin solenoid has 2705 turns and is 134 meters long. The wire carrys a current of 8.2A. What is the magnetic field in the center?
   - A. 1.90E-04 Tesla
   - **B. 2.08E-04 Tesla**
   - C. 2.28E-04 Tesla
   - D. 2.50E-04 Tesla
   - E. 2.74E-04 Tesla
2. A very long and thin solenoid has 1254 turns and is 164 meters long. The wire carrys a current of 9.3A. What is the magnetic field in the center?
   - A. 7.43E-05 Tesla
   - B. 8.15E-05 Tesla
   - **C. 8.94E-05 Tesla**
   - D. 9.80E-05 Tesla
   - E. 1.07E-04 Tesla
3. A very long and thin solenoid has 2543 turns and is 166 meters long. The wire carrys a current of 9.2A. What is the magnetic field in the center?
   - A. 1.34E-04 Tesla
   - B. 1.47E-04 Tesla
   - C. 1.62E-04 Tesla
   - **D. 1.77E-04 Tesla**
   - E. 1.94E-04 Tesla
4. A very long and thin solenoid has 2762 turns and is 142 meters long. The wire carrys a current of 9.7A. What is the magnetic field in the center?
   - **A. 2.37E-04 Tesla**
   - B. 2.60E-04 Tesla
   - C. 2.85E-04 Tesla
   - D. 3.13E-04 Tesla
   - E. 3.43E-04 Tesla
5. A very long and thin solenoid has 1070 turns and is 122 meters long. The wire carrys a current of 8.4A. What is the magnetic field in the center?
   - A. 7.02E-05 Tesla
   - B. 7.70E-05 Tesla
   - C. 8.44E-05 Tesla
   - **D. 9.26E-05 Tesla**
   - E. 1.02E-04 Tesla
6. A very long and thin solenoid has 2647 turns and is 180 meters long. The wire carrys a current of 9.3A. What is the magnetic field in the center?
   - **A. 1.72E-04 Tesla**

The next page might contain more answer choices for this question

B. 1.88E-04 Tesla
C. 2.07E-04 Tesla
D. 2.27E-04 Tesla
E. 2.48E-04 Tesla

7. A very long and thin solenoid has 1634 turns and is 122 meters long. The wire carrys a current of 9.5A. What is the magnetic field in the center?
    A. 1.60E-04 Tesla
    B. 1.75E-04 Tesla
    C. 1.92E-04 Tesla
    D. 2.11E-04 Tesla
    E. 2.31E-04 Tesla

8. A very long and thin solenoid has 1016 turns and is 136 meters long. The wire carrys a current of 7.6A. What is the magnetic field in the center?
    A. 5.41E-05 Tesla
    B. 5.93E-05 Tesla
    C. 6.51E-05 Tesla
    D. 7.13E-05 Tesla
    E. 7.82E-05 Tesla

9. A very long and thin solenoid has 1992 turns and is 162 meters long. The wire carrys a current of 8.7A. What is the magnetic field in the center?
    A. 1.02E-04 Tesla
    B. 1.12E-04 Tesla
    C. 1.23E-04 Tesla
    D. 1.34E-04 Tesla
    E. 1.47E-04 Tesla

10. A very long and thin solenoid has 1946 turns and is 144 meters long. The wire carrys a current of 9A. What is the magnetic field in the center?
    A. 1.06E-04 Tesla
    B. 1.16E-04 Tesla
    C. 1.27E-04 Tesla
    D. 1.39E-04 Tesla
    E. 1.53E-04 Tesla

11. A very long and thin solenoid has 1656 turns and is 144 meters long. The wire carrys a current of 8.4A. What is the magnetic field in the center?
    A. 8.40E-05 Tesla
    B. 9.21E-05 Tesla
    C. 1.01E-04 Tesla
    D. 1.11E-04 Tesla
    E. 1.21E-04 Tesla

The next page might contain more answer choices for this question

12. A very long and thin solenoid has 2066 turns and is 156 meters long. The wire carrys a current of 7.6A. What is the magnetic field in the center?

    A. 8.75E-05 Tesla
    B. 9.59E-05 Tesla
    C. 1.05E-04 Tesla
    D. 1.15E-04 Tesla
    E. 1.26E-04 Tesla

13. A very long and thin solenoid has 2979 turns and is 170 meters long. The wire carrys a current of 8.1A. What is the magnetic field in the center?

    A. 1.78E-04 Tesla
    B. 1.96E-04 Tesla
    C. 2.14E-04 Tesla
    D. 2.35E-04 Tesla
    E. 2.58E-04 Tesla

14. A very long and thin solenoid has 2662 turns and is 182 meters long. The wire carrys a current of 9.2A. What is the magnetic field in the center?

    A. 1.54E-04 Tesla
    B. 1.69E-04 Tesla
    C. 1.85E-04 Tesla
    D. 2.03E-04 Tesla
    E. 2.23E-04 Tesla

15. A very long and thin solenoid has 2175 turns and is 134 meters long. The wire carrys a current of 7.6A. What is the magnetic field in the center?

    A. 1.29E-04 Tesla
    B. 1.41E-04 Tesla
    C. 1.55E-04 Tesla
    D. 1.70E-04 Tesla
    E. 1.86E-04 Tesla

16. A very long and thin solenoid has 1744 turns and is 146 meters long. The wire carrys a current of 9.5A. What is the magnetic field in the center?

    A. 1.43E-04 Tesla
    B. 1.56E-04 Tesla
    C. 1.71E-04 Tesla
    D. 1.88E-04 Tesla
    E. 2.06E-04 Tesla

17. A very long and thin solenoid has 1518 turns and is 156 meters long. The wire carrys a current of 8.9A. What is the magnetic field in the center?

    A. 8.26E-05 Tesla
    B. 9.05E-05 Tesla

The next page might contain more answer choices for this question

C. 9.93E-05 Tesla

D. 1.09E-04 Tesla

E. 1.19E-04 Tesla

18. A very long and thin solenoid has 2890 turns and is 134 meters long. The wire carrys a current of 7.7A. What is the magnetic field in the center?

A. 1.90E-04 Tesla

B. 2.09E-04 Tesla

C. 2.29E-04 Tesla

D. 2.51E-04 Tesla

E. 2.75E-04 Tesla

19. A very long and thin solenoid has 1982 turns and is 154 meters long. The wire carrys a current of 9.1A. What is the magnetic field in the center?

A. 1.12E-04 Tesla

B. 1.22E-04 Tesla

C. 1.34E-04 Tesla

D. 1.47E-04 Tesla

E. 1.61E-04 Tesla

20. A very long and thin solenoid has 1259 turns and is 154 meters long. The wire carrys a current of 9A. What is the magnetic field in the center?

A. 9.25E-05 Tesla

B. 1.01E-04 Tesla

C. 1.11E-04 Tesla

D. 1.22E-04 Tesla

E. 1.34E-04 Tesla

21. A very long and thin solenoid has 2806 turns and is 118 meters long. The wire carrys a current of 9.7A. What is the magnetic field in the center?

A. 2.41E-04 Tesla

B. 2.64E-04 Tesla

C. 2.90E-04 Tesla

D. 3.18E-04 Tesla

E. 3.48E-04 Tesla

22. A very long and thin solenoid has 1727 turns and is 138 meters long. The wire carrys a current of 8.1A. What is the magnetic field in the center?

A. 9.66E-05 Tesla

B. 1.06E-04 Tesla

C. 1.16E-04 Tesla

D. 1.27E-04 Tesla

E. 1.40E-04 Tesla

The next page might contain more answer choices for this question

c22Magnetism_ampereLaw Q5

1. A very long and thin solenoid has 1223 turns and is 134 meters long. The wire carrys a current of 8.2A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 28 meters from the center and stops 93 meters from the center?
   - A. 2.21E+03 A
   - B. 2.43E+03 A
   - C. 2.66E+03 A
   - **D. 2.92E+03 A**
   - E. 3.20E+03 A

2. A very long and thin solenoid has 2850 turns and is 164 meters long. The wire carrys a current of 9.3A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 47 meters from the center and stops 108 meters from the center?
   - A. 5.16E+03 A
   - **B. 5.66E+03 A**
   - C. 6.20E+03 A
   - D. 6.80E+03 A
   - E. 7.46E+03 A

3. A very long and thin solenoid has 1880 turns and is 166 meters long. The wire carrys a current of 9.2A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 48 meters from the center and stops 102 meters from the center?
   - **A. 3.65E+03 A**
   - B. 4.00E+03 A
   - C. 4.38E+03 A
   - D. 4.81E+03 A
   - E. 5.27E+03 A

4. A very long and thin solenoid has 1016 turns and is 142 meters long. The wire carrys a current of 9.7A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 27 meters from the center and stops 84 meters from the center?
   - **A. 3.05E+03 A**
   - B. 3.35E+03 A
   - C. 3.67E+03 A
   - D. 4.03E+03 A
   - E. 4.41E+03 A

5. A very long and thin solenoid has 1292 turns and is 122 meters long. The wire carrys a current of 8.4A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 39 meters from the center and stops 75 meters from the center?
   - A. 1.63E+03 A
   - B. 1.78E+03 A
   - **C. 1.96E+03 A**
   - D. 2.15E+03 A

The next page might contain more answer choices for this question

E. 2.35E+03 A

6. A very long and thin solenoid has 2994 turns and is 180 meters long. The wire carrys a current of 9.3A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 43 meters from the center and stops 101 meters from the center?

   A. 6.63E+03 A
   B. 7.27E+03 A
   C. 7.97E+03 A
   D. 8.74E+03 A
   E. 9.58E+03 A

7. A very long and thin solenoid has 1513 turns and is 122 meters long. The wire carrys a current of 9.5A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 34 meters from the center and stops 89 meters from the center?

   A. 2.41E+03 A
   B. 2.65E+03 A
   C. 2.90E+03 A
   D. 3.18E+03 A
   E. 3.49E+03 A

8. A very long and thin solenoid has 1965 turns and is 136 meters long. The wire carrys a current of 7.6A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 43 meters from the center and stops 88 meters from the center?

   A. 2.75E+03 A
   B. 3.01E+03 A
   C. 3.30E+03 A
   D. 3.62E+03 A
   E. 3.97E+03 A

9. A very long and thin solenoid has 1847 turns and is 162 meters long. The wire carrys a current of 8.7A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 42 meters from the center and stops 103 meters from the center?

   A. 2.68E+03 A
   B. 2.93E+03 A
   C. 3.22E+03 A
   D. 3.53E+03 A
   E. 3.87E+03 A

10. A very long and thin solenoid has 2918 turns and is 144 meters long. The wire carrys a current of 9A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 38 meters from the center and stops 89 meters from the center?

   A. 6.20E+03 A
   B. 6.80E+03 A
   C. 7.45E+03 A
   D. 8.17E+03 A

The next page might contain more answer choices for this question

E. 8.96E+03 A

11. A very long and thin solenoid has 2472 turns and is 144 meters long. The wire carrys a current of 8.4A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 43 meters from the center and stops 87 meters from the center?

A. 3.17E+03 A

B. 3.48E+03 A

C. 3.81E+03 A

D. 4.18E+03 A

E. 4.59E+03 A

12. A very long and thin solenoid has 2376 turns and is 156 meters long. The wire carrys a current of 7.6A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 49 meters from the center and stops 102 meters from the center?

A. 2.32E+03 A

B. 2.55E+03 A

C. 2.79E+03 A

D. 3.06E+03 A

E. 3.36E+03 A

13. A very long and thin solenoid has 1409 turns and is 170 meters long. The wire carrys a current of 8.1A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 37 meters from the center and stops 100 meters from the center?

A. 2.94E+03 A

B. 3.22E+03 A

C. 3.53E+03 A

D. 3.87E+03 A

E. 4.25E+03 A

14. A very long and thin solenoid has 2240 turns and is 182 meters long. The wire carrys a current of 9.2A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 47 meters from the center and stops 109 meters from the center?

A. 4.14E+03 A

B. 4.54E+03 A

C. 4.98E+03 A

D. 5.46E+03 A

E. 5.99E+03 A

15. A very long and thin solenoid has 2219 turns and is 134 meters long. The wire carrys a current of 7.6A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 44 meters from the center and stops 86 meters from the center?

A. 2.41E+03 A

B. 2.64E+03 A

C. 2.89E+03 A

D. 3.17E+03 A

The next page might contain more answer choices for this question

E. 3.48E+03 A

16. A very long and thin solenoid has 2682 turns and is 146 meters long. The wire carrys a current of 9.5A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 44 meters from the center and stops 86 meters from the center?

A. 3.84E+03 A

B. 4.21E+03 A

C. 4.62E+03 A

D. 5.06E+03 A

E. 5.55E+03 A

17. A very long and thin solenoid has 1259 turns and is 156 meters long. The wire carrys a current of 8.9A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 35 meters from the center and stops 90 meters from the center?

A. 2.82E+03 A

B. 3.09E+03 A

C. 3.39E+03 A

D. 3.71E+03 A

E. 4.07E+03 A

18. A very long and thin solenoid has 2763 turns and is 134 meters long. The wire carrys a current of 7.7A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 34 meters from the center and stops 86 meters from the center?

A. 3.97E+03 A

B. 4.36E+03 A

C. 4.78E+03 A

D. 5.24E+03 A

E. 5.74E+03 A

19. A very long and thin solenoid has 2774 turns and is 154 meters long. The wire carrys a current of 9.1A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 38 meters from the center and stops 94 meters from the center?

A. 4.42E+03 A

B. 4.85E+03 A

C. 5.32E+03 A

D. 5.83E+03 A

E. 6.39E+03 A

20. A very long and thin solenoid has 1397 turns and is 154 meters long. The wire carrys a current of 9A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot d\vec{\ell}$ along an on-axis path that starts 31 meters from the center and stops 93 meters from the center?

A. 3.76E+03 A

B. 4.12E+03 A

C. 4.52E+03 A

D. 4.95E+03 A

The next page might contain more answer choices for this question

E. 5.43E+03 A

21. A very long and thin solenoid has 2006 turns and is 118 meters long. The wire carrys a current of 9.7A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 30 meters from the center and stops 78 meters from the center?

A. 4.78E+03 A

B. 5.24E+03 A

C. 5.75E+03 A

D. 6.30E+03 A

E. 6.91E+03 A

22. A very long and thin solenoid has 1295 turns and is 138 meters long. The wire carrys a current of 8.1A. If this solenoid is sufficiently thin, what is the line integral of $\int \vec{H} \cdot \vec{d\ell}$ along an on-axis path that starts 22 meters from the center and stops 90 meters from the center?

A. 2.97E+03 A

B. 3.26E+03 A

C. 3.57E+03 A

D. 3.92E+03 A

E. 4.30E+03 A

c22Magnetism_ampereLaw Q6

1. What is the sum of 5.2 apples plus 76 apples?

A. 7.41E+01 apples

B. 8.12E+01 apples

C. 8.90E+01 apples

D. 9.76E+01 apples

E. 1.07E+02 apples

2. What is the sum of 3.4 apples plus 62 apples?

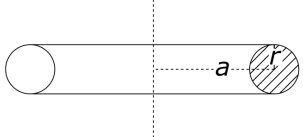
A. 4.96E+01 apples

B. 5.44E+01 apples

C. 5.96E+01 apples

D. 6.54E+01 apples

E. 7.17E+01 apples



3. A torus is centered around the x-y plane, with major radius, a = 3.24 m, and minor radius, r = 1.35m. A wire carrying 4.9A is uniformly wrapped with 731 turns. If $B=\mu_0 H$ is the magnetic field, what is H inside the torus, at a point on the xy plane that is 0.81m from the outermost edge of the torus?

A. 1.11E+02 amps per meter

B. 1.20E+02 amps per meter

C. 1.30E+02 amps per meter

The next page might contain more answer choices for this question

D. 1.40E+02 amps per meter

E. 1.51E+02 amps per meter

4. What is the sum of 6.6 apples plus 33 apples?

A. 3.61E+01 apples

B. 3.96E+01 apples

C. 4.34E+01 apples

D. 4.76E+01 apples

E. 5.22E+01 apples

5. What is the sum of 0.2 apples plus 57 apples?

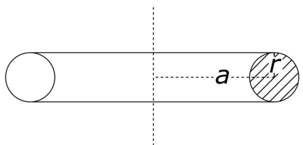
A. 5.72E+01 apples

B. 6.27E+01 apples

C. 6.88E+01 apples

D. 7.54E+01 apples

E. 8.27E+01 apples

6. 

A torus is centered around the x-y plane, with major radius, a = 6.48 m, and minor radius, r = 2.16m. A wire carrying 5A is uniformly wrapped with 930 turns. If B=μ_0H is the magnetic field, what is H inside the torus, at a point on the xy plane that is 0.54m from the outermost edge of the torus?

A. 5.31E+01 amps per meter

B. 5.73E+01 amps per meter

C. 6.19E+01 amps per meter

D. 6.68E+01 amps per meter

E. 7.21E+01 amps per meter

7. What is the sum of 0.8 apples plus 18 apples?

A. 1.56E+01 apples

B. 1.71E+01 apples

C. 1.88E+01 apples

D. 2.06E+01 apples

E. 2.26E+01 apples

8. What is the sum of 7.2 apples plus 9 apples?

A. 1.62E+01 apples

B. 1.78E+01 apples

C. 1.95E+01 apples

D. 2.14E+01 apples

E. 2.34E+01 apples

The next page might contain more answer choices for this question

24 c22Magnetism_ampereLawSymmetry

1. H is defined by, B=μ_0H, where B is magnetic field. A current of 48A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 6.7)$ to the point $(6.7, 0)$.[174]

   A. 9.10E+00 amps
   B. 9.98E+00 amps
   C. 1.09E+01 amps
   D. 1.20E+01 amps
   E. 1.32E+01 amps

2. H is defined by, B=μ_0H, where B is magnetic field. A current of 67A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(-6.1, 6.1)$ to the point $(6.1, 6.1)$.[175]

   A. 1.27E+01 amps
   B. 1.39E+01 amps
   C. 1.53E+01 amps
   D. 1.68E+01 amps
   E. 1.84E+01 amps

3. H is defined by, B=μ_0H, where B is magnetic field. A current of 84A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 9.3)$ to the point $(9.3, 9.3)$.[176]

   A. 1.05E+01 amps
   B. 1.15E+01 amps
   C. 1.26E+01 amps
   D. 1.38E+01 amps
   E. 1.52E+01 amps

4. H is defined by, B=μ_0H, where B is magnetic field. A current of 81A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 6.4)$ to $(+\infty, 6.4)$.[177]

   A. 3.37E+01 amps
   B. 3.69E+01 amps
   C. 4.05E+01 amps
   D. 4.44E+01 amps
   E. 4.87E+01 amps

24.1 Renditions

c22Magnetism_ampereLawSymmetry Q1

1. H is defined by, B=μ_0H, where B is magnetic field. A current of 52A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 7.5)$ to the point $(7.5, 0)$.

   A. 1.19E+01 amps
   B. 1.30E+01 amps
   C. 1.43E+01 amps
   D. 1.56E+01 amps
   E. 1.71E+01 amps

The next page might contain more answer choices for this question

2. H is defined by, B=μ_0H, where B is magnetic field. A current of 78A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 4.6)$ to the point $(4.6, 0)$.
   - A. 1.62E+01 amps
   - B. 1.78E+01 amps
   - **C. 1.95E+01 amps**
   - D. 2.14E+01 amps
   - E. 2.34E+01 amps
3. H is defined by, B=μ_0H, where B is magnetic field. A current of 83A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 7.4)$ to the point $(7.4, 0)$.
   - A. 1.89E+01 amps
   - **B. 2.08E+01 amps**
   - C. 2.28E+01 amps
   - D. 2.49E+01 amps
   - E. 2.74E+01 amps
4. H is defined by, B=μ_0H, where B is magnetic field. A current of 37A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 8.4)$ to the point $(8.4, 0)$.
   - A. 8.44E+00 amps
   - **B. 9.25E+00 amps**
   - C. 1.01E+01 amps
   - D. 1.11E+01 amps
   - E. 1.22E+01 amps
5. H is defined by, B=μ_0H, where B is magnetic field. A current of 92A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 6.4)$ to the point $(6.4, 0)$.
   - A. 2.10E+01 amps
   - **B. 2.30E+01 amps**
   - C. 2.52E+01 amps
   - D. 2.77E+01 amps
   - E. 3.03E+01 amps
6. H is defined by, B=μ_0H, where B is magnetic field. A current of 87A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 9.3)$ to the point $(9.3, 0)$.
   - **A. 2.18E+01 amps**
   - B. 2.38E+01 amps
   - C. 2.61E+01 amps
   - D. 2.87E+01 amps
   - E. 3.14E+01 amps
7. H is defined by, B=μ_0H, where B is magnetic field. A current of 47A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 9)$ to the point $(9, 0)$.
   - A. 8.91E+00 amps
   - B. 9.77E+00 amps

The next page might contain more answer choices for this question

C. 1.07E+01 amps

D. 1.18E+01 amps

E. 1.29E+01 amps

8. H is defined by, B=μ_0H, where B is magnetic field. A current of 55A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 8.7)$ to the point $(8.7, 0)$.

A. 1.38E+01 amps

B. 1.51E+01 amps

C. 1.65E+01 amps

D. 1.81E+01 amps

E. 1.99E+01 amps

9. H is defined by, B=μ_0H, where B is magnetic field. A current of 92A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 7.1)$ to the point $(7.1, 0)$.

A. 2.30E+01 amps

B. 2.52E+01 amps

C. 2.77E+01 amps

D. 3.03E+01 amps

E. 3.32E+01 amps

10. H is defined by, B=μ_0H, where B is magnetic field. A current of 40A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 6.7)$ to the point $(6.7, 0)$.

A. 8.32E+00 amps

B. 9.12E+00 amps

C. 1.00E+01 amps

D. 1.10E+01 amps

E. 1.20E+01 amps

11. H is defined by, B=μ_0H, where B is magnetic field. A current of 54A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 5.4)$ to the point $(5.4, 0)$.

A. 9.34E+00 amps

B. 1.02E+01 amps

C. 1.12E+01 amps

D. 1.23E+01 amps

E. 1.35E+01 amps

12. H is defined by, B=μ_0H, where B is magnetic field. A current of 48A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 9.3)$ to the point $(9.3, 0)$.

A. 9.98E+00 amps

B. 1.09E+01 amps

C. 1.20E+01 amps

D. 1.32E+01 amps

E. 1.44E+01 amps

The next page might contain more answer choices for this question

13. H is defined by, B=μ_0H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 4.1)$ to the point $(4.1, 0)$.

   A. 1.28E+01 amps
   B. 1.40E+01 amps
   C. 1.54E+01 amps
   D. 1.69E+01 amps
   E. 1.85E+01 amps

14. H is defined by, B=μ_0H, where B is magnetic field. A current of 91A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 7.3)$ to the point $(7.3, 0)$.

   A. 2.28E+01 amps
   B. 2.49E+01 amps
   C. 2.74E+01 amps
   D. 3.00E+01 amps
   E. 3.29E+01 amps

15. H is defined by, B=μ_0H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 8.4)$ to the point $(8.4, 0)$.

   A. 1.63E+01 amps
   B. 1.78E+01 amps
   C. 1.95E+01 amps
   D. 2.14E+01 amps
   E. 2.35E+01 amps

16. H is defined by, B=μ_0H, where B is magnetic field. A current of 63A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 4.6)$ to the point $(4.6, 0)$.

   A. 1.31E+01 amps
   B. 1.44E+01 amps
   C. 1.58E+01 amps
   D. 1.73E+01 amps
   E. 1.89E+01 amps

17. H is defined by, B=μ_0H, where B is magnetic field. A current of 43A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 7.1)$ to the point $(7.1, 0)$.

   A. 8.15E+00 amps
   B. 8.94E+00 amps
   C. 9.80E+00 amps
   D. 1.08E+01 amps
   E. 1.18E+01 amps

18. H is defined by, B=μ_0H, where B is magnetic field. A current of 99A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 6.2)$ to the point $(6.2, 0)$.

   A. 2.48E+01 amps
   B. 2.71E+01 amps

The next page might contain more answer choices for this question

C. 2.98E+01 amps

D. 3.26E+01 amps

E. 3.58E+01 amps

19. H is defined by, B=μ_0H, where B is magnetic field. A current of 85A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 9.8)$ to the point $(9.8, 0)$.

A. 1.77E+01 amps

B. 1.94E+01 amps

C. 2.13E+01 amps

D. 2.33E+01 amps

E. 2.55E+01 amps

20. H is defined by, B=μ_0H, where B is magnetic field. A current of 40A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 6.6)$ to the point $(6.6, 0)$.

A. 1.00E+01 amps

B. 1.10E+01 amps

C. 1.20E+01 amps

D. 1.32E+01 amps

E. 1.45E+01 amps

c22Magnetism_ampereLawSymmetry Q2

1. H is defined by, B=μ_0H, where B is magnetic field. A current of 96A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(-6.6, 6.6)$ to the point $(6.6, 6.6)$.

A. 1.82E+01 amps

B. 2.00E+01 amps

C. 2.19E+01 amps

D. 2.40E+01 amps

E. 2.63E+01 amps

2. H is defined by, B=μ_0H, where B is magnetic field. A current of 91A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(-9.6, 9.6)$ to the point $(9.6, 9.6)$.

A. 1.73E+01 amps

B. 1.89E+01 amps

C. 2.07E+01 amps

D. 2.28E+01 amps

E. 2.49E+01 amps

3. H is defined by, B=μ_0H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(-5.7, 5.7)$ to the point $(5.7, 5.7)$.

A. 1.54E+01 amps

B. 1.69E+01 amps

C. 1.85E+01 amps

D. 2.03E+01 amps

The next page might contain more answer choices for this question

E. 2.22E+01 amps

4. H is defined by, B=μ_0H, where B is magnetic field. A current of 33A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-6.6, 6.6)$ to the point $(6.6, 6.6)$.

A. 5.71E+00 amps

B. 6.26E+00 amps

C. 6.86E+00 amps

D. 7.52E+00 amps

E. 8.25E+00 amps

5. H is defined by, B=μ_0H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-7.4, 7.4)$ to the point $(7.4, 7.4)$.

A. 1.69E+01 amps

B. 1.85E+01 amps

C. 2.03E+01 amps

D. 2.22E+01 amps

E. 2.44E+01 amps

6. H is defined by, B=μ_0H, where B is magnetic field. A current of 96A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-6.4, 6.4)$ to the point $(6.4, 6.4)$.

A. 2.00E+01 amps

B. 2.19E+01 amps

C. 2.40E+01 amps

D. 2.63E+01 amps

E. 2.89E+01 amps

7. H is defined by, B=μ_0H, where B is magnetic field. A current of 65A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-4.9, 4.9)$ to the point $(4.9, 4.9)$.

A. 1.23E+01 amps

B. 1.35E+01 amps

C. 1.48E+01 amps

D. 1.63E+01 amps

E. 1.78E+01 amps

8. H is defined by, B=μ_0H, where B is magnetic field. A current of 40A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-9.4, 9.4)$ to the point $(9.4, 9.4)$.

A. 7.59E+00 amps

B. 8.32E+00 amps

C. 9.12E+00 amps

D. 1.00E+01 amps

E. 1.10E+01 amps

9. H is defined by, B=μ_0H, where B is magnetic field. A current of 77A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-9.8, 9.8)$ to the point $(9.8, 9.8)$.

A. 1.60E+01 amps

The next page might contain more answer choices for this question

B. 1.76E+01 amps

C. 1.93E+01 amps

D. 2.11E+01 amps

E. 2.31E+01 amps

10. H is defined by, B=μ_0H, where B is magnetic field. A current of 70A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-8.7, 8.7)$ to the point $(8.7, 8.7)$.

A. 1.21E+01 amps

B. 1.33E+01 amps

C. 1.46E+01 amps

D. 1.60E+01 amps

E. 1.75E+01 amps

11. H is defined by, B=μ_0H, where B is magnetic field. A current of 87A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-6.1, 6.1)$ to the point $(6.1, 6.1)$.

A. 1.50E+01 amps

B. 1.65E+01 amps

C. 1.81E+01 amps

D. 1.98E+01 amps

E. 2.18E+01 amps

12. H is defined by, B=μ_0H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-5.8, 5.8)$ to the point $(5.8, 5.8)$.

A. 1.78E+01 amps

B. 1.95E+01 amps

C. 2.14E+01 amps

D. 2.35E+01 amps

E. 2.58E+01 amps

13. H is defined by, B=μ_0H, where B is magnetic field. A current of 63A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-9.3, 9.3)$ to the point $(9.3, 9.3)$.

A. 1.19E+01 amps

B. 1.31E+01 amps

C. 1.44E+01 amps

D. 1.58E+01 amps

E. 1.73E+01 amps

14. H is defined by, B=μ_0H, where B is magnetic field. A current of 82A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-9.3, 9.3)$ to the point $(9.3, 9.3)$.

A. 2.05E+01 amps

B. 2.25E+01 amps

C. 2.46E+01 amps

D. 2.70E+01 amps

E. 2.96E+01 amps

The next page might contain more answer choices for this question

15. H is defined by, B=μ_0H, where B is magnetic field. A current of 51A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-7, 7)$ to the point $(7, 7)$.
    - A. 9.67E+00 amps
    - B. 1.06E+01 amps
    - C. 1.16E+01 amps
    - **D. 1.28E+01 amps**
    - E. 1.40E+01 amps

16. H is defined by, B=μ_0H, where B is magnetic field. A current of 88A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-8.1, 8.1)$ to the point $(8.1, 8.1)$.
    - A. 2.01E+01 amps
    - **B. 2.20E+01 amps**
    - C. 2.41E+01 amps
    - D. 2.64E+01 amps
    - E. 2.90E+01 amps

17. H is defined by, B=μ_0H, where B is magnetic field. A current of 51A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-6.8, 6.8)$ to the point $(6.8, 6.8)$.
    - A. 1.06E+01 amps
    - B. 1.16E+01 amps
    - **C. 1.28E+01 amps**
    - D. 1.40E+01 amps
    - E. 1.53E+01 amps

18. H is defined by, B=μ_0H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-6.4, 6.4)$ to the point $(6.4, 6.4)$.
    - A. 1.28E+01 amps
    - B. 1.40E+01 amps
    - C. 1.54E+01 amps
    - D. 1.69E+01 amps
    - **E. 1.85E+01 amps**

19. H is defined by, B=μ_0H, where B is magnetic field. A current of 71A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-8.6, 8.6)$ to the point $(8.6, 8.6)$.
    - A. 1.62E+01 amps
    - **B. 1.78E+01 amps**
    - C. 1.95E+01 amps
    - D. 2.13E+01 amps
    - E. 2.34E+01 amps

20. H is defined by, B=μ_0H, where B is magnetic field. A current of 68A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(-6.4, 6.4)$ to the point $(6.4, 6.4)$.
    - A. 1.55E+01 amps
    - **B. 1.70E+01 amps**
    - C. 1.86E+01 amps
    - D. 2.04E+01 amps
    - E. 2.24E+01 amps

The next page might contain more answer choices for this question

c22Magnetism_ampereLawSymmetry Q3

1. H is defined by, B=μ_0H, where B is magnetic field. A current of 33A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 9.5)$ to the point $(9.5, 9.5)$.
   - A. 3.43E+00 amps
   - B. 3.76E+00 amps
   - **C. 4.13E+00 amps**
   - D. 4.52E+00 amps
   - E. 4.96E+00 amps
2. H is defined by, B=μ_0H, where B is magnetic field. A current of 37A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 9)$ to the point $(9, 9)$.
   - A. 4.22E+00 amps
   - **B. 4.63E+00 amps**
   - C. 5.07E+00 amps
   - D. 5.56E+00 amps
   - E. 6.10E+00 amps
3. H is defined by, B=μ_0H, where B is magnetic field. A current of 88A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 6.6)$ to the point $(6.6, 6.6)$.
   - A. 9.15E+00 amps
   - B. 1.00E+01 amps
   - **C. 1.10E+01 amps**
   - D. 1.21E+01 amps
   - E. 1.32E+01 amps
4. H is defined by, B=μ_0H, where B is magnetic field. A current of 33A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 9.8)$ to the point $(9.8, 9.8)$.
   - A. 3.76E+00 amps
   - **B. 4.13E+00 amps**
   - C. 4.52E+00 amps
   - D. 4.96E+00 amps
   - E. 5.44E+00 amps
5. H is defined by, B=μ_0H, where B is magnetic field. A current of 92A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 5.3)$ to the point $(5.3, 5.3)$.
   - A. 8.72E+00 amps
   - B. 9.57E+00 amps
   - C. 1.05E+01 amps
   - **D. 1.15E+01 amps**
   - E. 1.26E+01 amps
6. H is defined by, B=μ_0H, where B is magnetic field. A current of 86A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 5)$ to the point $(5, 5)$.
   - A. 7.44E+00 amps

The next page might contain more answer choices for this question

B. 8.15E+00 amps
C. 8.94E+00 amps
D. 9.80E+00 amps
E. 1.08E+01 amps

7. H is defined by, B=μ_0H, where B is magnetic field. A current of 46A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 7.9)$ to the point $(7.9, 7.9)$.
A. 5.24E+00 amps
B. 5.75E+00 amps
C. 6.30E+00 amps
D. 6.91E+00 amps
E. 7.58E+00 amps

8. H is defined by, B=μ_0H, where B is magnetic field. A current of 50A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 7)$ to the point $(7, 7)$.
A. 6.25E+00 amps
B. 6.85E+00 amps
C. 7.51E+00 amps
D. 8.24E+00 amps
E. 9.03E+00 amps

9. H is defined by, B=μ_0H, where B is magnetic field. A current of 39A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 8.5)$ to the point $(8.5, 8.5)$.
A. 4.88E+00 amps
B. 5.35E+00 amps
C. 5.86E+00 amps
D. 6.43E+00 amps
E. 7.05E+00 amps

10. H is defined by, B=μ_0H, where B is magnetic field. A current of 59A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 7.2)$ to the point $(7.2, 7.2)$.
A. 7.38E+00 amps
B. 8.09E+00 amps
C. 8.87E+00 amps
D. 9.72E+00 amps
E. 1.07E+01 amps

11. H is defined by, B=μ_0H, where B is magnetic field. A current of 42A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from the point $(0, 4.2)$ to the point $(4.2, 4.2)$.
A. 3.98E+00 amps
B. 4.37E+00 amps
C. 4.79E+00 amps
D. 5.25E+00 amps
E. 5.76E+00 amps

The next page might contain more answer choices for this question

12. H is defined by, B=μ_0H, where B is magnetic field. A current of 36A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H}\cdot d\vec{\ell}$, from the point $(0, 8.6)$ to the point $(8.6, 8.6)$.

   A. 4.50E+00 amps

   B. 4.93E+00 amps

   C. 5.41E+00 amps

   D. 5.93E+00 amps

   E. 6.50E+00 amps

13. H is defined by, B=μ_0H, where B is magnetic field. A current of 38A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H}\cdot d\vec{\ell}$, from the point $(0, 6.7)$ to the point $(6.7, 6.7)$.

   A. 4.33E+00 amps

   B. 4.75E+00 amps

   C. 5.21E+00 amps

   D. 5.71E+00 amps

   E. 6.26E+00 amps

14. H is defined by, B=μ_0H, where B is magnetic field. A current of 89A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H}\cdot d\vec{\ell}$, from the point $(0, 4.8)$ to the point $(4.8, 4.8)$.

   A. 9.25E+00 amps

   B. 1.01E+01 amps

   C. 1.11E+01 amps

   D. 1.22E+01 amps

   E. 1.34E+01 amps

15. H is defined by, B=μ_0H, where B is magnetic field. A current of 48A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H}\cdot d\vec{\ell}$, from the point $(0, 8.4)$ to the point $(8.4, 8.4)$.

   A. 5.47E+00 amps

   B. 6.00E+00 amps

   C. 6.58E+00 amps

   D. 7.21E+00 amps

   E. 7.91E+00 amps

16. H is defined by, B=μ_0H, where B is magnetic field. A current of 49A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H}\cdot d\vec{\ell}$, from the point $(0, 9.8)$ to the point $(9.8, 9.8)$.

   A. 6.13E+00 amps

   B. 6.72E+00 amps

   C. 7.36E+00 amps

   D. 8.07E+00 amps

   E. 8.85E+00 amps

17. H is defined by, B=μ_0H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H}\cdot d\vec{\ell}$, from the point $(0, 5.3)$ to the point $(5.3, 5.3)$.

   A. 9.77E+00 amps

   B. 1.07E+01 amps

The next page might contain more answer choices for this question

C. 1.18E+01 amps
D. 1.29E+01 amps
E. 1.41E+01 amps

18. H is defined by, B=μ_0H, where B is magnetic field. A current of 31A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 7.3)$ to the point $(7.3, 7.3)$.
    A. 3.88E+00 amps
    B. 4.25E+00 amps
    C. 4.66E+00 amps
    D. 5.11E+00 amps
    E. 5.60E+00 amps

19. H is defined by, B=μ_0H, where B is magnetic field. A current of 81A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 7.9)$ to the point $(7.9, 7.9)$.
    A. 7.68E+00 amps
    B. 8.42E+00 amps
    C. 9.23E+00 amps
    D. 1.01E+01 amps
    E. 1.11E+01 amps

20. H is defined by, B=μ_0H, where B is magnetic field. A current of 58A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from the point $(0, 8.5)$ to the point $(8.5, 8.5)$.
    A. 6.03E+00 amps
    B. 6.61E+00 amps
    C. 7.25E+00 amps
    D. 7.95E+00 amps
    E. 8.72E+00 amps

c22Magnetism_ampereLawSymmetry Q4

1. H is defined by, B=μ_0H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from $(-\infty, 6.2)$ to $(+\infty, 6.2)$.
    A. 3.91E+01 amps
    B. 4.29E+01 amps
    C. 4.70E+01 amps
    D. 5.15E+01 amps
    E. 5.65E+01 amps

2. H is defined by, B=μ_0H, where B is magnetic field. A current of 93A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from $(-\infty, 4.1)$ to $(+\infty, 4.1)$.
    A. 3.53E+01 amps
    B. 3.87E+01 amps
    C. 4.24E+01 amps
    D. 4.65E+01 amps

The next page might contain more answer choices for this question

E. 5.10E+01 amps

3. H is defined by, B=μ_0H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from $(-\infty, 9)$ to $(+\infty, 9)$.

   A. 3.08E+01 amps
   B. 3.37E+01 amps
   C. 3.70E+01 amps
   D. 4.06E+01 amps
   E. 4.45E+01 amps

4. H is defined by, B=μ_0H, where B is magnetic field. A current of 67A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from $(-\infty, 9.4)$ to $(+\infty, 9.4)$.

   A. 2.32E+01 amps
   B. 2.54E+01 amps
   C. 2.79E+01 amps
   D. 3.06E+01 amps
   E. 3.35E+01 amps

5. H is defined by, B=μ_0H, where B is magnetic field. A current of 31A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from $(-\infty, 9.2)$ to $(+\infty, 9.2)$.

   A. 1.41E+01 amps
   B. 1.55E+01 amps
   C. 1.70E+01 amps
   D. 1.86E+01 amps
   E. 2.04E+01 amps

6. H is defined by, B=μ_0H, where B is magnetic field. A current of 74A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from $(-\infty, 8.2)$ to $(+\infty, 8.2)$.

   A. 3.37E+01 amps
   B. 3.70E+01 amps
   C. 4.06E+01 amps
   D. 4.45E+01 amps
   E. 4.88E+01 amps

7. H is defined by, B=μ_0H, where B is magnetic field. A current of 69A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from $(-\infty, 5.8)$ to $(+\infty, 5.8)$.

   A. 2.87E+01 amps
   B. 3.15E+01 amps
   C. 3.45E+01 amps
   D. 3.78E+01 amps
   E. 4.15E+01 amps

8. H is defined by, B=μ_0H, where B is magnetic field. A current of 85A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from $(-\infty, 8)$ to $(+\infty, 8)$.

   A. 2.94E+01 amps

The next page might contain more answer choices for this question

B. 3.22E+01 amps
C. 3.53E+01 amps
D. 3.88E+01 amps
E. 4.25E+01 amps

9. H is defined by, B=μ_0H, where B is magnetic field. A current of 88A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 8.7)$ to $(+\infty, 8.7)$.
A. 4.01E+01 amps
B. 4.40E+01 amps
C. 4.82E+01 amps
D. 5.29E+01 amps
E. 5.80E+01 amps

10. H is defined by, B=μ_0H, where B is magnetic field. A current of 94A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 9.4)$ to $(+\infty, 9.4)$.
A. 3.25E+01 amps
B. 3.57E+01 amps
C. 3.91E+01 amps
D. 4.29E+01 amps
E. 4.70E+01 amps

11. H is defined by, B=μ_0H, where B is magnetic field. A current of 96A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 8.1)$ to $(+\infty, 8.1)$.
A. 3.32E+01 amps
B. 3.64E+01 amps
C. 3.99E+01 amps
D. 4.38E+01 amps
E. 4.80E+01 amps

12. H is defined by, B=μ_0H, where B is magnetic field. A current of 36A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 8.3)$ to $(+\infty, 8.3)$.
A. 1.50E+01 amps
B. 1.64E+01 amps
C. 1.80E+01 amps
D. 1.97E+01 amps
E. 2.16E+01 amps

13. H is defined by, B=μ_0H, where B is magnetic field. A current of 76A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 5.8)$ to $(+\infty, 5.8)$.
A. 3.16E+01 amps
B. 3.47E+01 amps
C. 3.80E+01 amps
D. 4.17E+01 amps
E. 4.57E+01 amps

The next page might contain more answer choices for this question

14. H is defined by, B=μ_0H, where B is magnetic field. A current of 44A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 5)$ to $(+\infty, 5)$.

    A. 1.67E+01 amps
    B. 1.83E+01 amps
    C. 2.01E+01 amps
    D. 2.20E+01 amps
    E. 2.41E+01 amps

15. H is defined by, B=μ_0H, where B is magnetic field. A current of 39A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 8.5)$ to $(+\infty, 8.5)$.

    A. 1.62E+01 amps
    B. 1.78E+01 amps
    C. 1.95E+01 amps
    D. 2.14E+01 amps
    E. 2.34E+01 amps

16. H is defined by, B=μ_0H, where B is magnetic field. A current of 43A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 5.8)$ to $(+\infty, 5.8)$.

    A. 1.63E+01 amps
    B. 1.79E+01 amps
    C. 1.96E+01 amps
    D. 2.15E+01 amps
    E. 2.36E+01 amps

17. H is defined by, B=μ_0H, where B is magnetic field. A current of 31A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 9.4)$ to $(+\infty, 9.4)$.

    A. 1.55E+01 amps
    B. 1.70E+01 amps
    C. 1.86E+01 amps
    D. 2.04E+01 amps
    E. 2.24E+01 amps

18. H is defined by, B=μ_0H, where B is magnetic field. A current of 66A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 5.5)$ to $(+\infty, 5.5)$.

    A. 3.01E+01 amps
    B. 3.30E+01 amps
    C. 3.62E+01 amps
    D. 3.97E+01 amps
    E. 4.35E+01 amps

19. H is defined by, B=μ_0H, where B is magnetic field. A current of 76A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot d\vec{\ell}$, from $(-\infty, 9.6)$ to $(+\infty, 9.6)$.

    A. 3.16E+01 amps
    B. 3.47E+01 amps

The next page might contain more answer choices for this question

C. 3.80E+01 amps

D. 4.17E+01 amps

E. 4.57E+01 amps

20. H is defined by, B=μ_0H, where B is magnetic field. A current of 67A passes along the z-axis. Use symmetry to find the integral, $\int \vec{H} \cdot \vec{d\ell}$, from $(-\infty, 6.9)$ to $(+\infty, 6.9)$.

A. 2.54E+01 amps

B. 2.79E+01 amps

C. 3.06E+01 amps

D. 3.35E+01 amps

E. 3.67E+01 amps

25 d_cp2.13

1. A square coil has sides that are L= 0.25 m long and is tightly wound with N=200 turns of wire. The resistance of the coil is R=5 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.04 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it? [178]

A. 1.000E-01 A

B. 1.100E-01 A

C. 1.210E-01 A

D. 1.331E-01 A

E. 1.464E-01 A

2. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.5 m. The magnetic field is spatially uniform but decays in time according to $(1.5)e^{-\alpha t}$ at time t = 0.05 seconds, and $\alpha = 5\,\mathrm{s}^{-1}$. What is the current in the coil if the impedance of the coil is 10 Ω ?[179]

A. 3.791E-01 A

B. 4.170E-01 A

C. 4.588E-01 A

D. 5.046E-01 A

E. 5.551E-01 A

3. The current through the windings of a solenoid with n= 2.000E+03 turns per meter is changing at a rate dI/dt=3 A/s. The solenoid is 50 cm long and has a cross-sectional diameter of 3 cm. A small coil consisting of N=20turns wraped in a circle of diameter 1 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?[180]

A. 9.788E-06 V

B. 1.077E-05 V

C. 1.184E-05 V

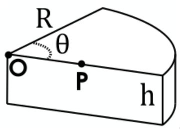
D. 1.303E-05 V

E. 1.433E-05 V

The next page might contain more answer choices for this question

4. Calculate the motional emf induced along a 20 km conductor moving at an orbital speed of 7.8 km/s perpendicular to Earth's 5.000E-05 Tesla magnetic field.[181]

   A. 7.091E+03 V
   B. 7.800E+03 V
   C. 8.580E+03 V
   D. 9.438E+03 V
   E. 1.038E+04 V

5. 

A cylinder of height 1.1 cm and radius 3.1 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 2.1 cm from point O and moves at a speed of 5.1 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)] [182]

   A. 8.767E+00 cm^3/s
   B. 9.644E+00 cm^3/s
   C. 1.061E+01 cm^3/s
   D. 1.167E+01 cm^3/s
   E. 1.284E+01 cm^3/s

6. A recangular coil with an area of 0.5 m^2 and 10 turns is placed in a uniform magnetic field of 1.5 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 2.000E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 50 s?[183]

   A. 4.029E+02 V
   B. 4.432E+02 V
   C. 4.875E+02 V
   D. 5.362E+02 V
   E. 5.899E+02 V

7. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =1.5 T and ω =2.000E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.5 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.[184]

   A. 9.425E+03 V
   B. 1.037E+04 V
   C. 1.140E+04 V
   D. 1.254E+04 V
   E. 1.380E+04 V

8. A long solenoid has a radius of 0.7 m and 50 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =3 A and α =25 s^{-1}.What is the induced electric fied at a distance 2.0 m from the axis at time t=0.04 s ?[185]

   A. 2.124E-04 V/m

The next page might contain more answer choices for this question

B. 2.336E-04 V/m
C. 2.570E-04 V/m
D. 2.827E-04 V/m
E. 3.109E-04 V/m

9. A long solenoid has a radius of 0.7 m and 50 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =3 A and α =25 s^{-1}.What is the induced electric fied at a distance 0.15 m from the axis at time t=0.04 s ?[186]

A. 1.300E-04 V/m
B. 1.430E-04 V/m
C. 1.573E-04 V/m
D. 1.731E-04 V/m
E. 1.904E-04 V/m

25.1 Renditions

d_cp2.13 Q1

1. A square coil has sides that are L= 0.673 m long and is tightly wound with N=211 turns of wire. The resistance of the coil is R=5.31 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0454 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

A. 6.753E-01 A
B. 7.428E-01 A
C. 8.171E-01 A
D. 8.988E-01 A
E. 9.887E-01 A

2. A square coil has sides that are L= 0.861 m long and is tightly wound with N=538 turns of wire. The resistance of the coil is R=9.04 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0433 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

A. 1.737E+00 A
B. 1.910E+00 A
C. 2.101E+00 A
D. 2.311E+00 A
E. 2.543E+00 A

3. A square coil has sides that are L= 0.259 m long and is tightly wound with N=628 turns of wire. The resistance of the coil is R=6.51 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0372 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

A. 1.809E-01 A
B. 1.989E-01 A
C. 2.188E-01 A

The next page might contain more answer choices for this question

D. 2.407E-01 A

E. 2.648E-01 A

4. A square coil has sides that are L= 0.894 m long and is tightly wound with N=255 turns of wire. The resistance of the coil is R=8.83 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0682 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

A. 1.301E+00 A

B. 1.431E+00 A

C. 1.574E+00 A

D. 1.732E+00 A

E. 1.905E+00 A

5. A square coil has sides that are L= 0.436 m long and is tightly wound with N=284 turns of wire. The resistance of the coil is R=6.89 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0733 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

A. 5.743E-01 A

B. 6.318E-01 A

C. 6.950E-01 A

D. 7.645E-01 A

E. 8.409E-01 A

6. A square coil has sides that are L= 0.561 m long and is tightly wound with N=930 turns of wire. The resistance of the coil is R=5.08 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0548 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

A. 2.609E+00 A

B. 2.870E+00 A

C. 3.157E+00 A

D. 3.473E+00 A

E. 3.820E+00 A

7. A square coil has sides that are L= 0.547 m long and is tightly wound with N=198 turns of wire. The resistance of the coil is R=4.62 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0768 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

A. 8.953E-01 A

B. 9.848E-01 A

C. 1.083E+00 A

D. 1.192E+00 A

E. 1.311E+00 A

8. A square coil has sides that are L= 0.245 m long and is tightly wound with N=925 turns of wire. The resistance of the coil is R=8.0 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0618 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

The next page might contain more answer choices for this question

A. 3.545E-01 A
B. 3.899E-01 A
C. 4.289E-01 A
D. 4.718E-01 A
E. 5.190E-01 A

9. A square coil has sides that are L= 0.568 m long and is tightly wound with N=482 turns of wire. The resistance of the coil is R=8.78 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0544 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?
   A. 6.581E-01 A
   B. 7.239E-01 A
   C. 7.963E-01 A
   D. 8.759E-01 A
   E. 9.635E-01 A

10. A square coil has sides that are L= 0.638 m long and is tightly wound with N=927 turns of wire. The resistance of the coil is R=8.34 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0718 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?
   A. 2.685E+00 A
   B. 2.953E+00 A
   C. 3.248E+00 A
   D. 3.573E+00 A
   E. 3.931E+00 A

11. A square coil has sides that are L= 0.219 m long and is tightly wound with N=508 turns of wire. The resistance of the coil is R=8.42 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0619 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?
   A. 1.791E-01 A
   B. 1.970E-01 A
   C. 2.167E-01 A
   D. 2.384E-01 A
   E. 2.622E-01 A

12. A square coil has sides that are L= 0.308 m long and is tightly wound with N=969 turns of wire. The resistance of the coil is R=8.64 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0498 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?
   A. 4.817E-01 A
   B. 5.298E-01 A
   C. 5.828E-01 A
   D. 6.411E-01 A

The next page might contain more answer choices for this question

E. 7.052E-01 A

13. A square coil has sides that are L= 0.738 m long and is tightly wound with N=717 turns of wire. The resistance of the coil is R=5.25 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0655 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

    A. 3.660E+00 A
    B. 4.027E+00 A
    C. 4.429E+00 A
    D. 4.872E+00 A
    E. 5.359E+00 A

14. A square coil has sides that are L= 0.888 m long and is tightly wound with N=604 turns of wire. The resistance of the coil is R=4.31 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0441 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

    A. 3.661E+00 A
    B. 4.028E+00 A
    C. 4.430E+00 A
    D. 4.873E+00 A
    E. 5.361E+00 A

15. A square coil has sides that are L= 0.325 m long and is tightly wound with N=697 turns of wire. The resistance of the coil is R=4.87 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0842 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

    A. 1.157E+00 A
    B. 1.273E+00 A
    C. 1.400E+00 A
    D. 1.540E+00 A
    E. 1.694E+00 A

16. A square coil has sides that are L= 0.727 m long and is tightly wound with N=376 turns of wire. The resistance of the coil is R=5.59 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0485 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

    A. 1.567E+00 A
    B. 1.724E+00 A
    C. 1.897E+00 A
    D. 2.086E+00 A
    E. 2.295E+00 A

17. A square coil has sides that are L= 0.465 m long and is tightly wound with N=954 turns of wire. The resistance of the coil is R=6.06 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0367 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

The next page might contain more answer choices for this question

A. 1.136E+00 A

B. 1.249E+00 A

C. 1.374E+00 A

D. 1.512E+00 A

E. 1.663E+00 A

18. A square coil has sides that are L= 0.819 m long and is tightly wound with N=887 turns of wire. The resistance of the coil is R=5.69 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0618 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

A. 4.414E+00 A

B. 4.855E+00 A

C. 5.341E+00 A

D. 5.875E+00 A

E. 6.462E+00 A

19. A square coil has sides that are L= 0.458 m long and is tightly wound with N=742 turns of wire. The resistance of the coil is R=6.81 Ω . The coil is placed in a spacially uniform magnetic field that is directed perpendicular to the face of the coil and whose magnitude is increasing at a rate dB/dt=0.0559 T/s. If R represents the only impedance of the coil, what is the magnitude of the current circulting through it?

A. 1.056E+00 A

B. 1.161E+00 A

C. 1.278E+00 A

D. 1.405E+00 A

E. 1.546E+00 A

d_cp2.13 Q2

1. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.72 m. The magnetic field is spatially uniform but decays in time according to $(1.3)e^{-\alpha t}$ at time t = 0.039 seconds, and α =9.5 s^{-1}. What is the current in the coil if the impedance of the coil is 18.0 Ω ?

A. 7.013E-01 A

B. 7.714E-01 A

C. 8.486E-01 A

D. 9.334E-01 A

E. 1.027E+00 A

2. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.76 m. The magnetic field is spatially uniform but decays in time according to $(4.2)e^{-\alpha t}$ at time t = 0.058 seconds, and α =8.8 s^{-1}. What is the current in the coil if the impedance of the coil is 86.0 Ω ?

A. 4.681E-01 A

B. 5.149E-01 A

C. 5.664E-01 A

D. 6.231E-01 A

The next page might contain more answer choices for this question

E. 6.854E-01 A

3. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.28 m. The magnetic field is spatially uniform but decays in time according to $(2.7)e^{-\alpha t}$ at time t = 0.035 seconds, and α =6.6 s^{-1}. What is the current in the coil if the impedance of the coil is 76.0 Ω ?

   A. 3.131E-02 A
   B. 3.444E-02 A
   C. 3.788E-02 A
   D. 4.167E-02 A
   E. 4.584E-02 A

4. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.98 m. The magnetic field is spatially uniform but decays in time according to $(4.5)e^{-\alpha t}$ at time t = 0.045 seconds, and α =8.6 s^{-1}. What is the current in the coil if the impedance of the coil is 7.5 Ω ?

   A. 7.221E+00 A
   B. 7.943E+00 A
   C. 8.738E+00 A
   D. 9.611E+00 A
   E. 1.057E+01 A

5. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.53 m. The magnetic field is spatially uniform but decays in time according to $(2.0)e^{-\alpha t}$ at time t = 0.077 seconds, and α =7.5 s^{-1}. What is the current in the coil if the impedance of the coil is 67.0 Ω ?

   A. 1.109E-01 A
   B. 1.220E-01 A
   C. 1.342E-01 A
   D. 1.476E-01 A
   E. 1.624E-01 A

6. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.65 m. The magnetic field is spatially uniform but decays in time according to $(5.7)e^{-\alpha t}$ at time t = 0.073 seconds, and α =8.2 s^{-1}. What is the current in the coil if the impedance of the coil is 51.0 Ω ?

   A. 5.525E-01 A
   B. 6.078E-01 A
   C. 6.685E-01 A
   D. 7.354E-01 A
   E. 8.089E-01 A

7. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.77 m. The magnetic field is spatially uniform but decays in time according to $(2.7)e^{-\alpha t}$ at time t = 0.035 seconds, and α =5.5 s^{-1}. What is the current in the coil if the impedance of the coil is 38.0 Ω ?

   A. 4.511E-01 A
   B. 4.962E-01 A
   C. 5.459E-01 A
   D. 6.004E-01 A

The next page might contain more answer choices for this question

E. 6.605E-01 A

8. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.68 m. The magnetic field is spatially uniform but decays in time according to $(2.6)e^{-\alpha t}$ at time t = 0.061 seconds, and α =9.5 s^{-1}. What is the current in the coil if the impedance of the coil is 13.0 Ω ?

   A. 1.278E+00 A

   B. 1.406E+00 A

   C. 1.546E+00 A

   D. 1.701E+00 A

   E. 1.871E+00 A

9. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.42 m. The magnetic field is spatially uniform but decays in time according to $(4.7)e^{-\alpha t}$ at time t = 0.033 seconds, and α =5.7 s^{-1}. What is the current in the coil if the impedance of the coil is 25.0 Ω ?

   A. 3.697E-01 A

   B. 4.066E-01 A

   C. 4.473E-01 A

   D. 4.920E-01 A

   E. 5.412E-01 A

10. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.73 m. The magnetic field is spatially uniform but decays in time according to $(1.2)e^{-\alpha t}$ at time t = 0.058 seconds, and α =7.1 s^{-1}. What is the current in the coil if the impedance of the coil is 54.0 Ω ?

   A. 1.750E-01 A

   B. 1.925E-01 A

   C. 2.117E-01 A

   D. 2.329E-01 A

   E. 2.562E-01 A

11. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.97 m. The magnetic field is spatially uniform but decays in time according to $(1.6)e^{-\alpha t}$ at time t = 0.035 seconds, and α =7.5 s^{-1}. What is the current in the coil if the impedance of the coil is 97.0 Ω ?

   A. 2.113E-01 A

   B. 2.324E-01 A

   C. 2.557E-01 A

   D. 2.813E-01 A

   E. 3.094E-01 A

12. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.75 m. The magnetic field is spatially uniform but decays in time according to $(5.2)e^{-\alpha t}$ at time t = 0.067 seconds, and α =9.6 s^{-1}. What is the current in the coil if the impedance of the coil is 71.0 Ω ?

   A. 5.937E-01 A

   B. 6.531E-01 A

   C. 7.184E-01 A

   D. 7.902E-01 A

The next page might contain more answer choices for this question

E. 8.692E-01 A

13. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.73 m. The magnetic field is spatially uniform but decays in time according to $(3.3)e^{-\alpha t}$ at time t = 0.062 seconds, and $\alpha = 8.1\,\mathrm{s}^{-1}$. What is the current in the coil if the impedance of the coil is 53.0 Ω ?

   A. 4.645E-01 A
   B. 5.110E-01 A
   C. 5.621E-01 A
   D. 6.183E-01 A
   E. 6.801E-01 A

14. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.68 m. The magnetic field is spatially uniform but decays in time according to $(1.8)e^{-\alpha t}$ at time t = 0.038 seconds, and $\alpha = 5.3\,\mathrm{s}^{-1}$. What is the current in the coil if the impedance of the coil is 91.0 Ω ?

   A. 1.245E-01 A
   B. 1.370E-01 A
   C. 1.507E-01 A
   D. 1.657E-01 A
   E. 1.823E-01 A

15. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.92 m. The magnetic field is spatially uniform but decays in time according to $(2.8)e^{-\alpha t}$ at time t = 0.032 seconds, and $\alpha = 6.6\,\mathrm{s}^{-1}$. What is the current in the coil if the impedance of the coil is 88.0 Ω ?

   A. 3.397E-01 A
   B. 3.736E-01 A
   C. 4.110E-01 A
   D. 4.521E-01 A
   E. 4.973E-01 A

16. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.48 m. The magnetic field is spatially uniform but decays in time according to $(3.8)e^{-\alpha t}$ at time t = 0.036 seconds, and $\alpha = 9.3\,\mathrm{s}^{-1}$. What is the current in the coil if the impedance of the coil is 68.0 Ω ?

   A. 2.022E-01 A
   B. 2.224E-01 A
   C. 2.447E-01 A
   D. 2.691E-01 A
   E. 2.961E-01 A

17. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.59 m. The magnetic field is spatially uniform but decays in time according to $(2.6)e^{-\alpha t}$ at time t = 0.051 seconds, and $\alpha = 9.1\,\mathrm{s}^{-1}$. What is the current in the coil if the impedance of the coil is 63.0 Ω ?

   A. 1.940E-01 A
   B. 2.134E-01 A
   C. 2.347E-01 A
   D. 2.582E-01 A

The next page might contain more answer choices for this question

E. 2.840E-01 A

18. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.4 m. The magnetic field is spatially uniform but decays in time according to $(2.3)e^{-\alpha t}$ at time t = 0.051 seconds, and α =4.1 s^{-1}. What is the current in the coil if the impedance of the coil is 1.7 Ω ?

    A. 1.545E+00 A

    B. 1.700E+00 A

    C. 1.870E+00 A

    D. 2.057E+00 A

    E. 2.262E+00 A

19. A time dependent magnetic field is directed perpendicular to the plane of a circular coil with a radius of 0.38 m. The magnetic field is spatially uniform but decays in time according to $(1.5)e^{-\alpha t}$ at time t = 0.032 seconds, and α =4.4 s^{-1}. What is the current in the coil if the impedance of the coil is 7.6 Ω ?

    A. 2.571E-01 A

    B. 2.828E-01 A

    C. 3.111E-01 A

    D. 3.422E-01 A

    E. 3.764E-01 A

d_cp2.13 Q3

1. The current through the windings of a solenoid with n= 2.120E+03 turns per meter is changing at a rate dI/dt=4 A/s. The solenoid is 94 cm long and has a cross-sectional diameter of 2.56 cm. A small coil consisting of N=30turns wraped in a circle of diameter 1.15 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

    A. 3.019E-05 V

    B. 3.321E-05 V

    C. 3.653E-05 V

    D. 4.018E-05 V

    E. 4.420E-05 V

2. The current through the windings of a solenoid with n= 2.460E+03 turns per meter is changing at a rate dI/dt=7 A/s. The solenoid is 87 cm long and has a cross-sectional diameter of 3.32 cm. A small coil consisting of N=38turns wraped in a circle of diameter 1.29 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

    A. 7.340E-05 V

    B. 8.075E-05 V

    C. 8.882E-05 V

    D. 9.770E-05 V

    E. 1.075E-04 V

The next page might contain more answer choices for this question

3. The current through the windings of a solenoid with n= 2.100E+03 turns per meter is changing at a rate dI/dt=7 A/s. The solenoid is 91 cm long and has a cross-sectional diameter of 3.24 cm. A small coil consisting of N=22turns wraped in a circle of diameter 1.22 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 3.245E-05 V
   B. 3.569E-05 V
   C. 3.926E-05 V
   D. 4.319E-05 V
   E. 4.751E-05 V

4. The current through the windings of a solenoid with n= 2.220E+03 turns per meter is changing at a rate dI/dt=10 A/s. The solenoid is 70 cm long and has a cross-sectional diameter of 2.73 cm. A small coil consisting of N=28turns wraped in a circle of diameter 1.45 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 1.066E-04 V
   B. 1.173E-04 V
   C. 1.290E-04 V
   D. 1.419E-04 V
   E. 1.561E-04 V

5. The current through the windings of a solenoid with n= 2.840E+03 turns per meter is changing at a rate dI/dt=19 A/s. The solenoid is 65 cm long and has a cross-sectional diameter of 2.18 cm. A small coil consisting of N=25turns wraped in a circle of diameter 1.35 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 2.206E-04 V
   B. 2.426E-04 V
   C. 2.669E-04 V
   D. 2.936E-04 V
   E. 3.230E-04 V

6. The current through the windings of a solenoid with n= 2.040E+03 turns per meter is changing at a rate dI/dt=19 A/s. The solenoid is 76 cm long and has a cross-sectional diameter of 3.23 cm. A small coil consisting of N=25turns wraped in a circle of diameter 1.67 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 2.204E-04 V
   B. 2.425E-04 V
   C. 2.667E-04 V
   D. 2.934E-04 V
   E. 3.227E-04 V

The next page might contain more answer choices for this question

7. The current through the windings of a solenoid with n= 2.970E+03 turns per meter is changing at a rate dI/dt=15 A/s. The solenoid is 89 cm long and has a cross-sectional diameter of 3.48 cm. A small coil consisting of N=28turns wraped in a circle of diameter 1.5 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 2.081E-04 V
   B. 2.289E-04 V
   C. 2.518E-04 V
   D. 2.770E-04 V
   E. 3.047E-04 V

8. The current through the windings of a solenoid with n= 1.820E+03 turns per meter is changing at a rate dI/dt=7 A/s. The solenoid is 78 cm long and has a cross-sectional diameter of 3.26 cm. A small coil consisting of N=35turns wraped in a circle of diameter 1.68 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 1.242E-04 V
   B. 1.366E-04 V
   C. 1.503E-04 V
   D. 1.653E-04 V
   E. 1.819E-04 V

9. The current through the windings of a solenoid with n= 2.210E+03 turns per meter is changing at a rate dI/dt=18 A/s. The solenoid is 65 cm long and has a cross-sectional diameter of 2.2 cm. A small coil consisting of N=36turns wraped in a circle of diameter 1.29 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 2.352E-04 V
   B. 2.587E-04 V
   C. 2.846E-04 V
   D. 3.131E-04 V
   E. 3.444E-04 V

10. The current through the windings of a solenoid with n= 2.760E+03 turns per meter is changing at a rate dI/dt=8 A/s. The solenoid is 74 cm long and has a cross-sectional diameter of 2.57 cm. A small coil consisting of N=32turns wraped in a circle of diameter 1.49 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

    A. 1.407E-04 V
    B. 1.548E-04 V
    C. 1.703E-04 V
    D. 1.873E-04 V
    E. 2.061E-04 V

The next page might contain more answer choices for this question

11. The current through the windings of a solenoid with n= 2.060E+03 turns per meter is changing at a rate dI/dt=12 A/s. The solenoid is 68 cm long and has a cross-sectional diameter of 2.96 cm. A small coil consisting of N=29turns wraped in a circle of diameter 1.74 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 1.463E-04 V
   B. 1.609E-04 V
   C. 1.770E-04 V
   D. 1.947E-04 V
   E. 2.142E-04 V

12. The current through the windings of a solenoid with n= 1.830E+03 turns per meter is changing at a rate dI/dt=14 A/s. The solenoid is 87 cm long and has a cross-sectional diameter of 2.5 cm. A small coil consisting of N=30turns wraped in a circle of diameter 1.34 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 1.126E-04 V
   B. 1.238E-04 V
   C. 1.362E-04 V
   D. 1.498E-04 V
   E. 1.648E-04 V

13. The current through the windings of a solenoid with n= 2.260E+03 turns per meter is changing at a rate dI/dt=12 A/s. The solenoid is 62 cm long and has a cross-sectional diameter of 3.37 cm. A small coil consisting of N=23turns wraped in a circle of diameter 1.7 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 1.215E-04 V
   B. 1.337E-04 V
   C. 1.470E-04 V
   D. 1.617E-04 V
   E. 1.779E-04 V

14. The current through the windings of a solenoid with n= 2.500E+03 turns per meter is changing at a rate dI/dt=4 A/s. The solenoid is 96 cm long and has a cross-sectional diameter of 2.39 cm. A small coil consisting of N=22turns wraped in a circle of diameter 1.44 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 3.721E-05 V
   B. 4.093E-05 V
   C. 4.502E-05 V
   D. 4.953E-05 V
   E. 5.448E-05 V

The next page might contain more answer choices for this question

15. The current through the windings of a solenoid with n= 2.590E+03 turns per meter is changing at a rate dI/dt=11 A/s. The solenoid is 95 cm long and has a cross-sectional diameter of 2.29 cm. A small coil consisting of N=25turns wraped in a circle of diameter 1.15 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 6.985E-05 V
   B. 7.683E-05 V
   C. 8.452E-05 V
   D. 9.297E-05 V
   E. 1.023E-04 V

16. The current through the windings of a solenoid with n= 2.960E+03 turns per meter is changing at a rate dI/dt=10 A/s. The solenoid is 85 cm long and has a cross-sectional diameter of 3.12 cm. A small coil consisting of N=32turns wraped in a circle of diameter 1.44 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 1.602E-04 V
   B. 1.762E-04 V
   C. 1.939E-04 V
   D. 2.132E-04 V
   E. 2.346E-04 V

17. The current through the windings of a solenoid with n= 1.850E+03 turns per meter is changing at a rate dI/dt=17 A/s. The solenoid is 98 cm long and has a cross-sectional diameter of 3.38 cm. A small coil consisting of N=23turns wraped in a circle of diameter 1.72 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 1.587E-04 V
   B. 1.745E-04 V
   C. 1.920E-04 V
   D. 2.112E-04 V
   E. 2.323E-04 V

18. The current through the windings of a solenoid with n= 2.980E+03 turns per meter is changing at a rate dI/dt=9 A/s. The solenoid is 88 cm long and has a cross-sectional diameter of 2.69 cm. A small coil consisting of N=28turns wraped in a circle of diameter 1.64 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

   A. 1.498E-04 V
   B. 1.647E-04 V
   C. 1.812E-04 V
   D. 1.993E-04 V
   E. 2.193E-04 V

The next page might contain more answer choices for this question

19. The current through the windings of a solenoid with n= 2.400E+03 turns per meter is changing at a rate dI/dt=3 A/s. The solenoid is 93 cm long and has a cross-sectional diameter of 2.13 cm. A small coil consisting of N=30turns wraped in a circle of diameter 1.35 cm is placed in the middle of the solenoid such that the plane of the coil is perpendicular to the central axis of the solenoid. Assume that the infinite-solenoid approximation is valid inside the small coil. What is the emf induced in the coil?

    A. 3.885E-05 V
    B. 4.274E-05 V
    C. 4.701E-05 V
    D. 5.171E-05 V
    E. 5.688E-05 V

d_cp2.13 Q4

1. Calculate the motional emf induced along a 40.1 km conductor moving at an orbital speed of 7.85 km/s perpendicular to Earth's 5.160E-05 Tesla magnetic field.

    A. 1.477E+04 V
    B. 1.624E+04 V
    C. 1.787E+04 V
    D. 1.965E+04 V
    E. 2.162E+04 V

2. Calculate the motional emf induced along a 24.9 km conductor moving at an orbital speed of 7.82 km/s perpendicular to Earth's 5.040E-05 Tesla magnetic field.

    A. 8.111E+03 V
    B. 8.922E+03 V
    C. 9.814E+03 V
    D. 1.080E+04 V
    E. 1.187E+04 V

3. Calculate the motional emf induced along a 27.5 km conductor moving at an orbital speed of 7.86 km/s perpendicular to Earth's 4.520E-05 Tesla magnetic field.

    A. 8.074E+03 V
    B. 8.882E+03 V
    C. 9.770E+03 V
    D. 1.075E+04 V
    E. 1.182E+04 V

4. Calculate the motional emf induced along a 42.1 km conductor moving at an orbital speed of 7.77 km/s perpendicular to Earth's 4.730E-05 Tesla magnetic field.

    A. 1.279E+04 V
    B. 1.407E+04 V
    C. 1.547E+04 V
    D. 1.702E+04 V
    E. 1.872E+04 V

The next page might contain more answer choices for this question

5. Calculate the motional emf induced along a 11.9 km conductor moving at an orbital speed of 7.8 km/s perpendicular to Earth's 4.870E-05 Tesla magnetic field.

   A. 3.736E+03 V
   B. 4.109E+03 V
   C. 4.520E+03 V
   D. 4.972E+03 V
   E. 5.470E+03 V

6. Calculate the motional emf induced along a 24.7 km conductor moving at an orbital speed of 7.77 km/s perpendicular to Earth's 5.410E-05 Tesla magnetic field.

   A. 7.801E+03 V
   B. 8.581E+03 V
   C. 9.439E+03 V
   D. 1.038E+04 V
   E. 1.142E+04 V

7. Calculate the motional emf induced along a 37.9 km conductor moving at an orbital speed of 7.84 km/s perpendicular to Earth's 5.410E-05 Tesla magnetic field.

   A. 1.208E+04 V
   B. 1.329E+04 V
   C. 1.461E+04 V
   D. 1.608E+04 V
   E. 1.768E+04 V

8. Calculate the motional emf induced along a 50.7 km conductor moving at an orbital speed of 7.88 km/s perpendicular to Earth's 4.930E-05 Tesla magnetic field.

   A. 1.791E+04 V
   B. 1.970E+04 V
   C. 2.167E+04 V
   D. 2.383E+04 V
   E. 2.622E+04 V

9. Calculate the motional emf induced along a 25.2 km conductor moving at an orbital speed of 7.72 km/s perpendicular to Earth's 4.900E-05 Tesla magnetic field.

   A. 7.162E+03 V
   B. 7.878E+03 V
   C. 8.666E+03 V
   D. 9.533E+03 V
   E. 1.049E+04 V

10. Calculate the motional emf induced along a 49.5 km conductor moving at an orbital speed of 7.77 km/s perpendicular to Earth's 5.310E-05 Tesla magnetic field.

   A. 1.395E+04 V
   B. 1.534E+04 V

The next page might contain more answer choices for this question

C. 1.688E+04 V

D. 1.857E+04 V

E. 2.042E+04 V

11. Calculate the motional emf induced along a 34.3 km conductor moving at an orbital speed of 7.86 km/s perpendicular to Earth's 4.780E-05 Tesla magnetic field.

A. 8.802E+03 V

B. 9.682E+03 V

C. 1.065E+04 V

D. 1.172E+04 V

E. 1.289E+04 V

12. Calculate the motional emf induced along a 30.3 km conductor moving at an orbital speed of 7.76 km/s perpendicular to Earth's 5.100E-05 Tesla magnetic field.

A. 1.090E+04 V

B. 1.199E+04 V

C. 1.319E+04 V

D. 1.451E+04 V

E. 1.596E+04 V

13. Calculate the motional emf induced along a 48.8 km conductor moving at an orbital speed of 7.88 km/s perpendicular to Earth's 4.660E-05 Tesla magnetic field.

A. 1.224E+04 V

B. 1.346E+04 V

C. 1.481E+04 V

D. 1.629E+04 V

E. 1.792E+04 V

14. Calculate the motional emf induced along a 14.1 km conductor moving at an orbital speed of 7.8 km/s perpendicular to Earth's 4.910E-05 Tesla magnetic field.

A. 3.688E+03 V

B. 4.057E+03 V

C. 4.463E+03 V

D. 4.909E+03 V

E. 5.400E+03 V

15. Calculate the motional emf induced along a 21.3 km conductor moving at an orbital speed of 7.75 km/s perpendicular to Earth's 5.320E-05 Tesla magnetic field.

A. 6.598E+03 V

B. 7.258E+03 V

C. 7.984E+03 V

D. 8.782E+03 V

E. 9.660E+03 V

The next page might contain more answer choices for this question

16. Calculate the motional emf induced along a 46.2 km conductor moving at an orbital speed of 7.9 km/s perpendicular to Earth's 4.630E-05 Tesla magnetic field.

   A. 1.536E+04 V
   B. 1.690E+04 V
   C. 1.859E+04 V
   D. 2.045E+04 V
   E. 2.249E+04 V

17. Calculate the motional emf induced along a 24.4 km conductor moving at an orbital speed of 7.79 km/s perpendicular to Earth's 4.790E-05 Tesla magnetic field.

   A. 6.840E+03 V
   B. 7.524E+03 V
   C. 8.277E+03 V
   D. 9.105E+03 V
   E. 1.002E+04 V

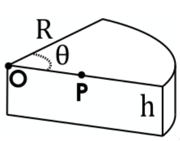
18. Calculate the motional emf induced along a 32.1 km conductor moving at an orbital speed of 7.8 km/s perpendicular to Earth's 5.280E-05 Tesla magnetic field.

   A. 1.093E+04 V
   B. 1.202E+04 V
   C. 1.322E+04 V
   D. 1.454E+04 V
   E. 1.600E+04 V

19. Calculate the motional emf induced along a 24.6 km conductor moving at an orbital speed of 7.89 km/s perpendicular to Earth's 5.180E-05 Tesla magnetic field.

   A. 9.140E+03 V
   B. 1.005E+04 V
   C. 1.106E+04 V
   D. 1.217E+04 V
   E. 1.338E+04 V

d_cp2.13 Q5

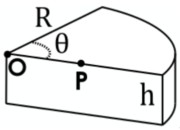
1. 

A cylinder of height 1.98 cm and radius 2.62 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 1.33 cm from point O and moves at a speed of 2.0 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

   A. 6.980E+00 cm^3/s
   B. 7.678E+00 cm^3/s
   C. 8.446E+00 cm^3/s
   D. 9.290E+00 cm^3/s

The next page might contain more answer choices for this question

E. 1.022E+01 cm^3/s

2. 

A cylinder of height 3.5 cm and radius 5.36 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 2.79 cm from point O and moves at a speed of 3.24 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

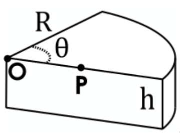
   A. 5.308E+01 cm^3/s

   B. 5.839E+01 cm^3/s

   C. 6.422E+01 cm^3/s

   D. 7.065E+01 cm^3/s

   E. 7.771E+01 cm^3/s

3. 

A cylinder of height 2.58 cm and radius 9.47 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 3.62 cm from point O and moves at a speed of 4.7 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

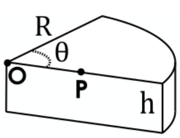
   A. 1.128E+02 cm^3/s

   B. 1.241E+02 cm^3/s

   C. 1.365E+02 cm^3/s

   D. 1.502E+02 cm^3/s

   E. 1.652E+02 cm^3/s

4. 

A cylinder of height 1.3 cm and radius 6.01 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 3.61 cm from point O and moves at a speed of 2.11 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

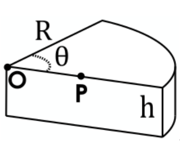
   A. 1.372E+01 cm^3/s

   B. 1.509E+01 cm^3/s

   C. 1.660E+01 cm^3/s

   D. 1.826E+01 cm^3/s

   E. 2.009E+01 cm^3/s

5. 

A cylinder of height 2.63 cm and radius 6.27 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 2.35 cm from point O and moves at a speed of 2.7 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

The next page might contain more answer choices for this question

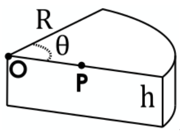
A. 4.057E+01 cm^3/s

B. 4.463E+01 cm^3/s

C. 4.909E+01 cm^3/s

D. 5.400E+01 cm^3/s

E. 5.940E+01 cm^3/s

6. 

A cylinder of height 2.12 cm and radius 2.28 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 1.52 cm from point O and moves at a speed of 8.21 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

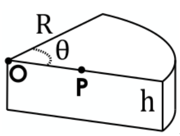
A. 2.976E+01 cm^3/s

B. 3.274E+01 cm^3/s

C. 3.601E+01 cm^3/s

D. 3.961E+01 cm^3/s

E. 4.358E+01 cm^3/s

7. 

A cylinder of height 2.42 cm and radius 6.94 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 2.59 cm from point O and moves at a speed of 4.87 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

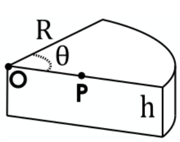
A. 9.962E+01 cm^3/s

B. 1.096E+02 cm^3/s

C. 1.205E+02 cm^3/s

D. 1.326E+02 cm^3/s

E. 1.459E+02 cm^3/s

8. 

A cylinder of height 2.94 cm and radius 5.05 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 2.37 cm from point O and moves at a speed of 7.29 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

A. 1.153E+02 cm^3/s

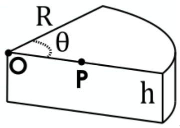
B. 1.268E+02 cm^3/s

C. 1.395E+02 cm^3/s

D. 1.535E+02 cm^3/s

E. 1.688E+02 cm^3/s

The next page might contain more answer choices for this question

9. 

A cylinder of height 2.15 cm and radius 7.03 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 3.83 cm from point O and moves at a speed of 5.7 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

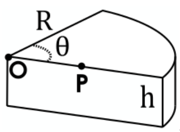
A. 6.534E+01 cm^3/s

B. 7.188E+01 cm^3/s

C. 7.907E+01 cm^3/s

D. 8.697E+01 cm^3/s

E. 9.567E+01 cm^3/s

10. 

A cylinder of height 1.27 cm and radius 8.63 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 3.15 cm from point O and moves at a speed of 1.26 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

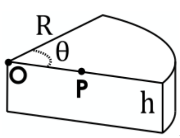
A. 1.892E+01 cm^3/s

B. 2.081E+01 cm^3/s

C. 2.289E+01 cm^3/s

D. 2.518E+01 cm^3/s

E. 2.770E+01 cm^3/s

11. 

A cylinder of height 1.34 cm and radius 2.47 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 1.23 cm from point O and moves at a speed of 6.23 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

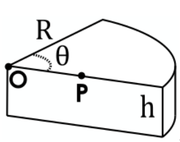
A. 1.414E+01 cm^3/s

B. 1.556E+01 cm^3/s

C. 1.711E+01 cm^3/s

D. 1.882E+01 cm^3/s

E. 2.070E+01 cm^3/s

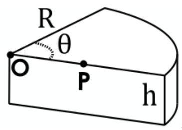
12. 

A cylinder of height 1.68 cm and radius 3.44 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 1.28 cm from point O and moves at a speed of 1.41 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

A. 7.479E+00 cm^3/s

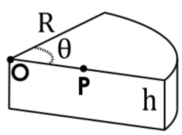
The next page might contain more answer choices for this question

B. 8.227E+00 cm^3/s
C. 9.049E+00 cm^3/s
D. 9.954E+00 cm^3/s
E. 1.095E+01 cm^3/s

13. 

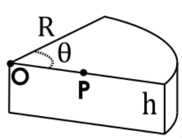
A cylinder of height 1.19 cm and radius 4.51 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 2.7 cm from point O and moves at a speed of 8.35 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

A. 3.093E+01 cm^3/s
B. 3.403E+01 cm^3/s
C. 3.743E+01 cm^3/s
D. 4.117E+01 cm^3/s
E. 4.529E+01 cm^3/s

14. 

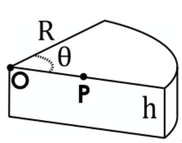
A cylinder of height 1.68 cm and radius 2.74 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 1.78 cm from point O and moves at a speed of 3.44 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

A. 8.324E+00 cm^3/s
B. 9.157E+00 cm^3/s
C. 1.007E+01 cm^3/s
D. 1.108E+01 cm^3/s
E. 1.219E+01 cm^3/s

15. 

A cylinder of height 3.82 cm and radius 5.6 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 2.89 cm from point O and moves at a speed of 4.25 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

A. 7.280E+01 cm^3/s
B. 8.008E+01 cm^3/s
C. 8.808E+01 cm^3/s
D. 9.689E+01 cm^3/s
E. 1.066E+02 cm^3/s

16. 

A cylinder of height 2.91 cm and radius 8.33 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 3.7 cm from point O and moves at a speed of 9.14 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

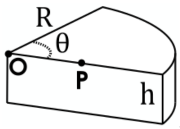
A. 2.061E+02 cm^3/s

B. 2.267E+02 cm^3/s

C. 2.494E+02 cm^3/s

D. 2.743E+02 cm^3/s

E. 3.018E+02 cm^3/s

17. 

A cylinder of height 1.48 cm and radius 7.74 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 3.76 cm from point O and moves at a speed of 3.09 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

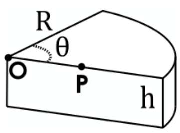
A. 3.312E+01 cm^3/s

B. 3.643E+01 cm^3/s

C. 4.008E+01 cm^3/s

D. 4.408E+01 cm^3/s

E. 4.849E+01 cm^3/s

18. 

A cylinder of height 2.25 cm and radius 6.77 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 3.27 cm from point O and moves at a speed of 4.07 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

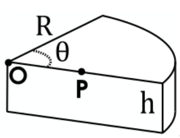
A. 5.834E+01 cm^3/s

B. 6.418E+01 cm^3/s

C. 7.059E+01 cm^3/s

D. 7.765E+01 cm^3/s

E. 8.542E+01 cm^3/s

19. 

A cylinder of height 1.69 cm and radius 4.56 cm is cut into a wedge as shown. Now imagine that the volume grows as θ increases while the radius R and height h remains constant. What is the volume's rate of change if point P is 2.33 cm from point O and moves at a speed of 4.9 cm/s? Assume that the wedge grows in such a way as the front face moves by rotating around the axis (that contains point O.)

A. 3.054E+01 cm^3/s

B. 3.359E+01 cm^3/s

C. 3.695E+01 cm^3/s

D. 4.065E+01 cm^3/s

E. 4.471E+01 cm^3/s

The next page might contain more answer choices for this question

d_cp2.13 Q6

1. A recangular coil with an area of 0.371 m^2 and 20 turns is placed in a uniform magnetic field of 2.51 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 3.060E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 88 s?

   A. 5.694E+04 V

   B. 6.263E+04 V

   C. 6.889E+04 V

   D. 7.578E+04 V

   E. 8.336E+04 V

2. A recangular coil with an area of 0.479 m^2 and 11 turns is placed in a uniform magnetic field of 1.34 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 4.200E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 38 s?

   A. 2.148E+04 V

   B. 2.363E+04 V

   C. 2.599E+04 V

   D. 2.859E+04 V

   E. 3.145E+04 V

3. A recangular coil with an area of 0.39 m^2 and 16 turns is placed in a uniform magnetic field of 3.07 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 3.320E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 44 s?

   A. 3.792E+04 V

   B. 4.172E+04 V

   C. 4.589E+04 V

   D. 5.048E+04 V

   E. 5.552E+04 V

4. A recangular coil with an area of 0.137 m^2 and 18 turns is placed in a uniform magnetic field of 1.18 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 4.120E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 47 s?

   A. 1.086E+04 V

   B. 1.195E+04 V

   C. 1.314E+04 V

   D. 1.446E+04 V

   E. 1.590E+04 V

5. A recangular coil with an area of 0.219 m^2 and 14 turns is placed in a uniform magnetic field of 3.71 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 7.540E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 15 s?

The next page might contain more answer choices for this question

A. 2.959E+04 V

B. 3.255E+04 V

C. 3.581E+04 V

D. 3.939E+04 V

E. 4.332E+04 V

6. A recangular coil with an area of 0.449 m^2 and 20 turns is placed in a uniform magnetic field of 3.58 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 4.990E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 66 s?

A. 7.734E+04 V

B. 8.507E+04 V

C. 9.358E+04 V

D. 1.029E+05 V

E. 1.132E+05 V

7. A recangular coil with an area of 0.157 m^2 and 17 turns is placed in a uniform magnetic field of 3.64 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 5.890E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 9 s?

A. 4.464E+04 V

B. 4.911E+04 V

C. 5.402E+04 V

D. 5.942E+04 V

E. 6.536E+04 V

8. A recangular coil with an area of 0.315 m^2 and 20 turns is placed in a uniform magnetic field of 3.45 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 9.480E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 26 s?

A. 1.342E+04 V

B. 1.476E+04 V

C. 1.624E+04 V

D. 1.786E+04 V

E. 1.965E+04 V

9. A recangular coil with an area of 0.23 m^2 and 20 turns is placed in a uniform magnetic field of 1.66 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 1.380E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 4 s?

A. 2.317E+03 V

B. 2.549E+03 V

C. 2.804E+03 V

D. 3.084E+03 V

The next page might contain more answer choices for this question

E. 3.393E+03 V

10. A recangular coil with an area of $0.178\,m^2$ and 17 turns is placed in a uniform magnetic field of 2.62 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of $4.380E+03\,s^{-1}$. What is the "magnitude" (absolute value) of the induced emf at t = 45 s?

A. 1.068E+04 V

B. 1.175E+04 V

C. 1.293E+04 V

D. 1.422E+04 V

E. 1.564E+04 V

11. A recangular coil with an area of $0.412\,m^2$ and 18 turns is placed in a uniform magnetic field of 3.81 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of $2.120E+03\,s^{-1}$. What is the "magnitude" (absolute value) of the induced emf at t = 79 s?

A. 4.465E+04 V

B. 4.912E+04 V

C. 5.403E+04 V

D. 5.943E+04 V

E. 6.538E+04 V

12. A recangular coil with an area of $0.815\,m^2$ and 11 turns is placed in a uniform magnetic field of 3.62 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of $4.700E+03\,s^{-1}$. What is the "magnitude" (absolute value) of the induced emf at t = 59 s?

A. 1.197E+05 V

B. 1.316E+05 V

C. 1.448E+05 V

D. 1.593E+05 V

E. 1.752E+05 V

13. A recangular coil with an area of $0.432\,m^2$ and 16 turns is placed in a uniform magnetic field of 3.7 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of $5.020E+03\,s^{-1}$. What is the "magnitude" (absolute value) of the induced emf at t = 55 s?

A. 1.055E+05 V

B. 1.161E+05 V

C. 1.277E+05 V

D. 1.405E+05 V

E. 1.545E+05 V

14. A recangular coil with an area of $0.446\,m^2$ and 13 turns is placed in a uniform magnetic field of 3.17 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of $5.060E+03\,s^{-1}$. What is the "magnitude" (absolute value) of the induced emf at t = 54 s?

The next page might contain more answer choices for this question

A. 1.957E+03 V

B. 2.153E+03 V

C. 2.368E+03 V

D. 2.605E+03 V

E. 2.865E+03 V

15. A recangular coil with an area of 0.897 m^2 and 8 turns is placed in a uniform magnetic field of 2.83 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 8.740E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 3 s?

A. 4.695E+04 V

B. 5.165E+04 V

C. 5.681E+04 V

D. 6.249E+04 V

E. 6.874E+04 V

16. A recangular coil with an area of 0.45 m^2 and 18 turns is placed in a uniform magnetic field of 2.68 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 3.730E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 87 s?

A. 4.861E+04 V

B. 5.347E+04 V

C. 5.882E+04 V

D. 6.470E+04 V

E. 7.117E+04 V

17. A recangular coil with an area of 0.182 m^2 and 5 turns is placed in a uniform magnetic field of 2.74 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 2.390E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 79 s?

A. 1.656E+03 V

B. 1.821E+03 V

C. 2.003E+03 V

D. 2.204E+03 V

E. 2.424E+03 V

18. A recangular coil with an area of 0.291 m^2 and 6 turns is placed in a uniform magnetic field of 2.63 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 7.130E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 35 s?

A. 1.490E+04 V

B. 1.639E+04 V

C. 1.803E+04 V

D. 1.983E+04 V

The next page might contain more answer choices for this question

E. 2.181E+04 V

19. A recangular coil with an area of 0.587 m^2 and 13 turns is placed in a uniform magnetic field of 1.62 T. The coil is rotated about an axis that is perpendicular to this field. At time t=0 the normal to the coil is oriented parallel to the magnetic field and the coil is rotating with a constant angular frequency of 3.800E+03 s^{-1}. What is the "magnitude" (absolute value) of the induced emf at t = 93 s?

   A. 2.512E+04 V

   B. 2.763E+04 V

   C. 3.039E+04 V

   D. 3.343E+04 V

   E. 3.677E+04 V

d_cp2.13 Q7

1. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =3.26 T and ω =9.250E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.385 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 6.029E+04 V

   B. 6.631E+04 V

   C. 7.295E+04 V

   D. 8.024E+04 V

   E. 8.826E+04 V

2. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =3.29 T and ω =4.720E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.658 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 6.420E+04 V

   B. 7.062E+04 V

   C. 7.768E+04 V

   D. 8.545E+04 V

   E. 9.400E+04 V

3. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =1.89 T and ω =1.710E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.476 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 7.262E+03 V

   B. 7.988E+03 V

   C. 8.787E+03 V

   D. 9.666E+03 V

   E. 1.063E+04 V

The next page might contain more answer choices for this question

4. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =3.71 T and ω =6.600E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.31 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 4.769E+04 V

   B. 5.246E+04 V

   C. 5.771E+04 V

   D. 6.348E+04 V

   E. 6.983E+04 V

5. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =2.18 T and ω =4.840E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.387 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 1.928E+04 V

   B. 2.120E+04 V

   C. 2.332E+04 V

   D. 2.566E+04 V

   E. 2.822E+04 V

6. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =3.7 T and ω =8.100E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.827 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 1.416E+05 V

   B. 1.557E+05 V

   C. 1.713E+05 V

   D. 1.884E+05 V

   E. 2.073E+05 V

7. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =2.34 T and ω =2.670E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.646 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 1.905E+04 V

   B. 2.096E+04 V

   C. 2.305E+04 V

   D. 2.536E+04 V

   E. 2.790E+04 V

8. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =3.84 T and ω =4.410E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.379 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 3.333E+04 V

The next page might contain more answer choices for this question

B. 3.666E+04 V

C. 4.033E+04 V

D. 4.436E+04 V

E. 4.879E+04 V

9. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =3.54 T and ω =1.860E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.642 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

A. 2.415E+04 V

B. 2.656E+04 V

C. 2.922E+04 V

D. 3.214E+04 V

E. 3.535E+04 V

10. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =2.25 T and ω =8.280E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.227 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

A. 2.657E+04 V

B. 2.923E+04 V

C. 3.215E+04 V

D. 3.537E+04 V

E. 3.890E+04 V

11. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =3.75 T and ω =1.740E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.417 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

A. 1.168E+04 V

B. 1.284E+04 V

C. 1.413E+04 V

D. 1.554E+04 V

E. 1.710E+04 V

12. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =3.75 T and ω =9.800E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.22 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

A. 4.198E+04 V

B. 4.618E+04 V

C. 5.080E+04 V

D. 5.588E+04 V

E. 6.147E+04 V

The next page might contain more answer choices for this question

13. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin\omega t$ where B_0 =3.79 T and ω =7.280E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.668 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 7.910E+04 V
   B. 8.701E+04 V
   C. 9.571E+04 V
   D. 1.053E+05 V
   E. 1.158E+05 V

14. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin\omega t$ where B_0 =1.8 T and ω =1.530E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.519 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 7.422E+03 V
   B. 8.164E+03 V
   C. 8.981E+03 V
   D. 9.879E+03 V
   E. 1.087E+04 V

15. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin\omega t$ where B_0 =1.97 T and ω =5.410E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.244 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 1.485E+04 V
   B. 1.634E+04 V
   C. 1.797E+04 V
   D. 1.977E+04 V
   E. 2.175E+04 V

16. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin\omega t$ where B_0 =3.31 T and ω =8.360E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.547 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 7.145E+04 V
   B. 7.860E+04 V
   C. 8.646E+04 V
   D. 9.510E+04 V
   E. 1.046E+05 V

17. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin\omega t$ where B_0 =3.58 T and ω =4.310E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.879 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

   A. 7.043E+04 V

The next page might contain more answer choices for this question

B. 7.747E+04 V

C. 8.522E+04 V

D. 9.374E+04 V

E. 1.031E+05 V

18. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =3.11 T and ω =1.150E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.171 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

    A. 2.887E+03 V

    B. 3.176E+03 V

    C. 3.493E+03 V

    D. 3.843E+03 V

    E. 4.227E+03 V

19. A spatially uniform magnetic points in the z-direction and oscilates with time as $\vec{B}(t) = B_0 \sin \omega t$ where B_0 =1.71 T and ω =4.780E+03 s^{-1}. Suppose the electric field is always zero at point $\mathcal{O}$, and consider a circle of radius 0.294 m that is centered at that point and oriented in a plane perpendicular to the magnetic field. Evaluate the maximum value of the line integral $\oint \vec{E} \cdot d\vec{s}$ around the circle.

    A. 1.510E+04 V

    B. 1.661E+04 V

    C. 1.827E+04 V

    D. 2.010E+04 V

    E. 2.211E+04 V

d_cp2.13 Q8

1. A long solenoid has a radius of 0.442 m and 63 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =7 A and α =22 s^{-1}.What is the induced electric fied at a distance 1.94 m from the axis at time t=0.0331 s ?

    A. 2.964E-04 V/m

    B. 3.260E-04 V/m

    C. 3.586E-04 V/m

    D. 3.945E-04 V/m

    E. 4.339E-04 V/m

2. A long solenoid has a radius of 0.521 m and 46 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =1 A and α =30 s^{-1}.What is the induced electric fied at a distance 2.42 m from the axis at time t=0.0449 s ?

    A. 2.529E-05 V/m

    B. 2.782E-05 V/m

    C. 3.060E-05 V/m

    D. 3.366E-05 V/m

    E. 3.703E-05 V/m

The next page might contain more answer choices for this question

3. A long solenoid has a radius of 0.8 m and 77 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =5 A and α =28 s^{-1}.What is the induced electric fied at a distance 2.2 m from the axis at time t=0.0757 s ?

   A. 1.616E-04 V/m
   B. 1.778E-04 V/m
   C. 1.955E-04 V/m
   D. 2.151E-04 V/m
   E. 2.366E-04 V/m

4. A long solenoid has a radius of 0.413 m and 17 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =1 A and α =21 s^{-1}.What is the induced electric fied at a distance 2.25 m from the axis at time t=0.0689 s ?

   A. 3.006E-06 V/m
   B. 3.307E-06 V/m
   C. 3.637E-06 V/m
   D. 4.001E-06 V/m
   E. 4.401E-06 V/m

5. A long solenoid has a radius of 0.644 m and 20 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =7 A and α =27 s^{-1}.What is the induced electric fied at a distance 2.84 m from the axis at time t=0.083 s ?

   A. 3.353E-05 V/m
   B. 3.689E-05 V/m
   C. 4.058E-05 V/m
   D. 4.463E-05 V/m
   E. 4.910E-05 V/m

6. A long solenoid has a radius of 0.45 m and 35 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =1 A and α =28 s^{-1}.What is the induced electric fied at a distance 2.35 m from the axis at time t=0.0709 s ?

   A. 5.475E-06 V/m
   B. 6.023E-06 V/m
   C. 6.625E-06 V/m
   D. 7.288E-06 V/m
   E. 8.017E-06 V/m

7. A long solenoid has a radius of 0.716 m and 96 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =9 A and α =23 s^{-1}.What is the induced electric fied at a distance 2.67 m from the axis at time t=0.0226 s ?

   A. 1.426E-03 V/m
   B. 1.568E-03 V/m
   C. 1.725E-03 V/m
   D. 1.897E-03 V/m
   E. 2.087E-03 V/m

The next page might contain more answer choices for this question

8. A long solenoid has a radius of 0.806 m and 41 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =2 A and α =21 s^{-1}.What is the induced electric fied at a distance 2.67 m from the axis at time t=0.0701 s ?

   A. 6.040E-05 V/m
   B. 6.644E-05 V/m
   C. 7.309E-05 V/m
   D. 8.039E-05 V/m
   E. 8.843E-05 V/m

9. A long solenoid has a radius of 0.786 m and 60 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =2 A and α =21 s^{-1}.What is the induced electric fied at a distance 1.98 m from the axis at time t=0.049 s ?

   A. 1.605E-04 V/m
   B. 1.766E-04 V/m
   C. 1.942E-04 V/m
   D. 2.136E-04 V/m
   E. 2.350E-04 V/m

10. A long solenoid has a radius of 0.578 m and 34 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =7 A and α =27 s^{-1}.What is the induced electric fied at a distance 2.63 m from the axis at time t=0.0462 s ?

   A. 1.473E-04 V/m
   B. 1.621E-04 V/m
   C. 1.783E-04 V/m
   D. 1.961E-04 V/m
   E. 2.157E-04 V/m

11. A long solenoid has a radius of 0.777 m and 67 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =6 A and α =20 s^{-1}.What is the induced electric fied at a distance 2.39 m from the axis at time t=0.0399 s ?

   A. 3.924E-04 V/m
   B. 4.317E-04 V/m
   C. 4.748E-04 V/m
   D. 5.223E-04 V/m
   E. 5.745E-04 V/m

12. A long solenoid has a radius of 0.434 m and 41 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =9 A and α =28 s^{-1}.What is the induced electric fied at a distance 2.28 m from the axis at time t=0.0392 s ?

   A. 1.479E-04 V/m
   B. 1.627E-04 V/m
   C. 1.789E-04 V/m
   D. 1.968E-04 V/m
   E. 2.165E-04 V/m

The next page might contain more answer choices for this question

13. A long solenoid has a radius of 0.845 m and 65 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =6 A and α =30 s^{-1}.What is the induced electric fied at a distance 2.63 m from the axis at time t=0.0561 s ?

   A. 3.371E-04 V/m

   B. 3.709E-04 V/m

   C. 4.079E-04 V/m

   D. 4.487E-04 V/m

   E. 4.936E-04 V/m

14. A long solenoid has a radius of 0.583 m and 38 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =6 A and α =24 s^{-1}.What is the induced electric fied at a distance 2.09 m from the axis at time t=0.0388 s ?

   A. 1.655E-04 V/m

   B. 1.821E-04 V/m

   C. 2.003E-04 V/m

   D. 2.203E-04 V/m

   E. 2.424E-04 V/m

15. A long solenoid has a radius of 0.394 m and 13 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =9 A and α =28 s^{-1}.What is the induced electric fied at a distance 1.8 m from the axis at time t=0.0757 s ?

   A. 2.132E-05 V/m

   B. 2.345E-05 V/m

   C. 2.579E-05 V/m

   D. 2.837E-05 V/m

   E. 3.121E-05 V/m

16. A long solenoid has a radius of 0.887 m and 43 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =7 A and α =28 s^{-1}.What is the induced electric fied at a distance 2.66 m from the axis at time t=0.0332 s ?

   A. 6.182E-04 V/m

   B. 6.801E-04 V/m

   C. 7.481E-04 V/m

   D. 8.229E-04 V/m

   E. 9.052E-04 V/m

17. A long solenoid has a radius of 0.624 m and 84 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =6 A and α =20 s^{-1}.What is the induced electric fied at a distance 1.78 m from the axis at time t=0.0579 s ?

   A. 3.597E-04 V/m

   B. 3.956E-04 V/m

   C. 4.352E-04 V/m

   D. 4.787E-04 V/m

   E. 5.266E-04 V/m

18. A long solenoid has a radius of 0.306 m and 98 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =6 A and α =22 s^{-1}.What is the induced electric fied at a distance 2.52 m from the axis at time t=0.0246 s ?
    - A. 1.598E-04 V/m
    - **B. 1.758E-04 V/m**
    - C. 1.934E-04 V/m
    - D. 2.127E-04 V/m
    - E. 2.340E-04 V/m
19. A long solenoid has a radius of 0.757 m and 90 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =7 A and α =30 s^{-1}.What is the induced electric fied at a distance 2.08 m from the axis at time t=0.0442 s ?
    - A. 6.527E-04 V/m
    - B. 7.180E-04 V/m
    - C. 7.898E-04 V/m
    - **D. 8.688E-04 V/m**
    - E. 9.556E-04 V/m

d_cp2.13 Q9

1. A long solenoid has a radius of 0.508 m and 90 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =7 A and α =25 s^{-1}.What is the induced electric fied at a distance 0.145 m from the axis at time t=0.0643 s ?
    - A. 2.614E-04 V/m
    - **B. 2.875E-04 V/m**
    - C. 3.163E-04 V/m
    - D. 3.479E-04 V/m
    - E. 3.827E-04 V/m
2. A long solenoid has a radius of 0.732 m and 55 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =9 A and α =25 s^{-1}.What is the induced electric fied at a distance 0.203 m from the axis at time t=0.0448 s ?
    - **A. 5.150E-04 V/m**
    - B. 5.665E-04 V/m
    - C. 6.232E-04 V/m
    - D. 6.855E-04 V/m
    - E. 7.540E-04 V/m
3. A long solenoid has a radius of 0.682 m and 38 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =2 A and α =27 s^{-1}.What is the induced electric fied at a distance 0.16 m from the axis at time t=0.0736 s ?
    - A. 2.571E-05 V/m
    - **B. 2.828E-05 V/m**
    - C. 3.111E-05 V/m

The next page might contain more answer choices for this question

D. 3.422E-05 V/m

E. 3.764E-05 V/m

4. A long solenoid has a radius of 0.887 m and 45 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =3 A and α =25 s^{-1}.What is the induced electric fied at a distance 0.169 m from the axis at time t=0.072 s ?

A. 4.896E-05 V/m

B. 5.385E-05 V/m

C. 5.924E-05 V/m

D. 6.516E-05 V/m

E. 7.168E-05 V/m

5. A long solenoid has a radius of 0.845 m and 78 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =3 A and α =20 s^{-1}.What is the induced electric fied at a distance 0.214 m from the axis at time t=0.0655 s ?

A. 1.160E-04 V/m

B. 1.276E-04 V/m

C. 1.403E-04 V/m

D. 1.544E-04 V/m

E. 1.698E-04 V/m

6. A long solenoid has a radius of 0.851 m and 12 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =3 A and α =30 s^{-1}.What is the induced electric fied at a distance 0.14 m from the axis at time t=0.0531 s ?

A. 1.319E-05 V/m

B. 1.451E-05 V/m

C. 1.596E-05 V/m

D. 1.756E-05 V/m

E. 1.932E-05 V/m

7. A long solenoid has a radius of 0.447 m and 85 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =7 A and α =23 s^{-1}.What is the induced electric fied at a distance 0.212 m from the axis at time t=0.0819 s ?

A. 1.893E-04 V/m

B. 2.082E-04 V/m

C. 2.290E-04 V/m

D. 2.519E-04 V/m

E. 2.771E-04 V/m

8. A long solenoid has a radius of 0.596 m and 19 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =5 A and α =29 s^{-1}.What is the induced electric fied at a distance 0.209 m from the axis at time t=0.0604 s ?

A. 6.277E-05 V/m

B. 6.904E-05 V/m

C. 7.595E-05 V/m

The next page might contain more answer choices for this question

D. 8.354E-05 V/m

E. 9.190E-05 V/m

9. A long solenoid has a radius of 0.645 m and 37 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =9 A and α =23 s^{-1}.What is the induced electric fied at a distance 0.189 m from the axis at time t=0.0698 s ?

A. 1.372E-04 V/m

B. 1.509E-04 V/m

C. 1.660E-04 V/m

D. 1.826E-04 V/m

E. 2.009E-04 V/m

10. A long solenoid has a radius of 0.857 m and 58 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =1 A and α =21 s^{-1}.What is the induced electric fied at a distance 0.144 m from the axis at time t=0.0898 s ?

A. 1.256E-05 V/m

B. 1.382E-05 V/m

C. 1.520E-05 V/m

D. 1.672E-05 V/m

E. 1.839E-05 V/m

11. A long solenoid has a radius of 0.436 m and 87 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =4 A and α =27 s^{-1}.What is the induced electric fied at a distance 0.153 m from the axis at time t=0.02 s ?

A. 4.785E-04 V/m

B. 5.264E-04 V/m

C. 5.790E-04 V/m

D. 6.369E-04 V/m

E. 7.006E-04 V/m

12. A long solenoid has a radius of 0.793 m and 45 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =2 A and α =29 s^{-1}.What is the induced electric fied at a distance 0.216 m from the axis at time t=0.0208 s ?

A. 1.456E-04 V/m

B. 1.601E-04 V/m

C. 1.762E-04 V/m

D. 1.938E-04 V/m

E. 2.132E-04 V/m

13. A long solenoid has a radius of 0.517 m and 23 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =1 A and α =30 s^{-1}.What is the induced electric fied at a distance 0.162 m from the axis at time t=0.0679 s ?

A. 6.256E-06 V/m

B. 6.882E-06 V/m

C. 7.570E-06 V/m

The next page might contain more answer choices for this question

D. 8.327E-06 V/m

E. 9.160E-06 V/m

14. A long solenoid has a radius of 0.861 m and 28 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =1 A and α =20 s^{-1}.What is the induced electric fied at a distance 0.106 m from the axis at time t=0.055 s ?

A. 1.026E-05 V/m

B. 1.129E-05 V/m

C. 1.242E-05 V/m

D. 1.366E-05 V/m

E. 1.502E-05 V/m

15. A long solenoid has a radius of 0.749 m and 62 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =9 A and α =25 s^{-1}.What is the induced electric fied at a distance 0.139 m from the axis at time t=0.071 s ?

A. 2.065E-04 V/m

B. 2.271E-04 V/m

C. 2.499E-04 V/m

D. 2.748E-04 V/m

E. 3.023E-04 V/m

16. A long solenoid has a radius of 0.591 m and 41 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =1 A and α =30 s^{-1}.What is the induced electric fied at a distance 0.234 m from the axis at time t=0.0208 s ?

A. 6.618E-05 V/m

B. 7.280E-05 V/m

C. 8.008E-05 V/m

D. 8.809E-05 V/m

E. 9.689E-05 V/m

17. A long solenoid has a radius of 0.603 m and 51 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =2 A and α =26 s^{-1}.What is the induced electric fied at a distance 0.105 m from the axis at time t=0.0659 s ?

A. 2.154E-05 V/m

B. 2.369E-05 V/m

C. 2.606E-05 V/m

D. 2.867E-05 V/m

E. 3.154E-05 V/m

18. A long solenoid has a radius of 0.613 m and 75 turns per meter; its current decreases with time according to $I_0e^{-\alpha t}$, where I_0 =2 A and α =22 s^{-1}.What is the induced electric fied at a distance 0.206 m from the axis at time t=0.0387 s ?

A. 1.370E-04 V/m

B. 1.507E-04 V/m

C. 1.657E-04 V/m

The next page might contain more answer choices for this question

D. 1.823E-04 V/m

E. 2.005E-04 V/m

19. A long solenoid has a radius of 0.442 m and 41 turns per meter; its current decreases with time according to $I_0 e^{-\alpha t}$, where I_0 =4 A and α =20 s^{-1}.What is the induced electric fied at a distance 0.2 m from the axis at time t=0.0833 s ?

A. 6.438E-05 V/m

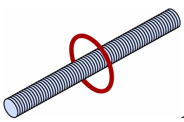
B. 7.082E-05 V/m

C. 7.790E-05 V/m

D. 8.569E-05 V/m

E. 9.426E-05 V/m

26 d_cp2.14

1.  A long solenoid has a length 0.75 meters, radius 3.1 cm, and 500 turns. It surrounds coil of radius 5.9 meters and 10turns. If the current in the solenoid is changing at a rate of 200 A/s, what is the emf induced in the surounding coil?[187]

A. 1.445E-02 V

B. 1.589E-02 V

C. 1.748E-02 V

D. 1.923E-02 V

E. 2.115E-02 V

2. An induced emf of 2.0V is measured across a coil of 50 closely wound turns while the current throuth it increases uniformly from 0.0 to 5.0A in 0.1s. What is the self-inductance of the coil?[188]

A. 3.306E-02 H

B. 3.636E-02 H

C. 4.000E-02 H

D. 4.400E-02 H

E. 4.840E-02 H

3. A washer has an inner diameter of 2.5 cm and an outer diamter of 4.5 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 3.5mm$, and $n = 2.7$. What is the volume of the washer?[189]

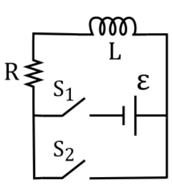
A. 6.191E-01 cm^3

B. 6.810E-01 cm^3

C. 7.491E-01 cm^3

D. 8.240E-01 cm^3

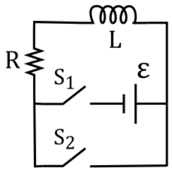
E. 9.065E-01 cm^3

4. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =2.0 s if ε= 2.0 V , R = 4.0 Ω , and L = 4.0 H?[190]

The next page might contain more answer choices for this question

A. 3.603E-01 V
B. 4.323E-01 V
C. 5.188E-01 V
D. 6.226E-01 V
E. 7.471E-01 V

5. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.0% of its maximum value if ε= 2.0 V , R = 4.0 Ω , and L = 4.0 H?[191]

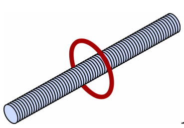
A. -1.730E+00 s
B. -1.903E+00 s
C. -2.093E+00 s
D. -2.303E+00 s
E. -2.533E+00 s

6. In an LC circuit, the self-inductance is 0.02 H and the capacitance is 8.000E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 1.200E-05 C. How long does it take for the capacitor to become completely discharged?[192]

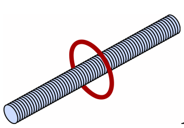
A. 6.283E-04 s
B. 6.912E-04 s
C. 7.603E-04 s
D. 8.363E-04 s
E. 9.199E-04 s

26.1 Renditions

d_cp2.14 Q1

1. 
A long solenoid has a length 0.714 meters, radius 4.95 cm, and 578 turns. It surrounds coil of radius 8.72 meters and 16turns. If the current in the solenoid is changing at a rate of 248 A/s, what is the emf induced in the surounding coil?

A. 6.667E-02 V
B. 7.334E-02 V
C. 8.067E-02 V
D. 8.874E-02 V
E. 9.762E-02 V

2. 
A long solenoid has a length 0.841 meters, radius 3.81 cm, and 516 turns. It surrounds coil of radius 9.2 meters and 11turns. If the current in the solenoid is changing at a rate of 190 A/s, what is the emf induced in the surounding coil?

The next page might contain more answer choices for this question

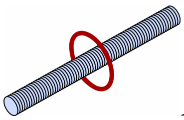
A. 1.735E-02 V

B. 1.908E-02 V

C. 2.099E-02 V

D. 2.309E-02 V

E. 2.540E-02 V

3.  A long solenoid has a length 0.605 meters, radius 4.26 cm, and 597 turns. It surrounds coil of radius 9.08 meters and 12turns. If the current in the solenoid is changing at a rate of 250 A/s, what is the emf induced in the surounding coil?

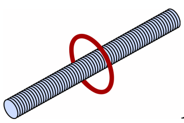
A. 4.551E-02 V

B. 5.006E-02 V

C. 5.507E-02 V

D. 6.057E-02 V

E. 6.663E-02 V

4.  A long solenoid has a length 0.822 meters, radius 4.37 cm, and 515 turns. It surrounds coil of radius 6.12 meters and 14turns. If the current in the solenoid is changing at a rate of 118 A/s, what is the emf induced in the surounding coil?

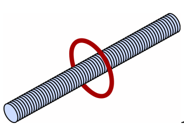
A. 2.229E-02 V

B. 2.451E-02 V

C. 2.697E-02 V

D. 2.966E-02 V

E. 3.263E-02 V

5.  A long solenoid has a length 0.777 meters, radius 3.45 cm, and 557 turns. It surrounds coil of radius 6.01 meters and 10turns. If the current in the solenoid is changing at a rate of 184 A/s, what is the emf induced in the surounding coil?

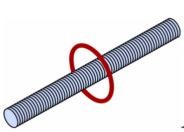
A. 1.463E-02 V

B. 1.609E-02 V

C. 1.770E-02 V

D. 1.947E-02 V

E. 2.142E-02 V

6.  A long solenoid has a length 0.567 meters, radius 3.35 cm, and 555 turns. It surrounds coil of radius 5.73 meters and 9turns. If the current in the solenoid is changing at a rate of 281 A/s, what is the emf induced in the surounding coil?

A. 3.446E-02 V

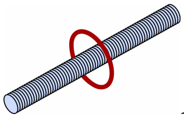
The next page might contain more answer choices for this question

B. 3.790E-02 V

C. 4.169E-02 V

D. 4.586E-02 V

E. 5.045E-02 V

7.  A long solenoid has a length 0.794 meters, radius 4.45 cm, and 568 turns. It surrounds coil of radius 6.81 meters and 9turns. If the current in the solenoid is changing at a rate of 246 A/s, what is the emf induced in the surounding coil?

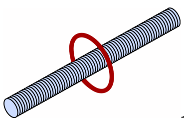
A. 3.890E-02 V

B. 4.279E-02 V

C. 4.707E-02 V

D. 5.177E-02 V

E. 5.695E-02 V

8.  A long solenoid has a length 0.864 meters, radius 3.37 cm, and 522 turns. It surrounds coil of radius 7.87 meters and 13turns. If the current in the solenoid is changing at a rate of 290 A/s, what is the emf induced in the surounding coil?

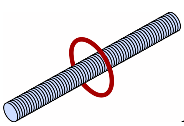
A. 2.917E-02 V

B. 3.208E-02 V

C. 3.529E-02 V

D. 3.882E-02 V

E. 4.270E-02 V

9.  A long solenoid has a length 0.974 meters, radius 4.72 cm, and 587 turns. It surrounds coil of radius 8.65 meters and 17turns. If the current in the solenoid is changing at a rate of 146 A/s, what is the emf induced in the surounding coil?

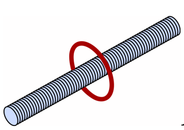
A. 2.823E-02 V

B. 3.105E-02 V

C. 3.416E-02 V

D. 3.757E-02 V

E. 4.133E-02 V

10.  A long solenoid has a length 0.896 meters, radius 4.28 cm, and 550 turns. It surrounds coil of radius 6.65 meters and 9turns. If the current in the solenoid is changing at a rate of 204 A/s, what is the emf induced in the surounding coil?

A. 2.328E-02 V

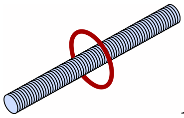
B. 2.560E-02 V

The next page might contain more answer choices for this question

C. 2.817E-02 V

D. 3.098E-02 V

E. 3.408E-02 V

11.  A long solenoid has a length 0.89 meters, radius 3.01 cm, and 505 turns. It surrounds coil of radius 8.65 meters and 18turns. If the current in the solenoid is changing at a rate of 279 A/s, what is the emf induced in the surounding coil?

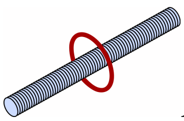
A. 2.646E-02 V

B. 2.911E-02 V

C. 3.202E-02 V

D. 3.522E-02 V

E. 3.874E-02 V

12.  A long solenoid has a length 0.784 meters, radius 3.57 cm, and 553 turns. It surrounds coil of radius 9.49 meters and 16turns. If the current in the solenoid is changing at a rate of 276 A/s, what is the emf induced in the surounding coil?

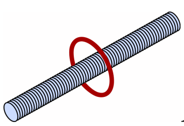
A. 4.476E-02 V

B. 4.924E-02 V

C. 5.416E-02 V

D. 5.958E-02 V

E. 6.553E-02 V

13.  A long solenoid has a length 0.923 meters, radius 4.08 cm, and 579 turns. It surrounds coil of radius 6.86 meters and 14turns. If the current in the solenoid is changing at a rate of 139 A/s, what is the emf induced in the surounding coil?

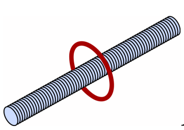
A. 1.894E-02 V

B. 2.083E-02 V

C. 2.291E-02 V

D. 2.520E-02 V

E. 2.772E-02 V

14.  A long solenoid has a length 0.634 meters, radius 3.04 cm, and 522 turns. It surrounds coil of radius 9.17 meters and 9turns. If the current in the solenoid is changing at a rate of 283 A/s, what is the emf induced in the surounding coil?

A. 1.986E-02 V

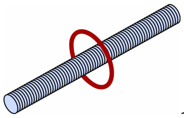
B. 2.185E-02 V

C. 2.404E-02 V

The next page might contain more answer choices for this question

D. 2.644E-02 V

E. 2.908E-02 V

15.  A long solenoid has a length 0.559 meters, radius 4.6 cm, and 515 turns. It surrounds coil of radius 9.72 meters and 17turns. If the current in the solenoid is changing at a rate of 189 A/s, what is the emf induced in the surounding coil?

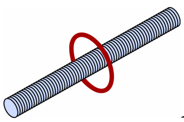
A. 7.062E-02 V

B. 7.768E-02 V

C. 8.545E-02 V

D. 9.400E-02 V

E. 1.034E-01 V

16.  A long solenoid has a length 0.759 meters, radius 4.51 cm, and 542 turns. It surrounds coil of radius 9.59 meters and 13turns. If the current in the solenoid is changing at a rate of 272 A/s, what is the emf induced in the surounding coil?

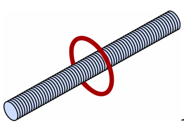
A. 5.791E-02 V

B. 6.370E-02 V

C. 7.007E-02 V

D. 7.708E-02 V

E. 8.478E-02 V

17.  A long solenoid has a length 0.703 meters, radius 4.03 cm, and 542 turns. It surrounds coil of radius 6.58 meters and 9turns. If the current in the solenoid is changing at a rate of 208 A/s, what is the emf induced in the surounding coil?

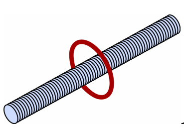
A. 2.643E-02 V

B. 2.907E-02 V

C. 3.198E-02 V

D. 3.518E-02 V

E. 3.869E-02 V

18.  A long solenoid has a length 0.805 meters, radius 4.24 cm, and 536 turns. It surrounds coil of radius 8.5 meters and 16turns. If the current in the solenoid is changing at a rate of 278 A/s, what is the emf induced in the surounding coil?

A. 6.604E-02 V

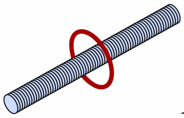
B. 7.264E-02 V

C. 7.990E-02 V

D. 8.789E-02 V

The next page might contain more answer choices for this question

E. 9.668E-02 V

19.  A long solenoid has a length 0.667 meters, radius 4.41 cm, and 517 turns. It surrounds coil of radius 9.18 meters and 9turns. If the current in the solenoid is changing at a rate of 296 A/s, what is the emf induced in the surounding coil?

A. 4.116E-02 V

B. 4.528E-02 V

C. 4.981E-02 V

D. 5.479E-02 V

E. 6.027E-02 V

d_cp2.14 Q2

1. An induced emf of 4.82V is measured across a coil of 73 closely wound turns while the current throuth it increases uniformly from 0.0 to 4.61A in 0.934s. What is the self-inductance of the coil?

A. 7.337E-01 H

B. 8.071E-01 H

C. 8.878E-01 H

D. 9.765E-01 H

E. 1.074E+00 H

2. An induced emf of 5.33V is measured across a coil of 77 closely wound turns while the current throuth it increases uniformly from 0.0 to 6.57A in 0.648s. What is the self-inductance of the coil?

A. 4.779E-01 H

B. 5.257E-01 H

C. 5.783E-01 H

D. 6.361E-01 H

E. 6.997E-01 H

3. An induced emf of 1.7V is measured across a coil of 81 closely wound turns while the current throuth it increases uniformly from 0.0 to 7.07A in 0.174s. What is the self-inductance of the coil?

A. 3.458E-02 H

B. 3.804E-02 H

C. 4.184E-02 H

D. 4.602E-02 H

E. 5.062E-02 H

4. An induced emf of 5.08V is measured across a coil of 78 closely wound turns while the current throuth it increases uniformly from 0.0 to 5.07A in 0.681s. What is the self-inductance of the coil?

A. 4.660E-01 H

B. 5.127E-01 H

C. 5.639E-01 H

D. 6.203E-01 H

The next page might contain more answer choices for this question

E. 6.823E-01 H

5. An induced emf of 8.76V is measured across a coil of 62 closely wound turns while the current throuth it increases uniformly from 0.0 to 5.59A in 0.611s. What is the self-inductance of the coil?

   A. 7.913E-01 H

   B. 8.704E-01 H

   C. 9.575E-01 H

   D. 1.053E+00 H

   E. 1.159E+00 H

6. An induced emf of 4.02V is measured across a coil of 85 closely wound turns while the current throuth it increases uniformly from 0.0 to 3.53A in 0.438s. What is the self-inductance of the coil?

   A. 4.535E-01 H

   B. 4.988E-01 H

   C. 5.487E-01 H

   D. 6.035E-01 H

   E. 6.639E-01 H

7. An induced emf of 6.75V is measured across a coil of 79 closely wound turns while the current throuth it increases uniformly from 0.0 to 7.76A in 0.115s. What is the self-inductance of the coil?

   A. 9.094E-02 H

   B. 1.000E-01 H

   C. 1.100E-01 H

   D. 1.210E-01 H

   E. 1.331E-01 H

8. An induced emf of 1.92V is measured across a coil of 74 closely wound turns while the current throuth it increases uniformly from 0.0 to 6.38A in 0.69s. What is the self-inductance of the coil?

   A. 1.560E-01 H

   B. 1.716E-01 H

   C. 1.888E-01 H

   D. 2.076E-01 H

   E. 2.284E-01 H

9. An induced emf of 5.4V is measured across a coil of 95 closely wound turns while the current throuth it increases uniformly from 0.0 to 7.03A in 0.713s. What is the self-inductance of the coil?

   A. 5.477E-01 H

   B. 6.024E-01 H

   C. 6.627E-01 H

   D. 7.290E-01 H

   E. 8.019E-01 H

10. An induced emf of 6.78V is measured across a coil of 58 closely wound turns while the current throuth it increases uniformly from 0.0 to 3.98A in 0.726s. What is the self-inductance of the coil?

    A. 1.022E+00 H

The next page might contain more answer choices for this question

B. 1.124E+00 H

C. 1.237E+00 H

D. 1.360E+00 H

E. 1.496E+00 H

11. An induced emf of 4.7V is measured across a coil of 52 closely wound turns while the current throuth it increases uniformly from 0.0 to 3.08A in 0.961s. What is the self-inductance of the coil?

A. 1.102E+00 H

B. 1.212E+00 H

C. 1.333E+00 H

D. 1.466E+00 H

E. 1.613E+00 H

12. An induced emf of 7.87V is measured across a coil of 66 closely wound turns while the current throuth it increases uniformly from 0.0 to 7.05A in 0.781s. What is the self-inductance of the coil?

A. 7.926E-01 H

B. 8.718E-01 H

C. 9.590E-01 H

D. 1.055E+00 H

E. 1.160E+00 H

13. An induced emf of 6.29V is measured across a coil of 85 closely wound turns while the current throuth it increases uniformly from 0.0 to 2.15A in 0.913s. What is the self-inductance of the coil?

A. 2.428E+00 H

B. 2.671E+00 H

C. 2.938E+00 H

D. 3.232E+00 H

E. 3.555E+00 H

14. An induced emf of 4.13V is measured across a coil of 70 closely wound turns while the current throuth it increases uniformly from 0.0 to 2.63A in 0.133s. What is the self-inductance of the coil?

A. 1.726E-01 H

B. 1.899E-01 H

C. 2.089E-01 H

D. 2.297E-01 H

E. 2.527E-01 H

15. An induced emf of 7.48V is measured across a coil of 95 closely wound turns while the current throuth it increases uniformly from 0.0 to 5.33A in 0.304s. What is the self-inductance of the coil?

A. 2.914E-01 H

B. 3.205E-01 H

C. 3.526E-01 H

D. 3.878E-01 H

E. 4.266E-01 H

The next page might contain more answer choices for this question

16. An induced emf of 3.78V is measured across a coil of 99 closely wound turns while the current throuth it increases uniformly from 0.0 to 6.36A in 0.821s. What is the self-inductance of the coil?
    - A. 4.033E-01 H
    - B. 4.436E-01 H
    - **C. 4.880E-01 H**
    - D. 5.367E-01 H
    - E. 5.904E-01 H

17. An induced emf of 2.9V is measured across a coil of 51 closely wound turns while the current throuth it increases uniformly from 0.0 to 6.89A in 0.806s. What is the self-inductance of the coil?
    - A. 2.549E-01 H
    - B. 2.804E-01 H
    - C. 3.084E-01 H
    - **D. 3.392E-01 H**
    - E. 3.732E-01 H

18. An induced emf of 7.94V is measured across a coil of 94 closely wound turns while the current throuth it increases uniformly from 0.0 to 5.65A in 0.478s. What is the self-inductance of the coil?
    - A. 5.047E-01 H
    - B. 5.552E-01 H
    - C. 6.107E-01 H
    - **D. 6.717E-01 H**
    - E. 7.389E-01 H

19. An induced emf of 1.86V is measured across a coil of 59 closely wound turns while the current throuth it increases uniformly from 0.0 to 2.58A in 0.89s. What is the self-inductance of the coil?
    - A. 4.821E-01 H
    - B. 5.303E-01 H
    - C. 5.833E-01 H
    - **D. 6.416E-01 H**
    - E. 7.058E-01 H

d_cp2.14 Q3

1. A washer has an inner diameter of 2.57 cm and an outer diamter of 4.14 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.33mm$, and $n = 2.42$. What is the volume of the washer?
    - A. 7.226E-01 cm^3
    - B. 7.949E-01 cm^3
    - C. 8.744E-01 cm^3
    - D. 9.618E-01 cm^3
    - **E. 1.058E+00 cm^3**

2. A washer has an inner diameter of 2.37 cm and an outer diamter of 4.84 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.67mm$, and $n = 2.56$. What is the volume of the washer?

The next page might contain more answer choices for this question

A. 1.570E+00 cm^3
B. 1.727E+00 cm^3
C. 1.900E+00 cm^3
D. 2.090E+00 cm^3
E. 2.299E+00 cm^3

3. A washer has an inner diameter of 2.3 cm and an outer diamter of 4.44 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.31mm$, and $n = 2.66$. What is the volume of the washer?
   A. 1.089E+00 cm^3
   B. 1.198E+00 cm^3
   C. 1.318E+00 cm^3
   D. 1.449E+00 cm^3
   E. 1.594E+00 cm^3

4. A washer has an inner diameter of 2.62 cm and an outer diamter of 4.79 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.08mm$, and $n = 2.68$. What is the volume of the washer?
   A. 1.056E+00 cm^3
   B. 1.161E+00 cm^3
   C. 1.278E+00 cm^3
   D. 1.405E+00 cm^3
   E. 1.546E+00 cm^3

5. A washer has an inner diameter of 2.38 cm and an outer diamter of 4.83 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 3.92mm$, and $n = 2.68$. What is the volume of the washer?
   A. 1.118E+00 cm^3
   B. 1.229E+00 cm^3
   C. 1.352E+00 cm^3
   D. 1.487E+00 cm^3
   E. 1.636E+00 cm^3

6. A washer has an inner diameter of 2.36 cm and an outer diamter of 4.5 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 3.28mm$, and $n = 2.4$. What is the volume of the washer?
   A. 1.097E+00 cm^3
   B. 1.207E+00 cm^3
   C. 1.328E+00 cm^3
   D. 1.460E+00 cm^3
   E. 1.606E+00 cm^3

7. A washer has an inner diameter of 2.2 cm and an outer diamter of 4.11 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 3.23mm$, and $n = 2.74$. What is the volume of the washer?
   A. 7.110E-01 cm^3
   B. 7.821E-01 cm^3
   C. 8.603E-01 cm^3
   D. 9.463E-01 cm^3

The next page might contain more answer choices for this question

E. 1.041E+00 cm^3

8. A washer has an inner diameter of 2.23 cm and an outer diamter of 4.85 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 3.7mm$, and $n = 2.76$. What is the volume of the washer?

   A. 1.038E+00 cm^3

   B. 1.142E+00 cm^3

   C. 1.256E+00 cm^3

   D. 1.381E+00 cm^3

   E. 1.520E+00 cm^3

9. A washer has an inner diameter of 2.6 cm and an outer diamter of 4.17 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.38mm$, and $n = 2.62$. What is the volume of the washer?

   A. 7.196E-01 cm^3

   B. 7.916E-01 cm^3

   C. 8.707E-01 cm^3

   D. 9.578E-01 cm^3

   E. 1.054E+00 cm^3

10. A washer has an inner diameter of 2.16 cm and an outer diamter of 4.82 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.22mm$, and $n = 2.8$. What is the volume of the washer?

    A. 1.342E+00 cm^3

    B. 1.477E+00 cm^3

    C. 1.624E+00 cm^3

    D. 1.787E+00 cm^3

    E. 1.965E+00 cm^3

11. A washer has an inner diameter of 2.12 cm and an outer diamter of 4.47 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.7mm$, and $n = 2.72$. What is the volume of the washer?

    A. 1.228E+00 cm^3

    B. 1.351E+00 cm^3

    C. 1.486E+00 cm^3

    D. 1.634E+00 cm^3

    E. 1.798E+00 cm^3

12. A washer has an inner diameter of 2.21 cm and an outer diamter of 4.5 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.29mm$, and $n = 2.62$. What is the volume of the washer?

    A. 1.325E+00 cm^3

    B. 1.457E+00 cm^3

    C. 1.603E+00 cm^3

    D. 1.763E+00 cm^3

    E. 1.939E+00 cm^3

13. A washer has an inner diameter of 2.23 cm and an outer diamter of 4.18 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.42mm$, and $n = 2.62$. What is the volume of the washer?

    A. 1.351E+00 cm^3

The next page might contain more answer choices for this question

B. 1.486E+00 cm^3

C. 1.635E+00 cm^3

D. 1.798E+00 cm^3

E. 1.978E+00 cm^3

14. A washer has an inner diameter of 2.75 cm and an outer diamter of 4.87 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.39mm$, and $n = 2.55$. What is the volume of the washer?

A. 7.754E-01 cm^3

B. 8.530E-01 cm^3

C. 9.383E-01 cm^3

D. 1.032E+00 cm^3

E. 1.135E+00 cm^3

15. A washer has an inner diameter of 2.46 cm and an outer diamter of 4.24 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.32mm$, and $n = 2.63$. What is the volume of the washer?

A. 7.499E-01 cm^3

B. 8.249E-01 cm^3

C. 9.074E-01 cm^3

D. 9.982E-01 cm^3

E. 1.098E+00 cm^3

16. A washer has an inner diameter of 2.74 cm and an outer diamter of 4.71 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 3.9mm$, and $n = 2.85$. What is the volume of the washer?

A. 8.141E-01 cm^3

B. 8.955E-01 cm^3

C. 9.850E-01 cm^3

D. 1.084E+00 cm^3

E. 1.192E+00 cm^3

17. A washer has an inner diameter of 2.42 cm and an outer diamter of 4.53 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.47mm$, and $n = 2.8$. What is the volume of the washer?

A. 8.932E-01 cm^3

B. 9.825E-01 cm^3

C. 1.081E+00 cm^3

D. 1.189E+00 cm^3

E. 1.308E+00 cm^3

18. A washer has an inner diameter of 2.31 cm and an outer diamter of 4.19 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 4.14mm$, and $n = 2.86$. What is the volume of the washer?

A. 1.071E+00 cm^3

B. 1.178E+00 cm^3

C. 1.296E+00 cm^3

D. 1.425E+00 cm^3

E. 1.568E+00 cm^3

The next page might contain more answer choices for this question

19. A washer has an inner diameter of 2.75 cm and an outer diamter of 4.62 cm. The thickness is $h = Cr^{-n}$ where r is measured in cm, $C = 3.66mm$, and $n = 2.61$. What is the volume of the washer?

   A. 6.960E-01 cm^3

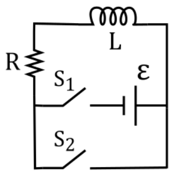
   B. 7.656E-01 cm^3

   C. 8.421E-01 cm^3

   D. 9.264E-01 cm^3

   E. 1.019E+00 cm^3

d_cp2.14 Q4

1. 

Suspose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =1.98 s if ε= 5.75 V , R = 8.07 Ω , and L = 2.84 H?

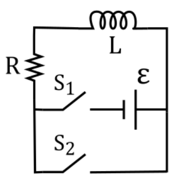
   A. 4.109E-01 V

   B. 4.930E-01 V

   C. 5.917E-01 V

   D. 7.100E-01 V

   E. 8.520E-01 V

2. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =5.67 s if ε= 5.58 V , R = 3.81 Ω , and L = 3.85 H?

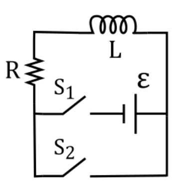
   A. 7.037E-01 V

   B. 8.444E-01 V

   C. 1.013E+00 V

   D. 1.216E+00 V

   E. 1.459E+00 V

3. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =0.919 s if ε= 6.65 V , R = 6.34 Ω , and L = 1.14 H?

   A. 6.033E-01 V

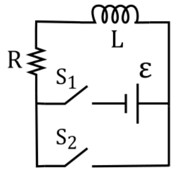
   B. 7.240E-01 V

   C. 8.688E-01 V

   D. 1.043E+00 V

   E. 1.251E+00 V

The next page might contain more answer choices for this question

4. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =13.6 s if ε= 6.56 V , R = 2.44 Ω , and L = 8.76 H?

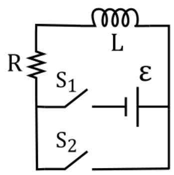
A. 2.627E+00 V

B. 3.153E+00 V

C. 3.783E+00 V

D. 4.540E+00 V

E. 5.448E+00 V

5. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =6.01 s if ε= 5.75 V , R = 5.73 Ω , and L = 7.46 H?

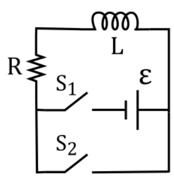
A. 9.936E-01 V

B. 1.192E+00 V

C. 1.431E+00 V

D. 1.717E+00 V

E. 2.060E+00 V

6. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =1.95 s if ε= 8.33 V , R = 6.96 Ω , and L = 2.66 H?

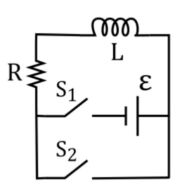
A. 5.736E-01 V

B. 6.884E-01 V

C. 8.260E-01 V

D. 9.912E-01 V

E. 1.189E+00 V

7. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =2.47 s if ε= 7.04 V , R = 7.69 Ω , and L = 5.78 H?

A. 4.249E-01 V

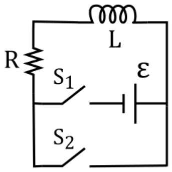
B. 5.099E-01 V

C. 6.118E-01 V

D. 7.342E-01 V

The next page might contain more answer choices for this question

E. 8.810E-01 V

8. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =5.9 s if ε= 7.85 V , R = 6.89 Ω , and L = 7.36 H?

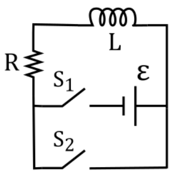
A. 6.567E-01 V

B. 7.880E-01 V

C. 9.456E-01 V

D. 1.135E+00 V

E. 1.362E+00 V

9. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =1.0 s if ε= 4.14 V , R = 7.92 Ω , and L = 2.26 H?

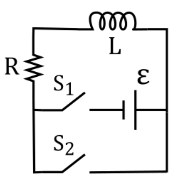
A. 3.523E-01 V

B. 4.227E-01 V

C. 5.073E-01 V

D. 6.087E-01 V

E. 7.304E-01 V

10. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =3.56 s if ε= 6.14 V , R = 7.96 Ω , and L = 6.65 H?

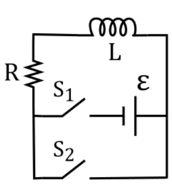
A. 5.281E-01 V

B. 6.337E-01 V

C. 7.605E-01 V

D. 9.126E-01 V

E. 1.095E+00 V

11. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =3.8 s if ε= 3.36 V , R = 5.2 Ω , and L = 3.37 H?

A. 5.369E-01 V

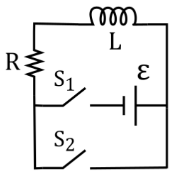
B. 6.443E-01 V

C. 7.732E-01 V

The next page might contain more answer choices for this question

D. 9.278E-01 V

E. 1.113E+00 V

12. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =6.88 s if ε= 2.58 V , R = 5.69 Ω , and L = 6.94 H?

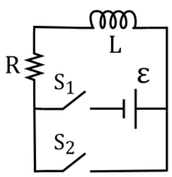
A. 4.518E-01 V

B. 5.422E-01 V

C. 6.506E-01 V

D. 7.807E-01 V

E. 9.369E-01 V

13. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =7.72 s if ε= 2.79 V , R = 1.56 Ω , and L = 3.16 H?

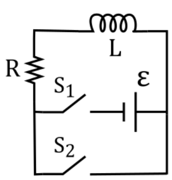
A. 1.214E+00 V

B. 1.457E+00 V

C. 1.749E+00 V

D. 2.099E+00 V

E. 2.518E+00 V

14. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =3.96 s if ε= 4.92 V , R = 5.02 Ω , and L = 5.0 H?

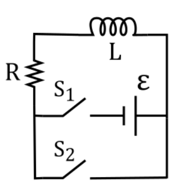
A. 9.618E-01 V

B. 1.154E+00 V

C. 1.385E+00 V

D. 1.662E+00 V

E. 1.994E+00 V

15. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =20.1 s if ε= 5.77 V , R = 1.38 Ω , and L = 5.45 H?

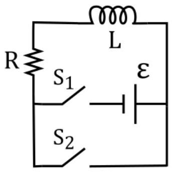
A. 3.463E+00 V

B. 4.156E+00 V

C. 4.987E+00 V

D. 5.984E+00 V

E. 7.181E+00 V

16. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =2.53 s if ε= 6.14 V , R = 4.22 Ω , and L = 1.91 H?

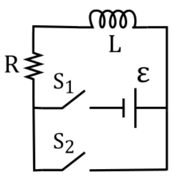
A. 1.007E+00 V

B. 1.208E+00 V

C. 1.450E+00 V

D. 1.739E+00 V

E. 2.087E+00 V

17. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =0.741 s if ε= 7.36 V , R = 5.33 Ω , and L = 1.27 H?

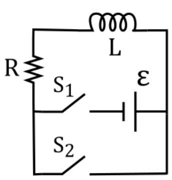
A. 7.635E-01 V

B. 9.162E-01 V

C. 1.099E+00 V

D. 1.319E+00 V

E. 1.583E+00 V

18. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =6.45 s if ε= 7.01 V , R = 7.04 Ω , and L = 8.75 H?

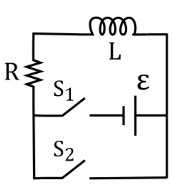
A. 9.902E-01 V

B. 1.188E+00 V

C. 1.426E+00 V

D. 1.711E+00 V

E. 2.053E+00 V

19. 

Suppose switch S_1 is suddenly closed at time t=0 in the figure shown. What is the current at t =1.55 s if ε= 5.97 V , R = 7.74 Ω , and L = 2.62 H?

A. 3.682E-01 V

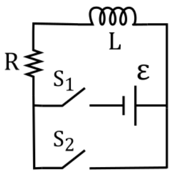
B. 4.418E-01 V

C. 5.301E-01 V

D. 6.362E-01 V

E. 7.634E-01 V

d_cp2.14 Q5

1. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.79% of its maximum value if ε= 8.03 V , R = 2.4 Ω , and L = 1.72 H?

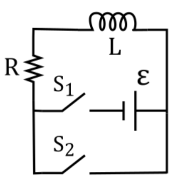
A. -1.442E+00 s

B. -1.586E+00 s

C. -1.744E+00 s

D. -1.919E+00 s

E. -2.111E+00 s

2. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.43% of its maximum value if ε= 1.64 V , R = 8.3 Ω , and L = 1.61 H?

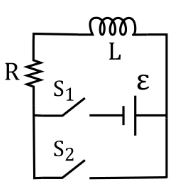
A. -4.120E-01 s

B. -4.532E-01 s

C. -4.985E-01 s

D. -5.483E-01 s

E. -6.031E-01 s

3. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.67% of its maximum value if ε= 5.07 V , R = 7.8 Ω , and L = 4.39 H?

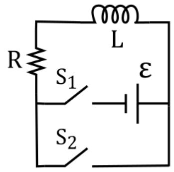
A. -1.047E+00 s

B. -1.152E+00 s

C. -1.267E+00 s

D. -1.393E+00 s

E. -1.533E+00 s

4. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.44% of its maximum value if ε= 5.95 V , R = 7.26 Ω , and L = 1.29 H?

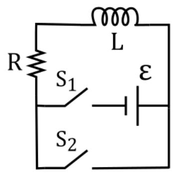
A. -3.114E-01 s

B. -3.425E-01 s

C. -3.767E-01 s

D. -4.144E-01 s

E. -4.559E-01 s

5. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.78% of its maximum value if ε= 1.39 V , R = 2.88 Ω , and L = 4.06 H?

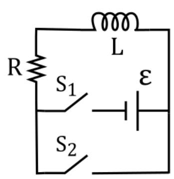
A. -2.296E+00 s

B. -2.525E+00 s

C. -2.778E+00 s

D. -3.056E+00 s

E. -3.361E+00 s

6. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.59% of its maximum value if ε= 1.14 V , R = 6.17 Ω , and L = 5.45 H?

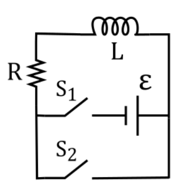
A. -1.614E+00 s

B. -1.775E+00 s

C. -1.952E+00 s

D. -2.148E+00 s

E. -2.362E+00 s

7. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.69% of its maximum value if ε= 4.79 V , R = 4.18 Ω , and L = 2.7 H?

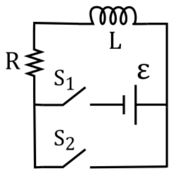
A. -8.773E-01 s

B. -9.651E-01 s

C. -1.062E+00 s

D. -1.168E+00 s

E. -1.284E+00 s

8. Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.63% of its maximum value if ε= 8.7 V , R = 8.35 Ω , and L = 1.44 H?

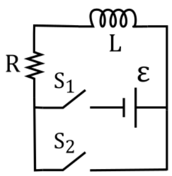
A. -3.137E-01 s

B. -3.451E-01 s

C. -3.796E-01 s

D. -4.176E-01 s

E. -4.593E-01 s

9. Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.65% of its maximum value if ε= 3.62 V , R = 4.07 Ω , and L = 7.19 H?

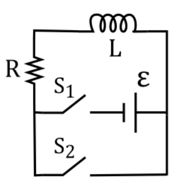
A. -2.476E+00 s

B. -2.724E+00 s

C. -2.996E+00 s

D. -3.296E+00 s

E. -3.625E+00 s

10. Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.16% of its maximum value if ε= 4.79 V , R = 4.37 Ω , and L = 5.29 H?

A. -2.110E+00 s

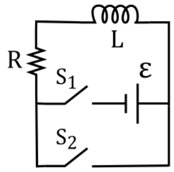
B. -2.321E+00 s

C. -2.553E+00 s

D. -2.809E+00 s

E. -3.090E+00 s

The next page might contain more answer choices for this question

11. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.82% of its maximum value if ε= 8.65 V , R = 3.02 Ω , and L = 1.75 H?

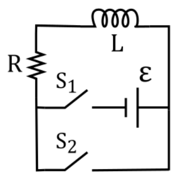
A. -9.593E-01 s

B. -1.055E+00 s

C. -1.161E+00 s

D. -1.277E+00 s

E. -1.405E+00 s

12. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.53% of its maximum value if ε= 6.08 V , R = 1.88 Ω , and L = 4.67 H?

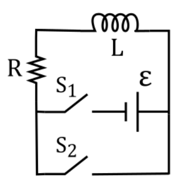
A. -5.192E+00 s

B. -5.711E+00 s

C. -6.282E+00 s

D. -6.910E+00 s

E. -7.601E+00 s

13. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.01% of its maximum value if ε= 1.45 V , R = 4.4 Ω , and L = 2.36 H?

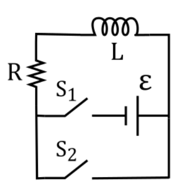
A. -8.659E-01 s

B. -9.525E-01 s

C. -1.048E+00 s

D. -1.153E+00 s

E. -1.268E+00 s

14. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.7% of its maximum value if ε= 7.67 V , R = 2.45 Ω , and L = 7.81 H?

A. -5.757E+00 s

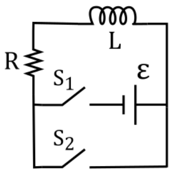
The next page might contain more answer choices for this question

B. -6.333E+00 s

C. -6.966E+00 s

D. -7.663E+00 s

E. -8.429E+00 s

15. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.56% of its maximum value if ε= 4.22 V , R = 1.89 Ω , and L = 6.57 H?

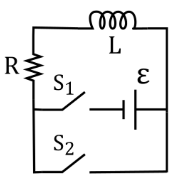
A. -4.939E+00 s

B. -5.433E+00 s

C. -5.976E+00 s

D. -6.574E+00 s

E. -7.231E+00 s

16. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 1.96% of its maximum value if ε= 2.64 V , R = 6.37 Ω , and L = 7.33 H?

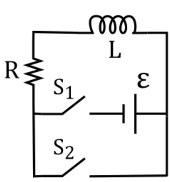
A. -1.700E+00 s

B. -1.870E+00 s

C. -2.057E+00 s

D. -2.262E+00 s

E. -2.489E+00 s

17. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.28% of its maximum value if ε= 7.39 V , R = 7.05 Ω , and L = 3.51 H?

A. -6.429E-01 s

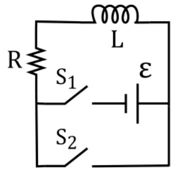
B. -7.072E-01 s

C. -7.779E-01 s

D. -8.557E-01 s

E. -9.412E-01 s

The next page might contain more answer choices for this question

18. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.54% of its maximum value if ε= 2.46 V , R = 2.8 Ω , and L = 5.67 H?

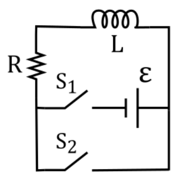
A. -2.540E+00 s

B. -2.794E+00 s

C. -3.073E+00 s

D. -3.381E+00 s

E. -3.719E+00 s

19. 

Suppose switch S_1 in the figure shown was closed and remained closed long enough to acheive steady state. At t=0 S_1 is opened as as S_2 is closed. How long will it take for the energy stored in the inductor to be reduced to 2.23% of its maximum value if ε= 3.13 V , R = 3.59 Ω , and L = 3.38 H?

A. -1.345E+00 s

B. -1.480E+00 s

C. -1.628E+00 s

D. -1.790E+00 s

E. -1.969E+00 s

d_cp2.14 Q6

1. In an LC circuit, the self-inductance is 0.0134 H and the capacitance is 3.280E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 5.930E-05 C. How long does it take for the capacitor to become completely discharged?

A. 2.722E-04 s

B. 2.994E-04 s

C. 3.293E-04 s

D. 3.622E-04 s

E. 3.985E-04 s

2. In an LC circuit, the self-inductance is 0.0424 H and the capacitance is 7.790E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 6.230E-05 C. How long does it take for the capacitor to become completely discharged?

A. 6.166E-04 s

B. 6.783E-04 s

C. 7.461E-04 s

D. 8.207E-04 s

E. 9.028E-04 s

3. In an LC circuit, the self-inductance is 0.0126 H and the capacitance is 3.350E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 7.420E-05 C. How long does it take for the capacitor to become completely discharged?

   A. 2.204E-04 s

   B. 2.425E-04 s

   C. 2.667E-04 s

   D. 2.934E-04 s

   E. 3.227E-04 s

4. In an LC circuit, the self-inductance is 0.0216 H and the capacitance is 6.450E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 1.240E-05 C. How long does it take for the capacitor to become completely discharged?

   A. 4.846E-04 s

   B. 5.330E-04 s

   C. 5.863E-04 s

   D. 6.449E-04 s

   E. 7.094E-04 s

5. In an LC circuit, the self-inductance is 0.0735 H and the capacitance is 2.300E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 3.220E-05 C. How long does it take for the capacitor to become completely discharged?

   A. 4.411E-04 s

   B. 4.852E-04 s

   C. 5.338E-04 s

   D. 5.871E-04 s

   E. 6.458E-04 s

6. In an LC circuit, the self-inductance is 0.025 H and the capacitance is 3.530E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 7.770E-05 C. How long does it take for the capacitor to become completely discharged?

   A. 3.856E-04 s

   B. 4.242E-04 s

   C. 4.666E-04 s

   D. 5.133E-04 s

   E. 5.646E-04 s

7. In an LC circuit, the self-inductance is 0.0689 H and the capacitance is 2.110E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 7.220E-05 C. How long does it take for the capacitor to become completely discharged?

   A. 4.950E-04 s

   B. 5.445E-04 s

   C. 5.989E-04 s

   D. 6.588E-04 s

   E. 7.247E-04 s

The next page might contain more answer choices for this question

8. In an LC circuit, the self-inductance is 0.0464 H and the capacitance is 7.350E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 3.280E-05 C. How long does it take for the capacitor to become completely discharged?

   A. 8.339E-04 s

   B. 9.173E-04 s

   C. 1.009E-03 s

   D. 1.110E-03 s

   E. 1.221E-03 s

9. In an LC circuit, the self-inductance is 0.0237 H and the capacitance is 6.140E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 8.260E-05 C. How long does it take for the capacitor to become completely discharged?

   A. 4.093E-04 s

   B. 4.502E-04 s

   C. 4.952E-04 s

   D. 5.447E-04 s

   E. 5.992E-04 s

10. In an LC circuit, the self-inductance is 0.0815 H and the capacitance is 6.520E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 8.410E-05 C. How long does it take for the capacitor to become completely discharged?

    A. 7.821E-04 s

    B. 8.603E-04 s

    C. 9.463E-04 s

    D. 1.041E-03 s

    E. 1.145E-03 s

11. In an LC circuit, the self-inductance is 0.0795 H and the capacitance is 7.930E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 2.420E-05 C. How long does it take for the capacitor to become completely discharged?

    A. 9.370E-04 s

    B. 1.031E-03 s

    C. 1.134E-03 s

    D. 1.247E-03 s

    E. 1.372E-03 s

12. In an LC circuit, the self-inductance is 0.0116 H and the capacitance is 7.040E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 6.140E-05 C. How long does it take for the capacitor to become completely discharged?

    A. 4.489E-04 s

    B. 4.938E-04 s

    C. 5.432E-04 s

    D. 5.975E-04 s

    E. 6.572E-04 s

The next page might contain more answer choices for this question

13. In an LC circuit, the self-inductance is 0.0307 H and the capacitance is 5.330E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 1.840E-05 C. How long does it take for the capacitor to become completely discharged?

    A. 5.251E-04 s
    B. 5.776E-04 s
    C. 6.354E-04 s
    D. 6.989E-04 s
    E. 7.688E-04 s

14. In an LC circuit, the self-inductance is 0.0273 H and the capacitance is 6.440E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 6.620E-05 C. How long does it take for the capacitor to become completely discharged?

    A. 5.443E-04 s
    B. 5.988E-04 s
    C. 6.586E-04 s
    D. 7.245E-04 s
    E. 7.969E-04 s

15. In an LC circuit, the self-inductance is 0.0156 H and the capacitance is 6.950E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 4.830E-05 C. How long does it take for the capacitor to become completely discharged?

    A. 3.886E-04 s
    B. 4.275E-04 s
    C. 4.702E-04 s
    D. 5.172E-04 s
    E. 5.689E-04 s

16. In an LC circuit, the self-inductance is 0.035 H and the capacitance is 4.620E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 8.250E-05 C. How long does it take for the capacitor to become completely discharged?

    A. 6.316E-04 s
    B. 6.948E-04 s
    C. 7.643E-04 s
    D. 8.407E-04 s
    E. 9.248E-04 s

17. In an LC circuit, the self-inductance is 0.0399 H and the capacitance is 8.450E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 6.480E-05 C. How long does it take for the capacitor to become completely discharged?

    A. 6.230E-04 s
    B. 6.853E-04 s
    C. 7.538E-04 s
    D. 8.292E-04 s
    E. 9.121E-04 s

The next page might contain more answer choices for this question

18. In an LC circuit, the self-inductance is 0.0262 H and the capacitance is 4.540E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 4.700E-05 C. How long does it take for the capacitor to become completely discharged?

   A. 4.070E-04 s
   B. 4.477E-04 s
   C. 4.925E-04 s
   D. 5.417E-04 s
   E. 5.959E-04 s

19. In an LC circuit, the self-inductance is 0.0776 H and the capacitance is 6.940E-06 F. At t=0 all the energy is stored in the capacitor, which has a charge of 3.400E-05 C. How long does it take for the capacitor to become completely discharged?

   A. 1.048E-03 s
   B. 1.153E-03 s
   C. 1.268E-03 s
   D. 1.395E-03 s
   E. 1.534E-03 s

27 d_cp2.15

1. An ac generator produces an emf of amplitude 10 V at a frequency of 60 Hz. What is the maximum amplitude of the current if the generator is connected to a 15 mF inductor?[193]

   A. 1.208E+00 A
   B. 1.329E+00 A
   C. 1.461E+00 A
   D. 1.608E+00 A
   E. 1.768E+00 A

2. An ac generator produces an emf of amplitude 10 V at a frequency of 60 Hz. What is the maximum amplitude of the current if the generator is connected to a 10 mF capacitor?[194]

   A. 3.770E-02 A
   B. 4.147E-02 A
   C. 4.562E-02 A
   D. 5.018E-02 A
   E. 5.520E-02 A

3. The output of an ac generator connected to an RLC series combination has a frequency of 200 Hz and an amplitude of 0.1 V;. If R =4 Ω , L= 3.00E-03H , and C=8.00E-04 F, what is the impedance?[195]

   A. 4.024E+00 Ω
   B. 4.426E+00 Ω
   C. 4.868E+00 Ω
   D. 5.355E+00 Ω
   E. 5.891E+00 Ω

The next page might contain more answer choices for this question

4. The output of an ac generator connected to an RLC series combination has a frequency of 200 Hz and an amplitude of 0.1 V;. If R =4 Ω , L= 3.00E-03H, and C=8.00E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?[196]

   A. 5.514E-01 rad

   B. 6.066E-01 rad

   C. 6.672E-01 rad

   D. 7.339E-01 rad

   E. 8.073E-01 rad

5. The output of an ac generator connected to an RLC series combination has a frequency of 1.00E+04 Hz and an amplitude of 4 V. If R =5 Ω , L= 2.00E-03H , and C=4.00E-06 F, what is the rms power transferred to the resistor?[197]

   A. 7.273E-01 Watts

   B. 8.000E-01 Watts

   C. 8.800E-01 Watts

   D. 9.680E-01 Watts

   E. 1.065E+00 Watts

6. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=0.1 V. The resistance, inductance, and capacitance are R =4 Ω , L= 3.00E-03H , and C=8.00E-04 F, respectively. What is the amplitude of the current?[198]

   A. 2.066E-02 A

   B. 2.273E-02 A

   C. 2.500E-02 A

   D. 2.750E-02 A

   E. 3.025E-02 A

7. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=4 V. The resistance, inductance, and capacitance are R =0.2 Ω , L= 4.00E-03H , and C=2.00E-06 F, respectively.[199]

   A. Q = 1.278E+02

   B. Q = 1.470E+02

   C. Q = 1.691E+02

   D. Q = 1.944E+02

   E. Q = 2.236E+02

8. A step-down transformer steps 12 kV down to 240 V. The high-voltage input is provided by a 200 Ω power line that carries 2 A of currentWhat is the output current (at the 240 V side ?)[200]

   A. 1.000E+02 A

   B. 1.100E+02 A

   C. 1.210E+02 A

   D. 1.331E+02 A

   E. 1.464E+02 A

The next page might contain more answer choices for this question

27.1 Renditions

d_cp2.15 Q1

1. An ac generator produces an emf of amplitude 78 V at a frequency of 45 Hz. What is the maximum amplitude of the current if the generator is connected to a 60 mF inductor?
   - A. 3.140E+00 A
   - B. 3.454E+00 A
   - C. 3.800E+00 A
   - D. 4.180E+00 A
   - **E. 4.598E+00 A**

2. An ac generator produces an emf of amplitude 5 V at a frequency of 52 Hz. What is the maximum amplitude of the current if the generator is connected to a 49 mF inductor?
   - A. 2.839E-01 A
   - **B. 3.123E-01 A**
   - C. 3.435E-01 A
   - D. 3.779E-01 A
   - E. 4.157E-01 A

3. An ac generator produces an emf of amplitude 97 V at a frequency of 64 Hz. What is the maximum amplitude of the current if the generator is connected to a 55 mF inductor?
   - **A. 4.386E+00 A**
   - B. 4.824E+00 A
   - C. 5.307E+00 A
   - D. 5.838E+00 A
   - E. 6.421E+00 A

4. An ac generator produces an emf of amplitude 40 V at a frequency of 130 Hz. What is the maximum amplitude of the current if the generator is connected to a 52 mF inductor?
   - A. 7.783E-01 A
   - B. 8.561E-01 A
   - **C. 9.417E-01 A**
   - D. 1.036E+00 A
   - E. 1.140E+00 A

5. An ac generator produces an emf of amplitude 60 V at a frequency of 130 Hz. What is the maximum amplitude of the current if the generator is connected to a 85 mF inductor?
   - A. 7.856E-01 A
   - **B. 8.642E-01 A**
   - C. 9.506E-01 A
   - D. 1.046E+00 A
   - E. 1.150E+00 A

6. An ac generator produces an emf of amplitude 70 V at a frequency of 63 Hz. What is the maximum amplitude of the current if the generator is connected to a 34 mF inductor?

The next page might contain more answer choices for this question

A. 3.908E+00 A
B. 4.298E+00 A
C. 4.728E+00 A
D. 5.201E+00 A
E. 5.721E+00 A

7. An ac generator produces an emf of amplitude 3 V at a frequency of 130 Hz. What is the maximum amplitude of the current if the generator is connected to a 75 mF inductor?
A. 3.679E-02 A
B. 4.047E-02 A
C. 4.452E-02 A
D. 4.897E-02 A
E. 5.387E-02 A

8. An ac generator produces an emf of amplitude 73 V at a frequency of 110 Hz. What is the maximum amplitude of the current if the generator is connected to a 70 mF inductor?
A. 1.134E+00 A
B. 1.247E+00 A
C. 1.372E+00 A
D. 1.509E+00 A
E. 1.660E+00 A

9. An ac generator produces an emf of amplitude 90 V at a frequency of 130 Hz. What is the maximum amplitude of the current if the generator is connected to a 20 mF inductor?
A. 5.008E+00 A
B. 5.509E+00 A
C. 6.060E+00 A
D. 6.666E+00 A
E. 7.333E+00 A

10. An ac generator produces an emf of amplitude 69 V at a frequency of 180 Hz. What is the maximum amplitude of the current if the generator is connected to a 57 mF inductor?
A. 1.070E+00 A
B. 1.177E+00 A
C. 1.295E+00 A
D. 1.425E+00 A
E. 1.567E+00 A

11. An ac generator produces an emf of amplitude 7 V at a frequency of 190 Hz. What is the maximum amplitude of the current if the generator is connected to a 44 mF inductor?
A. 9.102E-02 A
B. 1.001E-01 A
C. 1.101E-01 A
D. 1.211E-01 A

The next page might contain more answer choices for this question

E. 1.333E-01 A

12. An ac generator produces an emf of amplitude 37 V at a frequency of 100 Hz. What is the maximum amplitude of the current if the generator is connected to a 86 mF inductor?

A. 4.677E-01 A

B. 5.145E-01 A

C. 5.659E-01 A

D. 6.225E-01 A

E. 6.847E-01 A

13. An ac generator produces an emf of amplitude 24 V at a frequency of 120 Hz. What is the maximum amplitude of the current if the generator is connected to a 96 mF inductor?

A. 3.014E-01 A

B. 3.316E-01 A

C. 3.647E-01 A

D. 4.012E-01 A

E. 4.413E-01 A

14. An ac generator produces an emf of amplitude 58 V at a frequency of 99 Hz. What is the maximum amplitude of the current if the generator is connected to a 35 mF inductor?

A. 2.422E+00 A

B. 2.664E+00 A

C. 2.930E+00 A

D. 3.224E+00 A

E. 3.546E+00 A

15. An ac generator produces an emf of amplitude 8 V at a frequency of 80 Hz. What is the maximum amplitude of the current if the generator is connected to a 14 mF inductor?

A. 8.541E-01 A

B. 9.395E-01 A

C. 1.033E+00 A

D. 1.137E+00 A

E. 1.251E+00 A

16. An ac generator produces an emf of amplitude 46 V at a frequency of 160 Hz. What is the maximum amplitude of the current if the generator is connected to a 63 mF inductor?

A. 4.961E-01 A

B. 5.457E-01 A

C. 6.002E-01 A

D. 6.603E-01 A

E. 7.263E-01 A

17. An ac generator produces an emf of amplitude 76 V at a frequency of 180 Hz. What is the maximum amplitude of the current if the generator is connected to a 14 mF inductor?

A. 3.606E+00 A

The next page might contain more answer choices for this question

B. 3.967E+00 A
C. 4.364E+00 A
D. 4.800E+00 A
E. 5.280E+00 A

18. An ac generator produces an emf of amplitude 75 V at a frequency of 200 Hz. What is the maximum amplitude of the current if the generator is connected to a 22 mF inductor?
    A. 2.466E+00 A
    B. 2.713E+00 A
    C. 2.984E+00 A
    D. 3.283E+00 A
    E. 3.611E+00 A

19. An ac generator produces an emf of amplitude 66 V at a frequency of 180 Hz. What is the maximum amplitude of the current if the generator is connected to a 97 mF inductor?
    A. 4.972E-01 A
    B. 5.469E-01 A
    C. 6.016E-01 A
    D. 6.618E-01 A
    E. 7.280E-01 A

d_cp2.15 Q2

1. An ac generator produces an emf of amplitude 64 V at a frequency of 95 Hz. What is the maximum amplitude of the current if the generator is connected to a 99 mF capacitor?
    A. 3.126E+00 A
    B. 3.438E+00 A
    C. 3.782E+00 A
    D. 4.160E+00 A
    E. 4.576E+00 A

2. An ac generator produces an emf of amplitude 58 V at a frequency of 200 Hz. What is the maximum amplitude of the current if the generator is connected to a 66 mF capacitor?
    A. 3.976E+00 A
    B. 4.373E+00 A
    C. 4.810E+00 A
    D. 5.291E+00 A
    E. 5.821E+00 A

3. An ac generator produces an emf of amplitude 90 V at a frequency of 64 Hz. What is the maximum amplitude of the current if the generator is connected to a 16 mF capacitor?
    A. 4.351E-01 A
    B. 4.786E-01 A
    C. 5.264E-01 A

The next page might contain more answer choices for this question

D. 5.791E-01 A

E. 6.370E-01 A

4. An ac generator produces an emf of amplitude 87 V at a frequency of 44 Hz. What is the maximum amplitude of the current if the generator is connected to a 9 mF capacitor?

   A. 1.626E-01 A

   B. 1.789E-01 A

   C. 1.968E-01 A

   D. 2.165E-01 A

   E. 2.381E-01 A

5. An ac generator produces an emf of amplitude 71 V at a frequency of 68 Hz. What is the maximum amplitude of the current if the generator is connected to a 35 mF capacitor?

   A. 7.252E-01 A

   B. 7.977E-01 A

   C. 8.775E-01 A

   D. 9.652E-01 A

   E. 1.062E+00 A

6. An ac generator produces an emf of amplitude 85 V at a frequency of 160 Hz. What is the maximum amplitude of the current if the generator is connected to a 59 mF capacitor?

   A. 5.042E+00 A

   B. 5.546E+00 A

   C. 6.100E+00 A

   D. 6.710E+00 A

   E. 7.381E+00 A

7. An ac generator produces an emf of amplitude 32 V at a frequency of 120 Hz. What is the maximum amplitude of the current if the generator is connected to a 14 mF capacitor?

   A. 3.378E-01 A

   B. 3.716E-01 A

   C. 4.087E-01 A

   D. 4.496E-01 A

   E. 4.945E-01 A

8. An ac generator produces an emf of amplitude 50 V at a frequency of 47 Hz. What is the maximum amplitude of the current if the generator is connected to a 88 mF capacitor?

   A. 1.074E+00 A

   B. 1.181E+00 A

   C. 1.299E+00 A

   D. 1.429E+00 A

   E. 1.572E+00 A

9. An ac generator produces an emf of amplitude 53 V at a frequency of 190 Hz. What is the maximum amplitude of the current if the generator is connected to a 85 mF capacitor?

The next page might contain more answer choices for this question

A. 4.445E+00 A
B. 4.889E+00 A
C. 5.378E+00 A
D. 5.916E+00 A
E. 6.507E+00 A

10. An ac generator produces an emf of amplitude 49 V at a frequency of 110 Hz. What is the maximum amplitude of the current if the generator is connected to a 32 mF capacitor?
A. 8.956E-01 A
B. 9.852E-01 A
C. 1.084E+00 A
D. 1.192E+00 A
E. 1.311E+00 A

11. An ac generator produces an emf of amplitude 98 V at a frequency of 110 Hz. What is the maximum amplitude of the current if the generator is connected to a 2 mF capacitor?
A. 1.232E-01 A
B. 1.355E-01 A
C. 1.490E-01 A
D. 1.639E-01 A
E. 1.803E-01 A

12. An ac generator produces an emf of amplitude 51 V at a frequency of 57 Hz. What is the maximum amplitude of the current if the generator is connected to a 99 mF capacitor?
A. 1.644E+00 A
B. 1.808E+00 A
C. 1.989E+00 A
D. 2.188E+00 A
E. 2.407E+00 A

13. An ac generator produces an emf of amplitude 8 V at a frequency of 85 Hz. What is the maximum amplitude of the current if the generator is connected to a 16 mF capacitor?
A. 4.669E-02 A
B. 5.136E-02 A
C. 5.650E-02 A
D. 6.215E-02 A
E. 6.836E-02 A

14. An ac generator produces an emf of amplitude 54 V at a frequency of 120 Hz. What is the maximum amplitude of the current if the generator is connected to a 7 mF capacitor?
A. 2.850E-01 A
B. 3.135E-01 A
C. 3.449E-01 A
D. 3.793E-01 A

The next page might contain more answer choices for this question

E. 4.173E-01 A

15. An ac generator produces an emf of amplitude 64 V at a frequency of 100 Hz. What is the maximum amplitude of the current if the generator is connected to a 32 mF capacitor?

A. 1.170E+00 A

B. 1.287E+00 A

C. 1.415E+00 A

D. 1.557E+00 A

E. 1.713E+00 A

16. An ac generator produces an emf of amplitude 17 V at a frequency of 120 Hz. What is the maximum amplitude of the current if the generator is connected to a 6 mF capacitor?

A. 5.253E-02 A

B. 5.778E-02 A

C. 6.356E-02 A

D. 6.991E-02 A

E. 7.691E-02 A

17. An ac generator produces an emf of amplitude 4 V at a frequency of 160 Hz. What is the maximum amplitude of the current if the generator is connected to a 19 mF capacitor?

A. 6.946E-02 A

B. 7.640E-02 A

C. 8.404E-02 A

D. 9.245E-02 A

E. 1.017E-01 A

18. An ac generator produces an emf of amplitude 7 V at a frequency of 95 Hz. What is the maximum amplitude of the current if the generator is connected to a 50 mF capacitor?

A. 1.427E-01 A

B. 1.570E-01 A

C. 1.727E-01 A

D. 1.899E-01 A

E. 2.089E-01 A

19. An ac generator produces an emf of amplitude 93 V at a frequency of 160 Hz. What is the maximum amplitude of the current if the generator is connected to a 70 mF capacitor?

A. 4.917E+00 A

B. 5.409E+00 A

C. 5.950E+00 A

D. 6.545E+00 A

E. 7.199E+00 A

The next page might contain more answer choices for this question

d_cp2.15 Q3

1. The output of an ac generator connected to an RLC series combination has a frequency of 510 Hz and an amplitude of 0.69 V;. If R =4 Ω , L= 4.30E-03H , and C=9.20E-04 F, what is the impedance?
   - A. 1.054E+01 Ω
   - B. 1.159E+01 Ω
   - C. 1.275E+01 Ω
   - **D. 1.402E+01 Ω**
   - E. 1.542E+01 Ω
2. The output of an ac generator connected to an RLC series combination has a frequency of 810 Hz and an amplitude of 0.64 V;. If R =6 Ω , L= 8.70E-03H , and C=8.20E-04 F, what is the impedance?
   - **A. 4.444E+01 Ω**
   - B. 4.889E+01 Ω
   - C. 5.378E+01 Ω
   - D. 5.916E+01 Ω
   - E. 6.507E+01 Ω
3. The output of an ac generator connected to an RLC series combination has a frequency of 900 Hz and an amplitude of 0.43 V;. If R =7 Ω , L= 5.60E-03H , and C=6.30E-04 F, what is the impedance?
   - A. 2.658E+01 Ω
   - B. 2.923E+01 Ω
   - **C. 3.216E+01 Ω**
   - D. 3.537E+01 Ω
   - E. 3.891E+01 Ω
4. The output of an ac generator connected to an RLC series combination has a frequency of 680 Hz and an amplitude of 0.79 V;. If R =5 Ω , L= 2.40E-03H , and C=9.10E-04 F, what is the impedance?
   - A. 8.398E+00 Ω
   - B. 9.238E+00 Ω
   - C. 1.016E+01 Ω
   - **D. 1.118E+01 Ω**
   - E. 1.230E+01 Ω
5. The output of an ac generator connected to an RLC series combination has a frequency of 710 Hz and an amplitude of 0.88 V;. If R =2 Ω , L= 2.60E-03H , and C=8.00E-04 F, what is the impedance?
   - A. 1.045E+01 Ω
   - **B. 1.149E+01 Ω**
   - C. 1.264E+01 Ω
   - D. 1.391E+01 Ω
   - E. 1.530E+01 Ω
6. The output of an ac generator connected to an RLC series combination has a frequency of 890 Hz and an amplitude of 0.12 V;. If R =8 Ω , L= 8.60E-03H , and C=9.90E-04 F, what is the impedance?
   - A. 3.318E+01 Ω

The next page might contain more answer choices for this question

B. 3.649E+01 Ω
C. 4.014E+01 Ω
D. 4.416E+01 Ω
E. 4.857E+01 Ω

7. The output of an ac generator connected to an RLC series combination has a frequency of 1.00E+03 Hz and an amplitude of 0.6 V;. If R =3 Ω , L= 1.70E-03H , and C=5.40E-04 F, what is the impedance?
   A. 8.123E+00 Ω
   B. 8.935E+00 Ω
   C. 9.828E+00 Ω
   D. 1.081E+01 Ω
   E. 1.189E+01 Ω

8. The output of an ac generator connected to an RLC series combination has a frequency of 490 Hz and an amplitude of 0.68 V;. If R =9 Ω , L= 5.80E-03H , and C=9.50E-04 F, what is the impedance?
   A. 1.969E+01 Ω
   B. 2.166E+01 Ω
   C. 2.383E+01 Ω
   D. 2.621E+01 Ω
   E. 2.883E+01 Ω

9. The output of an ac generator connected to an RLC series combination has a frequency of 650 Hz and an amplitude of 0.3 V;. If R =3 Ω , L= 4.90E-03H , and C=8.20E-04 F, what is the impedance?
   A. 1.813E+01 Ω
   B. 1.994E+01 Ω
   C. 2.193E+01 Ω
   D. 2.413E+01 Ω
   E. 2.654E+01 Ω

10. The output of an ac generator connected to an RLC series combination has a frequency of 370 Hz and an amplitude of 0.14 V;. If R =3 Ω , L= 5.30E-03H , and C=5.50E-04 F, what is the impedance?
   A. 8.958E+00 Ω
   B. 9.854E+00 Ω
   C. 1.084E+01 Ω
   D. 1.192E+01 Ω
   E. 1.312E+01 Ω

11. The output of an ac generator connected to an RLC series combination has a frequency of 290 Hz and an amplitude of 0.75 V;. If R =2 Ω , L= 8.00E-03H , and C=9.90E-04 F, what is the impedance?
   A. 9.675E+00 Ω
   B. 1.064E+01 Ω
   C. 1.171E+01 Ω
   D. 1.288E+01 Ω
   E. 1.416E+01 Ω

The next page might contain more answer choices for this question

12. The output of an ac generator connected to an RLC series combination has a frequency of 690 Hz and an amplitude of 0.4 V;. If R =3 Ω , L= 3.00E-03H , and C=8.30E-04 F, what is the impedance?
    - **A. 1.308E+01 Ω**
    - B. 1.438E+01 Ω
    - C. 1.582E+01 Ω
    - D. 1.741E+01 Ω
    - E. 1.915E+01 Ω

13. The output of an ac generator connected to an RLC series combination has a frequency of 420 Hz and an amplitude of 0.73 V;. If R =2 Ω , L= 9.60E-03H , and C=7.80E-04 F, what is the impedance?
    - A. 2.060E+01 Ω
    - B. 2.266E+01 Ω
    - **C. 2.493E+01 Ω**
    - D. 2.742E+01 Ω
    - E. 3.016E+01 Ω

14. The output of an ac generator connected to an RLC series combination has a frequency of 540 Hz and an amplitude of 0.18 V;. If R =3 Ω , L= 2.50E-03H , and C=8.20E-04 F, what is the impedance?
    - A. 7.872E+00 Ω
    - **B. 8.659E+00 Ω**
    - C. 9.525E+00 Ω
    - D. 1.048E+01 Ω
    - E. 1.153E+01 Ω

15. The output of an ac generator connected to an RLC series combination has a frequency of 840 Hz and an amplitude of 0.55 V;. If R =4 Ω , L= 9.30E-03H , and C=9.40E-04 F, what is the impedance?
    - A. 3.685E+01 Ω
    - B. 4.053E+01 Ω
    - C. 4.459E+01 Ω
    - **D. 4.905E+01 Ω**
    - E. 5.395E+01 Ω

16. The output of an ac generator connected to an RLC series combination has a frequency of 470 Hz and an amplitude of 0.67 V;. If R =4 Ω , L= 2.40E-03H , and C=5.10E-04 F, what is the impedance?
    - A. 6.254E+00 Ω
    - B. 6.879E+00 Ω
    - **C. 7.567E+00 Ω**
    - D. 8.324E+00 Ω
    - E. 9.156E+00 Ω

17. The output of an ac generator connected to an RLC series combination has a frequency of 740 Hz and an amplitude of 0.66 V;. If R =3 Ω , L= 2.40E-03H , and C=5.70E-04 F, what is the impedance?
    - **A. 1.119E+01 Ω**
    - B. 1.231E+01 Ω

The next page might contain more answer choices for this question

C. 1.354E+01 Ω
D. 1.490E+01 Ω
E. 1.639E+01 Ω

18. The output of an ac generator connected to an RLC series combination has a frequency of 910 Hz and an amplitude of 0.88 V;. If R =7 Ω , L= 6.80E-03H , and C=9.60E-04 F, what is the impedance?
    A. 3.575E+01 Ω
    B. 3.933E+01 Ω
    C. 4.326E+01 Ω
    D. 4.758E+01 Ω
    E. 5.234E+01 Ω

19. The output of an ac generator connected to an RLC series combination has a frequency of 760 Hz and an amplitude of 0.18 V;. If R =6 Ω , L= 7.50E-03H , and C=7.50E-04 F, what is the impedance?
    A. 2.708E+01 Ω
    B. 2.978E+01 Ω
    C. 3.276E+01 Ω
    D. 3.604E+01 Ω
    E. 3.964E+01 Ω

d_cp2.15 Q4

1. The output of an ac generator connected to an RLC series combination has a frequency of 480 Hz and an amplitude of 0.17 V;. If R =5 Ω , L= 6.70E-03H , and C=6.30E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?
    A. 1.322E+00 rad
    B. 1.454E+00 rad
    C. 1.600E+00 rad
    D. 1.760E+00 rad
    E. 1.936E+00 rad

2. The output of an ac generator connected to an RLC series combination has a frequency of 300 Hz and an amplitude of 0.76 V;. If R =5 Ω , L= 6.10E-03H , and C=5.80E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?
    A. 7.714E-01 rad
    B. 8.486E-01 rad
    C. 9.334E-01 rad
    D. 1.027E+00 rad
    E. 1.129E+00 rad

3. The output of an ac generator connected to an RLC series combination has a frequency of 220 Hz and an amplitude of 0.71 V;. If R =7 Ω , L= 8.20E-03H , and C=9.40E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?
    A. 8.146E-01 rad
    B. 8.960E-01 rad

The next page might contain more answer choices for this question

C. 9.856E-01 rad
D. 1.084E+00 rad
E. 1.193E+00 rad

4. The output of an ac generator connected to an RLC series combination has a frequency of 160 Hz and an amplitude of 0.47 V;. If R =8 Ω , L= 1.30E-03H , and C=6.40E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?
   A. 2.111E-02 rad
   B. 2.322E-02 rad
   C. 2.554E-02 rad
   D. 2.810E-02 rad
   E. 3.091E-02 rad

5. The output of an ac generator connected to an RLC series combination has a frequency of 860 Hz and an amplitude of 0.59 V;. If R =9 Ω , L= 8.40E-03H , and C=8.80E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?
   A. 1.032E+00 rad
   B. 1.136E+00 rad
   C. 1.249E+00 rad
   D. 1.374E+00 rad
   E. 1.512E+00 rad

6. The output of an ac generator connected to an RLC series combination has a frequency of 830 Hz and an amplitude of 0.73 V;. If R =8 Ω , L= 2.80E-03H , and C=5.80E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?
   A. 8.759E-01 rad
   B. 9.635E-01 rad
   C. 1.060E+00 rad
   D. 1.166E+00 rad
   E. 1.282E+00 rad

7. The output of an ac generator connected to an RLC series combination has a frequency of 970 Hz and an amplitude of 0.11 V;. If R =9 Ω , L= 8.50E-03H , and C=7.00E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?
   A. 1.398E+00 rad
   B. 1.538E+00 rad
   C. 1.692E+00 rad
   D. 1.861E+00 rad
   E. 2.047E+00 rad

8. The output of an ac generator connected to an RLC series combination has a frequency of 760 Hz and an amplitude of 0.43 V;. If R =7 Ω , L= 7.40E-03H , and C=6.00E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?
   A. 9.380E-01 rad
   B. 1.032E+00 rad

The next page might contain more answer choices for this question

C. 1.135E+00 rad

D. 1.248E+00 rad

E. 1.373E+00 rad

9. The output of an ac generator connected to an RLC series combination has a frequency of 760 Hz and an amplitude of 0.23 V;. If R =4 Ω , L= 7.70E-03H , and C=9.30E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 1.329E+00 rad

B. 1.462E+00 rad

C. 1.608E+00 rad

D. 1.769E+00 rad

E. 1.946E+00 rad

10. The output of an ac generator connected to an RLC series combination has a frequency of 720 Hz and an amplitude of 0.63 V;. If R =5 Ω , L= 4.20E-03H , and C=5.80E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 1.081E+00 rad

B. 1.189E+00 rad

C. 1.308E+00 rad

D. 1.439E+00 rad

E. 1.583E+00 rad

11. The output of an ac generator connected to an RLC series combination has a frequency of 320 Hz and an amplitude of 0.69 V;. If R =6 Ω , L= 6.80E-03H , and C=9.40E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 1.143E+00 rad

B. 1.257E+00 rad

C. 1.382E+00 rad

D. 1.521E+00 rad

E. 1.673E+00 rad

12. The output of an ac generator connected to an RLC series combination has a frequency of 510 Hz and an amplitude of 0.24 V;. If R =7 Ω , L= 2.90E-03H , and C=9.00E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 7.495E-01 rad

B. 8.244E-01 rad

C. 9.068E-01 rad

D. 9.975E-01 rad

E. 1.097E+00 rad

13. The output of an ac generator connected to an RLC series combination has a frequency of 750 Hz and an amplitude of 0.88 V;. If R =4 Ω , L= 5.60E-03H , and C=9.70E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 1.290E+00 rad

B. 1.419E+00 rad

The next page might contain more answer choices for this question

C. 1.561E+00 rad
D. 1.717E+00 rad
E. 1.889E+00 rad

14. The output of an ac generator connected to an RLC series combination has a frequency of 410 Hz and an amplitude of 0.82 V;. If R =7 Ω , L= 9.70E-03H , and C=9.00E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 1.176E+00 rad
B. 1.293E+00 rad
C. 1.422E+00 rad
D. 1.565E+00 rad
E. 1.721E+00 rad

15. The output of an ac generator connected to an RLC series combination has a frequency of 280 Hz and an amplitude of 0.35 V;. If R =5 Ω , L= 9.50E-03H , and C=6.90E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 8.646E-01 rad
B. 9.511E-01 rad
C. 1.046E+00 rad
D. 1.151E+00 rad
E. 1.266E+00 rad

16. The output of an ac generator connected to an RLC series combination has a frequency of 360 Hz and an amplitude of 0.17 V;. If R =9 Ω , L= 2.60E-03H , and C=8.00E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 4.860E-01 rad
B. 5.346E-01 rad
C. 5.880E-01 rad
D. 6.468E-01 rad
E. 7.115E-01 rad

17. The output of an ac generator connected to an RLC series combination has a frequency of 890 Hz and an amplitude of 0.58 V;. If R =9 Ω , L= 2.90E-03H , and C=8.30E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 7.952E-01 rad
B. 8.747E-01 rad
C. 9.622E-01 rad
D. 1.058E+00 rad
E. 1.164E+00 rad

18. The output of an ac generator connected to an RLC series combination has a frequency of 200 Hz and an amplitude of 0.14 V;. If R =3 Ω , L= 1.70E-03H , and C=9.40E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 3.691E-01 rad
B. 4.060E-01 rad

The next page might contain more answer choices for this question

C. 4.466E-01 rad

D. 4.913E-01 rad

E. 5.404E-01 rad

19. The output of an ac generator connected to an RLC series combination has a frequency of 480 Hz and an amplitude of 0.63 V;. If R =7 Ω , L= 3.80E-03H , and C=5.30E-04 F, what is the magnitude (absolute value) of the phase difference between current and emf?

A. 9.972E-01 rad

B. 1.097E+00 rad

C. 1.207E+00 rad

D. 1.327E+00 rad

E. 1.460E+00 rad

d_cp2.15 Q5

1. The output of an ac generator connected to an RLC series combination has a frequency of 8.20E+04 Hz and an amplitude of 4 V. If R =5 Ω , L= 5.40E-03H , and C=9.80E-06 F, what is the rms power transferred to the resistor?

A. 1.865E-04 Watts

B. 2.051E-04 Watts

C. 2.256E-04 Watts

D. 2.482E-04 Watts

E. 2.730E-04 Watts

2. The output of an ac generator connected to an RLC series combination has a frequency of 4.30E+04 Hz and an amplitude of 6 V. If R =6 Ω , L= 5.20E-03H , and C=8.60E-06 F, what is the rms power transferred to the resistor?

A. 1.511E-03 Watts

B. 1.662E-03 Watts

C. 1.828E-03 Watts

D. 2.011E-03 Watts

E. 2.212E-03 Watts

3. The output of an ac generator connected to an RLC series combination has a frequency of 6.10E+04 Hz and an amplitude of 9 V. If R =4 Ω , L= 3.40E-03H , and C=8.10E-06 F, what is the rms power transferred to the resistor?

A. 3.839E-03 Watts

B. 4.223E-03 Watts

C. 4.646E-03 Watts

D. 5.110E-03 Watts

E. 5.621E-03 Watts

4. The output of an ac generator connected to an RLC series combination has a frequency of 3.40E+04 Hz and an amplitude of 8 V. If R =4 Ω , L= 6.60E-03H , and C=5.30E-06 F, what is the rms power transferred to the resistor?

The next page might contain more answer choices for this question

A. 2.007E-03 Watts

B. 2.208E-03 Watts

C. 2.429E-03 Watts

D. 2.672E-03 Watts

E. 2.939E-03 Watts

5. The output of an ac generator connected to an RLC series combination has a frequency of 2.70E+04 Hz and an amplitude of 8 V. If R =4 Ω , L= 9.10E-03H , and C=9.60E-06 F, what is the rms power transferred to the resistor?

A. 2.188E-03 Watts

B. 2.407E-03 Watts

C. 2.647E-03 Watts

D. 2.912E-03 Watts

E. 3.203E-03 Watts

6. The output of an ac generator connected to an RLC series combination has a frequency of 3.50E+04 Hz and an amplitude of 8 V. If R =7 Ω , L= 9.40E-03H , and C=8.50E-06 F, what is the rms power transferred to the resistor?

A. 2.111E-03 Watts

B. 2.323E-03 Watts

C. 2.555E-03 Watts

D. 2.810E-03 Watts

E. 3.091E-03 Watts

7. The output of an ac generator connected to an RLC series combination has a frequency of 5.50E+04 Hz and an amplitude of 2 V. If R =8 Ω , L= 9.60E-03H , and C=8.30E-06 F, what is the rms power transferred to the resistor?

A. 4.347E-05 Watts

B. 4.782E-05 Watts

C. 5.260E-05 Watts

D. 5.786E-05 Watts

E. 6.364E-05 Watts

8. The output of an ac generator connected to an RLC series combination has a frequency of 2.30E+04 Hz and an amplitude of 3 V. If R =5 Ω , L= 3.90E-03H , and C=9.00E-06 F, what is the rms power transferred to the resistor?

A. 2.339E-03 Watts

B. 2.573E-03 Watts

C. 2.830E-03 Watts

D. 3.113E-03 Watts

E. 3.424E-03 Watts

9. The output of an ac generator connected to an RLC series combination has a frequency of 5.40E+04 Hz and an amplitude of 6 V. If R =2 Ω , L= 6.80E-03H , and C=9.90E-06 F, what is the rms power transferred to the resistor?

The next page might contain more answer choices for this question

A. 2.452E-04 Watts
B. 2.697E-04 Watts
C. 2.967E-04 Watts
D. 3.264E-04 Watts
E. 3.590E-04 Watts

10. The output of an ac generator connected to an RLC series combination has a frequency of 1.90E+04 Hz and an amplitude of 3 V. If R =8 Ω , L= 9.70E-03H , and C=9.70E-06 F, what is the rms power transferred to the resistor?

A. 7.670E-04 Watts
B. 8.436E-04 Watts
C. 9.280E-04 Watts
D. 1.021E-03 Watts
E. 1.123E-03 Watts

11. The output of an ac generator connected to an RLC series combination has a frequency of 3.60E+04 Hz and an amplitude of 9 V. If R =2 Ω , L= 7.60E-03H , and C=7.50E-06 F, what is the rms power transferred to the resistor?

A. 1.011E-03 Watts
B. 1.112E-03 Watts
C. 1.223E-03 Watts
D. 1.345E-03 Watts
E. 1.480E-03 Watts

12. The output of an ac generator connected to an RLC series combination has a frequency of 5.00E+04 Hz and an amplitude of 5 V. If R =6 Ω , L= 2.50E-03H , and C=5.20E-06 F, what is the rms power transferred to the resistor?

A. 5.097E-03 Watts
B. 5.607E-03 Watts
C. 6.167E-03 Watts
D. 6.784E-03 Watts
E. 7.463E-03 Watts

13. The output of an ac generator connected to an RLC series combination has a frequency of 2.30E+04 Hz and an amplitude of 7 V. If R =3 Ω , L= 4.10E-03H , and C=8.70E-06 F, what is the rms power transferred to the resistor?

A. 8.369E-03 Watts
B. 9.206E-03 Watts
C. 1.013E-02 Watts
D. 1.114E-02 Watts
E. 1.225E-02 Watts

14. The output of an ac generator connected to an RLC series combination has a frequency of 6.10E+04 Hz and an amplitude of 8 V. If R =5 Ω , L= 9.10E-03H , and C=8.80E-06 F, what is the rms power transferred to the resistor?

The next page might contain more answer choices for this question

A. 4.320E-04 Watts

B. 4.752E-04 Watts

C. 5.227E-04 Watts

D. 5.750E-04 Watts

E. 6.325E-04 Watts

15. The output of an ac generator connected to an RLC series combination has a frequency of 4.00E+04 Hz and an amplitude of 8 V. If R =4 Ω , L= 7.00E-03H , and C=6.60E-06 F, what is the rms power transferred to the resistor?

A. 1.146E-03 Watts

B. 1.260E-03 Watts

C. 1.386E-03 Watts

D. 1.525E-03 Watts

E. 1.677E-03 Watts

16. The output of an ac generator connected to an RLC series combination has a frequency of 7.60E+04 Hz and an amplitude of 5 V. If R =6 Ω , L= 3.70E-03H , and C=5.80E-06 F, what is the rms power transferred to the resistor?

A. 7.239E-04 Watts

B. 7.963E-04 Watts

C. 8.759E-04 Watts

D. 9.635E-04 Watts

E. 1.060E-03 Watts

17. The output of an ac generator connected to an RLC series combination has a frequency of 8.00E+04 Hz and an amplitude of 2 V. If R =7 Ω , L= 4.60E-03H , and C=5.30E-06 F, what is the rms power transferred to the resistor?

A. 1.047E-04 Watts

B. 1.151E-04 Watts

C. 1.267E-04 Watts

D. 1.393E-04 Watts

E. 1.533E-04 Watts

18. The output of an ac generator connected to an RLC series combination has a frequency of 5.70E+04 Hz and an amplitude of 5 V. If R =9 Ω , L= 6.10E-03H , and C=6.60E-06 F, what is the rms power transferred to the resistor?

A. 9.443E-04 Watts

B. 1.039E-03 Watts

C. 1.143E-03 Watts

D. 1.257E-03 Watts

E. 1.383E-03 Watts

19. The output of an ac generator connected to an RLC series combination has a frequency of 6.00E+04 Hz and an amplitude of 2 V. If R =3 Ω , L= 7.20E-03H , and C=6.50E-06 F, what is the rms power transferred to the resistor?

The next page might contain more answer choices for this question

A. 2.222E-05 Watts
B. 2.444E-05 Watts
C. 2.689E-05 Watts
D. 2.958E-05 Watts
E. 3.253E-05 Watts

d_cp2.15 Q6

1. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.38$ V. The resistance, inductance, and capacitance are R =7 Ω , L= 4.10E-03H , and C=7.40E-04 F, respectively. What is the amplitude of the current?
   A. 4.486E-02 A
   B. 4.935E-02 A
   C. 5.429E-02 A
   D. 5.971E-02 A
   E. 6.569E-02 A
2. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.62$ V. The resistance, inductance, and capacitance are R =6 Ω , L= 8.10E-03H , and C=6.40E-04 F, respectively. What is the amplitude of the current?
   A. 7.058E-02 A
   B. 7.764E-02 A
   C. 8.540E-02 A
   D. 9.394E-02 A
   E. 1.033E-01 A
3. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.16$ V. The resistance, inductance, and capacitance are R =8 Ω , L= 5.40E-03H , and C=5.40E-04 F, respectively. What is the amplitude of the current?
   A. 2.000E-02 A
   B. 2.200E-02 A
   C. 2.420E-02 A
   D. 2.662E-02 A
   E. 2.928E-02 A
4. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.77$ V. The resistance, inductance, and capacitance are R =3 Ω , L= 6.70E-03H , and C=7.10E-04 F, respectively. What is the amplitude of the current?
   A. 2.333E-01 A
   B. 2.567E-01 A
   C. 2.823E-01 A
   D. 3.106E-01 A
   E. 3.416E-01 A

The next page might contain more answer choices for this question

5. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.82$ V. The resistance, inductance, and capacitance are R =8 Ω , L= 6.40E-03H , and C=5.70E-04 F, respectively. What is the amplitude of the current?

   A. 7.701E-02 A

   B. 8.471E-02 A

   C. 9.318E-02 A

   D. 1.025E-01 A

   E. 1.128E-01 A

6. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.64$ V. The resistance, inductance, and capacitance are R =2 Ω , L= 4.00E-03H , and C=8.30E-04 F, respectively. What is the amplitude of the current?

   A. 3.200E-01 A

   B. 3.520E-01 A

   C. 3.872E-01 A

   D. 4.259E-01 A

   E. 4.685E-01 A

7. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.8$ V. The resistance, inductance, and capacitance are R =7 Ω , L= 4.90E-03H , and C=8.50E-04 F, respectively. What is the amplitude of the current?

   A. 1.039E-01 A

   B. 1.143E-01 A

   C. 1.257E-01 A

   D. 1.383E-01 A

   E. 1.521E-01 A

8. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.25$ V. The resistance, inductance, and capacitance are R =3 Ω , L= 2.20E-03H , and C=6.30E-04 F, respectively. What is the amplitude of the current?

   A. 7.576E-02 A

   B. 8.333E-02 A

   C. 9.167E-02 A

   D. 1.008E-01 A

   E. 1.109E-01 A

9. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.25$ V. The resistance, inductance, and capacitance are R =7 Ω , L= 5.00E-03H , and C=7.70E-04 F, respectively. What is the amplitude of the current?

   A. 2.439E-02 A

   B. 2.683E-02 A

   C. 2.952E-02 A

   D. 3.247E-02 A

   E. 3.571E-02 A

The next page might contain more answer choices for this question

10. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega t)$, where $V_0=0.88$ V. The resistance, inductance, and capacitance are R =7 Ω , L= 8.00E-03H , and C=5.50E-04 F, respectively. What is the amplitude of the current?

    A. 1.143E-01 A

    B. 1.257E-01 A

    C. 1.383E-01 A

    D. 1.521E-01 A

    E. 1.673E-01 A

11. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega t)$, where $V_0=0.3$ V. The resistance, inductance, and capacitance are R =2 Ω , L= 8.10E-03H , and C=9.40E-04 F, respectively. What is the amplitude of the current?

    A. 1.364E-01 A

    B. 1.500E-01 A

    C. 1.650E-01 A

    D. 1.815E-01 A

    E. 1.997E-01 A

12. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega t)$, where $V_0=0.31$ V. The resistance, inductance, and capacitance are R =5 Ω , L= 9.00E-03H , and C=5.10E-04 F, respectively. What is the amplitude of the current?

    A. 4.235E-02 A

    B. 4.658E-02 A

    C. 5.124E-02 A

    D. 5.636E-02 A

    E. 6.200E-02 A

13. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega t)$, where $V_0=0.82$ V. The resistance, inductance, and capacitance are R =3 Ω , L= 6.20E-03H , and C=6.70E-04 F, respectively. What is the amplitude of the current?

    A. 2.259E-01 A

    B. 2.485E-01 A

    C. 2.733E-01 A

    D. 3.007E-01 A

    E. 3.307E-01 A

14. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega t)$, where $V_0=0.75$ V. The resistance, inductance, and capacitance are R =5 Ω , L= 9.90E-03H , and C=6.80E-04 F, respectively. What is the amplitude of the current?

    A. 1.240E-01 A

    B. 1.364E-01 A

    C. 1.500E-01 A

    D. 1.650E-01 A

    E. 1.815E-01 A

The next page might contain more answer choices for this question

15. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.83$ V. The resistance, inductance, and capacitance are R =9 Ω , L= 8.50E-03H , and C=7.20E-04 F, respectively. What is the amplitude of the current?

    A. 8.384E-02 A

    B. 9.222E-02 A

    C. 1.014E-01 A

    D. 1.116E-01 A

    E. 1.227E-01 A

16. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.76$ V. The resistance, inductance, and capacitance are R =8 Ω , L= 3.80E-03H , and C=5.60E-04 F, respectively. What is the amplitude of the current?

    A. 8.636E-02 A

    B. 9.500E-02 A

    C. 1.045E-01 A

    D. 1.150E-01 A

    E. 1.264E-01 A

17. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.83$ V. The resistance, inductance, and capacitance are R =4 Ω , L= 4.60E-03H , and C=8.10E-04 F, respectively. What is the amplitude of the current?

    A. 1.417E-01 A

    B. 1.559E-01 A

    C. 1.715E-01 A

    D. 1.886E-01 A

    E. 2.075E-01 A

18. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.44$ V. The resistance, inductance, and capacitance are R =7 Ω , L= 5.40E-03H , and C=5.70E-04 F, respectively. What is the amplitude of the current?

    A. 4.723E-02 A

    B. 5.195E-02 A

    C. 5.714E-02 A

    D. 6.286E-02 A

    E. 6.914E-02 A

19. An RLC series combination is driven with an applied voltage of of $V=V_0\sin(\omega\ t)$, where $V_0=0.12$ V. The resistance, inductance, and capacitance are R =3 Ω , L= 8.80E-03H , and C=6.40E-04 F, respectively. What is the amplitude of the current?

    A. 2.732E-02 A

    B. 3.005E-02 A

    C. 3.306E-02 A

    D. 3.636E-02 A

    E. 4.000E-02 A

The next page might contain more answer choices for this question

d_cp2.15 Q7

1. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=1 V. The resistance, inductance, and capacitance are R =0.21 Ω , L= 4.80E-03H , and C=3.60E-06 F, respectively.
   - **A. Q = 1.739E+02**
   - B. Q = 2.000E+02
   - C. Q = 2.300E+02
   - D. Q = 2.645E+02
   - E. Q = 3.041E+02

2. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=3 V. The resistance, inductance, and capacitance are R =0.14 Ω , L= 5.20E-03H , and C=2.90E-06 F, respectively.
   - A. Q = 2.287E+02
   - B. Q = 2.630E+02
   - **C. Q = 3.025E+02**
   - D. Q = 3.478E+02
   - E. Q = 4.000E+02

3. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=2 V. The resistance, inductance, and capacitance are R =0.25 Ω , L= 4.20E-03H , and C=2.70E-06 F, respectively.
   - A. Q = 1.372E+02
   - **B. Q = 1.578E+02**
   - C. Q = 1.814E+02
   - D. Q = 2.086E+02
   - E. Q = 2.399E+02

4. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=3 V. The resistance, inductance, and capacitance are R =0.22 Ω , L= 5.10E-03H , and C=2.50E-06 F, respectively.
   - **A. Q = 2.053E+02**
   - B. Q = 2.361E+02
   - C. Q = 2.715E+02
   - D. Q = 3.122E+02
   - E. Q = 3.591E+02

The next page might contain more answer choices for this question

5. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega t)$, where V_0=6 V. The resistance, inductance, and capacitance are R =0.27 Ω , L= 4.20E-03H , and C=3.70E-06 F, respectively.

   A. Q = 7.135E+01

   B. Q = 8.205E+01

   C. Q = 9.435E+01

   D. Q = 1.085E+02

   E. Q = 1.248E+02

6. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega t)$, where V_0=4 V. The resistance, inductance, and capacitance are R =0.2 Ω , L= 4.90E-03H , and C=2.10E-06 F, respectively.

   A. Q = 1.381E+02

   B. Q = 1.588E+02

   C. Q = 1.826E+02

   D. Q = 2.100E+02

   E. Q = 2.415E+02

7. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega t)$, where V_0=2 V. The resistance, inductance, and capacitance are R =0.28 Ω , L= 4.70E-03H , and C=2.50E-06 F, respectively.

   A. Q = 1.171E+02

   B. Q = 1.347E+02

   C. Q = 1.549E+02

   D. Q = 1.781E+02

   E. Q = 2.048E+02

8. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega t)$, where V_0=3 V. The resistance, inductance, and capacitance are R =0.21 Ω , L= 4.70E-03H , and C=3.70E-06 F, respectively.

   A. Q = 1.476E+02

   B. Q = 1.697E+02

   C. Q = 1.952E+02

   D. Q = 2.245E+02

   E. Q = 2.581E+02

The next page might contain more answer choices for this question

9. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=5 V. The resistance, inductance, and capacitance are R =0.13 Ω , L= 5.30E-03H , and C=2.60E-06 F, respectively.

   A. Q = 1.986E+02
   B. Q = 2.284E+02
   C. Q = 2.626E+02
   D. Q = 3.020E+02
   E. Q = 3.473E+02

10. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=5 V. The resistance, inductance, and capacitance are R =0.27 Ω , L= 4.30E-03H , and C=2.20E-06 F, respectively.

   A. Q = 1.238E+02
   B. Q = 1.424E+02
   C. Q = 1.637E+02
   D. Q = 1.883E+02
   E. Q = 2.165E+02

11. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=4 V. The resistance, inductance, and capacitance are R =0.25 Ω , L= 4.80E-03H , and C=2.60E-06 F, respectively.

   A. Q = 1.300E+02
   B. Q = 1.495E+02
   C. Q = 1.719E+02
   D. Q = 1.976E+02
   E. Q = 2.273E+02

12. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=3 V. The resistance, inductance, and capacitance are R =0.25 Ω , L= 4.70E-03H , and C=3.30E-06 F, respectively.

   A. Q = 1.313E+02
   B. Q = 1.510E+02
   C. Q = 1.736E+02
   D. Q = 1.996E+02
   E. Q = 2.296E+02

The next page might contain more answer choices for this question

13. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=5 V. The resistance, inductance, and capacitance are R =0.21 Ω , L= 5.40E-03H , and C=3.20E-06 F, respectively.

A. Q = 1.286E+02

B. Q = 1.479E+02

C. Q = 1.701E+02

D. Q = 1.956E+02

E. Q = 2.250E+02

14. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=3 V. The resistance, inductance, and capacitance are R =0.29 Ω , L= 4.80E-03H , and C=2.60E-06 F, respectively.

A. Q = 1.288E+02

B. Q = 1.482E+02

C. Q = 1.704E+02

D. Q = 1.959E+02

E. Q = 2.253E+02

15. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=6 V. The resistance, inductance, and capacitance are R =0.3 Ω , L= 5.90E-03H , and C=3.80E-06 F, respectively.

A. Q = 7.510E+01

B. Q = 8.636E+01

C. Q = 9.932E+01

D. Q = 1.142E+02

E. Q = 1.313E+02

16. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega\ t)$, where V_0=5 V. The resistance, inductance, and capacitance are R =0.17 Ω , L= 4.40E-03H , and C=3.40E-06 F, respectively.

A. Q = 1.391E+02

B. Q = 1.600E+02

C. Q = 1.840E+02

D. Q = 2.116E+02

E. Q = 2.434E+02

The next page might contain more answer choices for this question

17. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega t)$, where V_0=2 V. The resistance, inductance, and capacitance are R =0.25 Ω , L= 5.40E-03H , and C=3.20E-06 F, respectively.

    A. Q = 9.395E+01

    B. Q = 1.080E+02

    C. Q = 1.242E+02

    D. Q = 1.429E+02

    E. Q = 1.643E+02

18. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega t)$, where V_0=4 V. The resistance, inductance, and capacitance are R =0.2 Ω , L= 5.00E-03H , and C=3.20E-06 F, respectively.

    A. Q = 1.300E+02

    B. Q = 1.494E+02

    C. Q = 1.719E+02

    D. Q = 1.976E+02

    E. Q = 2.273E+02

19. The quality factor Q is a dimensionless paramater involving the relative values of the magnitudes of the at three impedances (R, X_L, X_C). Since Q is calculatedat resonance, X_L, X_C and only twoimpedances are involved, Q= $\omega_0 L/R$ is defined so that Q is large if the resistance is low. Calculate the Q of an LRC series driven at resonance by an applied voltage of of $V=V_0\sin(\omega t)$, where V_0=1 V. The resistance, inductance, and capacitance are R =0.2 Ω , L= 4.30E-03H , and C=3.20E-06 F, respectively.

    A. Q = 1.048E+02

    B. Q = 1.205E+02

    C. Q = 1.386E+02

    D. Q = 1.594E+02

    E. Q = 1.833E+02

d_cp2.15 Q8

1. A step-down transformer steps 19 kV down to 220 V. The high-voltage input is provided by a 250 Ω power line that carries 4 A of currentWhat is the output current (at the 220 V side ?)

    A. 2.595E+02 A

    B. 2.855E+02 A

    C. 3.140E+02 A

    D. 3.455E+02 A

    E. 3.800E+02 A

2. A step-down transformer steps 14 kV down to 210 V. The high-voltage input is provided by a 240 Ω power line that carries 3 A of currentWhat is the output current (at the 210 V side ?)

The next page might contain more answer choices for this question

A. 2.000E+02 A
B. 2.200E+02 A
C. 2.420E+02 A
D. 2.662E+02 A
E. 2.928E+02 A

3. A step-down transformer steps 18 kV down to 260 V. The high-voltage input is provided by a 290 Ω power line that carries 3 A of currentWhat is the output current (at the 260 V side ?)

A. 1.888E+02 A
B. 2.077E+02 A
C. 2.285E+02 A
D. 2.513E+02 A
E. 2.764E+02 A

4. A step-down transformer steps 9 kV down to 210 V. The high-voltage input is provided by a 170 Ω power line that carries 5 A of currentWhat is the output current (at the 210 V side ?)

A. 1.948E+02 A
B. 2.143E+02 A
C. 2.357E+02 A
D. 2.593E+02 A
E. 2.852E+02 A

5. A step-down transformer steps 18 kV down to 230 V. The high-voltage input is provided by a 250 Ω power line that carries 8 A of currentWhat is the output current (at the 230 V side ?)

A. 5.174E+02 A
B. 5.692E+02 A
C. 6.261E+02 A
D. 6.887E+02 A
E. 7.576E+02 A

6. A step-down transformer steps 19 kV down to 220 V. The high-voltage input is provided by a 230 Ω power line that carries 5 A of currentWhat is the output current (at the 220 V side ?)

A. 3.244E+02 A
B. 3.569E+02 A
C. 3.926E+02 A
D. 4.318E+02 A
E. 4.750E+02 A

7. A step-down transformer steps 8 kV down to 220 V. The high-voltage input is provided by a 110 Ω power line that carries 8 A of currentWhat is the output current (at the 220 V side ?)

A. 2.404E+02 A
B. 2.645E+02 A
C. 2.909E+02 A
D. 3.200E+02 A

The next page might contain more answer choices for this question

E. 3.520E+02 A

8. A step-down transformer steps 15 kV down to 240 V. The high-voltage input is provided by a 200 Ω power line that carries 4 A of currentWhat is the output current (at the 240 V side ?)

A. 1.708E+02 A

B. 1.878E+02 A

C. 2.066E+02 A

D. 2.273E+02 A

E. 2.500E+02 A

9. A step-down transformer steps 12 kV down to 170 V. The high-voltage input is provided by a 140 Ω power line that carries 9 A of currentWhat is the output current (at the 170 V side ?)

A. 4.773E+02 A

B. 5.250E+02 A

C. 5.775E+02 A

D. 6.353E+02 A

E. 6.988E+02 A

10. A step-down transformer steps 16 kV down to 210 V. The high-voltage input is provided by a 200 Ω power line that carries 7 A of currentWhat is the output current (at the 210 V side ?)

A. 4.007E+02 A

B. 4.408E+02 A

C. 4.848E+02 A

D. 5.333E+02 A

E. 5.867E+02 A

11. A step-down transformer steps 18 kV down to 170 V. The high-voltage input is provided by a 240 Ω power line that carries 5 A of currentWhat is the output current (at the 170 V side ?)

A. 5.294E+02 A

B. 5.824E+02 A

C. 6.406E+02 A

D. 7.046E+02 A

E. 7.751E+02 A

12. A step-down transformer steps 15 kV down to 240 V. The high-voltage input is provided by a 120 Ω power line that carries 3 A of currentWhat is the output current (at the 240 V side ?)

A. 1.550E+02 A

B. 1.705E+02 A

C. 1.875E+02 A

D. 2.063E+02 A

E. 2.269E+02 A

13. A step-down transformer steps 18 kV down to 170 V. The high-voltage input is provided by a 230 Ω power line that carries 5 A of currentWhat is the output current (at the 170 V side ?)

A. 4.375E+02 A

The next page might contain more answer choices for this question

B. 4.813E+02 A

C. 5.294E+02 A

D. 5.824E+02 A

E. 6.406E+02 A

14. A step-down transformer steps 6 kV down to 190 V. The high-voltage input is provided by a 130 Ω power line that carries 6 A of currentWhat is the output current (at the 190 V side ?)

A. 1.424E+02 A

B. 1.566E+02 A

C. 1.722E+02 A

D. 1.895E+02 A

E. 2.084E+02 A

15. A step-down transformer steps 7 kV down to 190 V. The high-voltage input is provided by a 240 Ω power line that carries 5 A of currentWhat is the output current (at the 190 V side ?)

A. 1.675E+02 A

B. 1.842E+02 A

C. 2.026E+02 A

D. 2.229E+02 A

E. 2.452E+02 A

16. A step-down transformer steps 9 kV down to 160 V. The high-voltage input is provided by a 260 Ω power line that carries 7 A of currentWhat is the output current (at the 160 V side ?)

A. 3.938E+02 A

B. 4.331E+02 A

C. 4.764E+02 A

D. 5.241E+02 A

E. 5.765E+02 A

17. A step-down transformer steps 12 kV down to 230 V. The high-voltage input is provided by a 140 Ω power line that carries 5 A of currentWhat is the output current (at the 230 V side ?)

A. 2.156E+02 A

B. 2.372E+02 A

C. 2.609E+02 A

D. 2.870E+02 A

E. 3.157E+02 A

18. A step-down transformer steps 19 kV down to 260 V. The high-voltage input is provided by a 290 Ω power line that carries 6 A of currentWhat is the output current (at the 260 V side ?)

A. 3.294E+02 A

B. 3.624E+02 A

C. 3.986E+02 A

D. 4.385E+02 A

E. 4.823E+02 A

The next page might contain more answer choices for this question

19. A step-down transformer steps 15 kV down to 250 V. The high-voltage input is provided by a 130 Ω power line that carries 4 A of currentWhat is the output current (at the 250 V side ?)

   A. 1.983E+02 A
   B. 2.182E+02 A
   C. 2.400E+02 A
   D. 2.640E+02 A
   E. 2.904E+02 A

28 a23InductionACcircuits_Q1

1. Two orbiting satellites are orbiting at a speed of 85 km/s perpendicular to a magnetic field of 56 μ T. They are connected by a cable that is 29 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?[201]

   A. 7.76 x 10^4 volts.
   B. 9.4 x 10^4 volts.
   C. 1.14 x 10^5 volts.
   D. 1.38 x 10^5 volts.
   E. 1.67 x 10^5 volts.

2. An loop of wire with 25 turns has a radius of 0.85 meters, and is oriented with its axis parallel to a magetic field of 0.58 Tesla. What is the induced voltage if this field is reduced to 49

   A. 9.24 x 10^0 volts
   B. 1.12 x 10^1 volts
   C. 1.36 x 10^1 volts
   D. 1.64 x 10^1 volts
   E. 1.99 x 10^1 volts

28.1 Renditions

a23InductionACcircuits_Q1 Q1

1. Two orbiting satellites are orbiting at a speed of 77 km/s perpendicular to a magnetic field of 56 μ T. They are connected by a cable that is 31 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?

   A. 1.1 x 10^5 volts.
   B. 1.34 x 10^5 volts.
   C. 1.62 x 10^5 volts.
   D. 1.96 x 10^5 volts.
   E. 2.38 x 10^5 volts.

2. Two orbiting satellites are orbiting at a speed of 66 km/s perpendicular to a magnetic field of 64 μ T. They are connected by a cable that is 37 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?

The next page might contain more answer choices for this question

A. 1.29×10^5 volts.

B. 1.56×10^5 volts.

C. 1.89×10^5 volts.

D. 2.29×10^5 volts.

E. 2.78×10^5 volts.

3. Two orbiting satellites are orbiting at a speed of 53 km/s perpendicular to a magnetic field of 58 μ T. They are connected by a cable that is 29 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?

A. 7.36×10^4 volts.

B. 8.91×10^4 volts.

C. 1.08×10^5 volts.

D. 1.31×10^5 volts.

E. 1.59×10^5 volts.

4. Two orbiting satellites are orbiting at a speed of 83 km/s perpendicular to a magnetic field of 57 μ T. They are connected by a cable that is 23 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?

A. 8.98×10^4 volts.

B. 1.09×10^5 volts.

C. 1.32×10^5 volts.

D. 1.6×10^5 volts.

E. 1.93×10^5 volts.

5. Two orbiting satellites are orbiting at a speed of 52 km/s perpendicular to a magnetic field of 41 μ T. They are connected by a cable that is 33 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?

A. 4.79×10^4 volts.

B. 5.81×10^4 volts.

C. 7.04×10^4 volts.

D. 8.52×10^4 volts.

E. 1.03×10^5 volts.

6. Two orbiting satellites are orbiting at a speed of 58 km/s perpendicular to a magnetic field of 46 μ T. They are connected by a cable that is 22 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?

A. 2.72×10^4 volts.

B. 3.3×10^4 volts.

C. 4×10^4 volts.

D. 4.84×10^4 volts.

The next page might contain more answer choices for this question

E. 5.87×10^4 volts.

7. Two orbiting satellites are orbiting at a speed of 70 km/s perpendicular to a magnetic field of 46 µ T. They are connected by a cable that is 30 km long. A voltmeter is attached between a satellite and one end of the cable. The voltmeter's internal impedance far exceeds the net resistance through the ionosphere that completes the circuit. What is the measured voltage?

   A. 4.48×10^4 volts.

   B. 5.43×10^4 volts.

   C. 6.58×10^4 volts.

   D. 7.97×10^4 volts.

   E. 9.66×10^4 volts.

a23InductionACcircuits_Q1 Q2

1. An loop of wire with 26 turns has a radius of 0.26 meters, and is oriented with its axis parallel to a magetic field of 0.75 Tesla. What is the induced voltage if this field is reduced to 13

   A. 2×10^0 volts

   B. 2.42×10^0 volts

   C. 2.94×10^0 volts

   D. 3.56×10^0 volts

   E. 4.31×10^0 volts

2. An loop of wire with 92 turns has a radius of 0.39 meters, and is oriented with its axis parallel to a magetic field of 0.97 Tesla. What is the induced voltage if this field is reduced to 16

   A. 2.56×10^1 volts

   B. 3.1×10^1 volts

   C. 3.76×10^1 volts

   D. 4.55×10^1 volts

   E. 5.51×10^1 volts

3. An loop of wire with 80 turns has a radius of 0.52 meters, and is oriented with its axis parallel to a magetic field of 0.15 Tesla. What is the induced voltage if this field is reduced to 19

   A. 1.06×10^0 volts

   B. 1.29×10^0 volts

   C. 1.56×10^0 volts

   D. 1.89×10^0 volts

   E. 2.29×10^0 volts

4. An loop of wire with 43 turns has a radius of 0.27 meters, and is oriented with its axis parallel to a magetic field of 0.68 Tesla. What is the induced voltage if this field is reduced to 36

   A. 6.34×10^{-1} volts

   B. 7.68×10^{-1} volts

   C. 9.31×10^{-1} volts

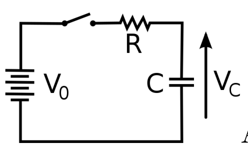
   D. 1.13×10^0 volts

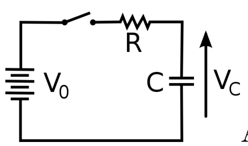
The next page might contain more answer choices for this question

E. 1.37×10^{0} volts

5. An loop of wire with 54 turns has a radius of 0.8 meters, and is oriented with its axis parallel to a magetic field of 0.86 Tesla. What is the induced voltage if this field is reduced to 46
   - A. 1.43×10^{1} volts
   - B. 1.73×10^{1} volts
   - **C. 2.1×10^{1} volts**
   - D. 2.55×10^{1} volts
   - E. 3.08×10^{1} volts
6. An loop of wire with 31 turns has a radius of 0.9 meters, and is oriented with its axis parallel to a magetic field of 0.83 Tesla. What is the induced voltage if this field is reduced to 35
   - A. 2.07×10^{1} volts
   - **B. 2.5×10^{1} volts**
   - C. 3.03×10^{1} volts
   - D. 3.67×10^{1} volts
   - E. 4.45×10^{1} volts
7. An loop of wire with 33 turns has a radius of 0.55 meters, and is oriented with its axis parallel to a magetic field of 0.74 Tesla. What is the induced voltage if this field is reduced to 32
   - A. 5.43×10^{0} volts
   - **B. 6.58×10^{0} volts**
   - C. 7.97×10^{0} volts
   - D. 9.65×10^{0} volts
   - E. 1.17×10^{1} volts

29 d_cp2.16

1. 

A parallel plate capacitor with a capicatnce C=1.00E-06 F whose plates have an area A=225.9 m^2 and separation d=2.00E-03 m is connected via a swith to a 2 Ω resistor and a battery of voltage V_0=2 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=4.00E-06?[202]
   - **A. 1.729E+00 V**
   - B. 1.902E+00 V
   - C. 2.092E+00 V
   - D. 2.302E+00 V
   - E. 2.532E+00 V
2. 

A parallel plate capacitor with a capicatnce C=1.00E-06 F whose plates have an area A=225.9 m^2 and separation d=2.00E-03 m is connected via a swith to a 2 Ω resistor and a battery of voltage V_0=2 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=4.00E-06?[203]

The next page might contain more answer choices for this question

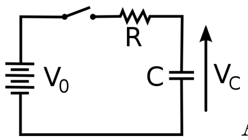
A. 8.647E+02 V/m

B. 9.511E+02 V/m

C. 1.046E+03 V/m

D. 1.151E+03 V/m

E. 1.266E+03 V/m



3. A parallel plate capacitor with a capicatnce C=1.00E-06 F whose plates have an area A=225.9 m^2 and separation d=2.00E-03 m is connected via a swith to a 2 Ω resistor and a battery of voltage V_0=2 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=4.00E-06?[204]

A. 1.230E-01 A

B. 1.353E-01 A

C. 1.489E-01 A

D. 1.638E-01 A

E. 1.801E-01 A

4. A 60 kW radio transmitter on Earth sends it signal to a satellite 100 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 90 kW?[205]

A. 9.202E+01 km

B. 1.012E+02 km

C. 1.113E+02 km

D. 1.225E+02 km

E. 1.347E+02 km

5. What is the radiation pressure on an object that is 9.00E+10 m away from the sun and has cross-sectional area of 0.04 m^2? The average power output of the Sun is 3.80E+26 W.[206]

A. 1.701E-05 N/m^2

B. 1.871E-05 N/m^2

C. 2.058E-05 N/m^2

D. 2.264E-05 N/m^2

E. 2.491E-05 N/m^2

6. What is the radiation force on an object that is 9.00E+10 m away from the sun and has cross-sectional area of 0.04 m^2? The average power output of the Sun is 3.80E+26 W.[207]

A. 8.233E-07 N

B. 9.056E-07 N

C. 9.962E-07 N

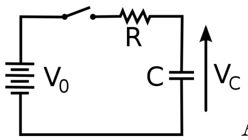
D. 1.096E-06 N

E. 1.205E-06 N

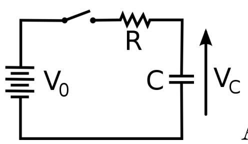
The next page might contain more answer choices for this question

29.1 Renditions

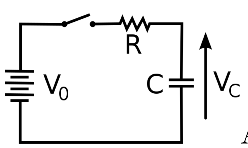
d_cp2.16 Q1

1. 

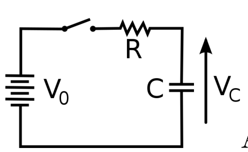
A parallel plate capacitor with a capicatnce C=5.40E-06 F whose plates have an area A=3.50E+03 m^2 and separation d=5.70E-03 m is connected via a swith to a 92 Ω resistor and a battery of voltage V_0=52 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=2.40E-03?
   - A. 3.876E+01 V
   - B. 4.263E+01 V
   - C. 4.690E+01 V
   - **D. 5.159E+01 V**
   - E. 5.674E+01 V

2. 

A parallel plate capacitor with a capicatnce C=2.90E-06 F whose plates have an area A=1.60E+03 m^2 and separation d=5.00E-03 m is connected via a swith to a 41 Ω resistor and a battery of voltage V_0=92 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=4.50E-04?
   - A. 6.755E+01 V
   - B. 7.431E+01 V
   - C. 8.174E+01 V
   - **D. 8.991E+01 V**
   - E. 9.890E+01 V

3. 

A parallel plate capacitor with a capicatnce C=6.20E-06 F whose plates have an area A=5.30E+03 m^2 and separation d=7.50E-03 m is connected via a swith to a 95 Ω resistor and a battery of voltage V_0=15 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=9.20E-04?
   - A. 8.097E+00 V
   - B. 8.906E+00 V
   - C. 9.797E+00 V
   - D. 1.078E+01 V
   - **E. 1.185E+01 V**

4. 

A parallel plate capacitor with a capicatnce C=9.60E-06 F whose plates have an area A=5.40E+03 m^2 and separation d=5.00E-03 m is connected via a swith to a 29 Ω resistor and a battery of voltage V_0=50 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=8.30E-04?

The next page might contain more answer choices for this question

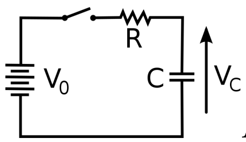
A. 3.923E+01 V

B. 4.315E+01 V

C. 4.746E+01 V

D. 5.221E+01 V

E. 5.743E+01 V

5. 

A parallel plate capacitor with a capicatnce C=8.90E-06 F whose plates have an area A=6.90E+03 m^2 and separation d=6.90E-03 m is connected via a swith to a 89 Ω resistor and a battery of voltage V_0=89 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=3.40E-03?

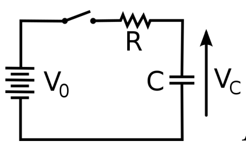
A. 6.595E+01 V

B. 7.255E+01 V

C. 7.980E+01 V

D. 8.778E+01 V

E. 9.656E+01 V

6. 

A parallel plate capacitor with a capicatnce C=7.40E-06 F whose plates have an area A=7.20E+03 m^2 and separation d=8.60E-03 m is connected via a swith to a 14 Ω resistor and a battery of voltage V_0=16 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=1.50E-04?

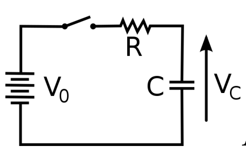
A. 9.195E+00 V

B. 1.011E+01 V

C. 1.113E+01 V

D. 1.224E+01 V

E. 1.346E+01 V

7. 

A parallel plate capacitor with a capicatnce C=7.10E-06 F whose plates have an area A=5.10E+03 m^2 and separation d=6.40E-03 m is connected via a swith to a 54 Ω resistor and a battery of voltage V_0=83 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=1.50E-03?

A. 6.111E+01 V

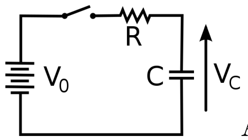
B. 6.722E+01 V

C. 7.395E+01 V

D. 8.134E+01 V

E. 8.947E+01 V

The next page might contain more answer choices for this question

8. 

A parallel plate capacitor with a capicatnce C=7.40E-06 F whose plates have an area A=5.30E+03 m^2 and separation d=6.30E-03 m is connected via a swith to a 5 Ω resistor and a battery of voltage V_0=58 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=1.10E-04?

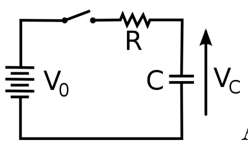
A. 4.548E+01 V

B. 5.003E+01 V

C. 5.503E+01 V

D. 6.054E+01 V

E. 6.659E+01 V

9. 

A parallel plate capacitor with a capicatnce C=1.80E-06 F whose plates have an area A=670.0 m^2 and separation d=3.30E-03 m is connected via a swith to a 40 Ω resistor and a battery of voltage V_0=97 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=2.40E-04?

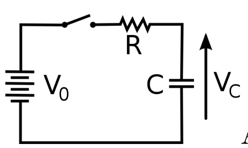
A. 7.731E+01 V

B. 8.504E+01 V

C. 9.354E+01 V

D. 1.029E+02 V

E. 1.132E+02 V

10. 

A parallel plate capacitor with a capicatnce C=3.80E-06 F whose plates have an area A=2.70E+03 m^2 and separation d=6.30E-03 m is connected via a swith to a 4 Ω resistor and a battery of voltage V_0=7 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=3.40E-05?

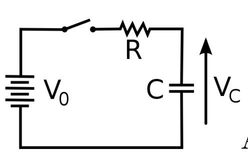
A. 6.252E+00 V

B. 6.878E+00 V

C. 7.565E+00 V

D. 8.322E+00 V

E. 9.154E+00 V

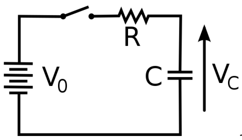
11. 

A parallel plate capacitor with a capicatnce C=9.80E-06 F whose plates have an area A=9.60E+03 m^2 and separation d=8.70E-03 m is connected via a swith to a 23 Ω resistor and a battery of voltage V_0=3 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=7.20E-04?

A. 2.877E+00 V

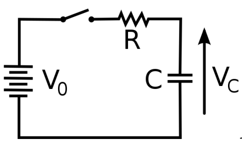
The next page might contain more answer choices for this question

B. 3.165E+00 V
C. 3.481E+00 V
D. 3.829E+00 V
E. 4.212E+00 V



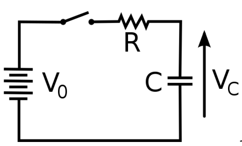
12. A parallel plate capacitor with a capicatnce C=8.30E-06 F whose plates have an area A=7.00E+03 m^2 and separation d=7.50E-03 m is connected via a swith to a 51 Ω resistor and a battery of voltage V_0=81 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=1.20E-03?

A. 5.728E+01 V
B. 6.301E+01 V
C. 6.931E+01 V
D. 7.624E+01 V
E. 8.387E+01 V



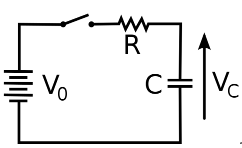
13. A parallel plate capacitor with a capicatnce C=4.70E-06 F whose plates have an area A=1.70E+03 m^2 and separation d=3.20E-03 m is connected via a swith to a 61 Ω resistor and a battery of voltage V_0=53 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=8.40E-04?

A. 5.017E+01 V
B. 5.519E+01 V
C. 6.071E+01 V
D. 6.678E+01 V
E. 7.345E+01 V



14. A parallel plate capacitor with a capicatnce C=7.60E-06 F whose plates have an area A=2.90E+03 m^2 and separation d=3.40E-03 m is connected via a swith to a 15 Ω resistor and a battery of voltage V_0=90 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=2.20E-04?

A. 7.693E+01 V
B. 8.463E+01 V
C. 9.309E+01 V
D. 1.024E+02 V
E. 1.126E+02 V



15. A parallel plate capacitor with a capicatnce C=5.60E-06 F whose plates have an area A=3.50E+03 m^2 and separation d=5.60E-03 m is connected via a swith to a 94 Ω resistor and a battery of voltage V_0=21 V as

shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=8.40E-04?

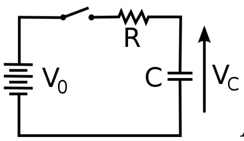
A. 1.258E+01 V

B. 1.384E+01 V

C. 1.522E+01 V

D. 1.674E+01 V

E. 1.842E+01 V



16. A parallel plate capacitor with a capicatnce C=6.50E-06 F whose plates have an area A=4.50E+03 m^2 and separation d=6.10E-03 m is connected via a swith to a 4 Ω resistor and a battery of voltage V_0=3 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=2.70E-05?

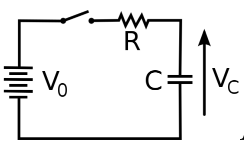
A. 1.456E+00 V

B. 1.602E+00 V

C. 1.762E+00 V

D. 1.938E+00 V

E. 2.132E+00 V



17. A parallel plate capacitor with a capicatnce C=7.50E-06 F whose plates have an area A=2.90E+03 m^2 and separation d=3.40E-03 m is connected via a swith to a 61 Ω resistor and a battery of voltage V_0=77 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=1.70E-03?

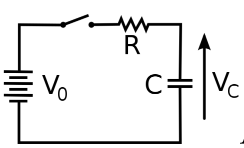
A. 5.131E+01 V

B. 5.644E+01 V

C. 6.209E+01 V

D. 6.830E+01 V

E. 7.513E+01 V



18. A parallel plate capacitor with a capicatnce C=9.80E-06 F whose plates have an area A=5.60E+03 m^2 and separation d=5.10E-03 m is connected via a swith to a 15 Ω resistor and a battery of voltage V_0=54 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=2.50E-04?

A. 3.015E+01 V

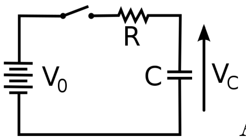
B. 3.316E+01 V

C. 3.648E+01 V

D. 4.013E+01 V

E. 4.414E+01 V

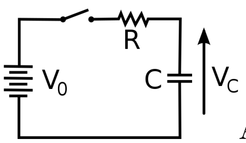
The next page might contain more answer choices for this question



19. A parallel plate capacitor with a capicatnce C=9.10E-06 F whose plates have an area A=8.50E+03 m^2 and separation d=8.30E-03 m is connected via a swith to a 67 Ω resistor and a battery of voltage V_0=8 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the voltage at time t=1.40E-03?

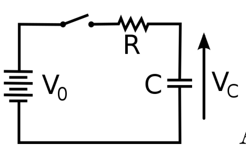
A. 5.946E+00 V
B. 6.541E+00 V
C. 7.195E+00 V
D. 7.914E+00 V
E. 8.706E+00 V

d_cp2.16 Q2



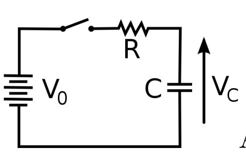
1. A parallel plate capacitor with a capicatnce C=1.10E-06 F whose plates have an area A=930.0 m^2 and separation d=7.50E-03 m is connected via a swith to a 83 Ω resistor and a battery of voltage V_0=42 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=3.80E-04?

A. 3.765E+03 V/m
B. 4.142E+03 V/m
C. 4.556E+03 V/m
D. 5.012E+03 V/m
E. 5.513E+03 V/m



2. A parallel plate capacitor with a capicatnce C=1.20E-06 F whose plates have an area A=1.00E+03 m^2 and separation d=7.70E-03 m is connected via a swith to a 32 Ω resistor and a battery of voltage V_0=38 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=1.40E-04?

A. 3.972E+03 V/m
B. 4.369E+03 V/m
C. 4.806E+03 V/m
D. 5.287E+03 V/m
E. 5.816E+03 V/m



3. A parallel plate capacitor with a capicatnce C=5.60E-06 F whose plates have an area A=2.00E+03 m^2 and separation d=3.10E-03 m is connected via a swith to a 68 Ω resistor and a battery of voltage V_0=73 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=8.50E-04?

The next page might contain more answer choices for this question

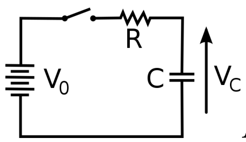
A. 1.579E+04 V/m

B. 1.737E+04 V/m

C. 1.911E+04 V/m

D. 2.102E+04 V/m

E. 2.312E+04 V/m



4. A parallel plate capacitor with a capicatnce C=9.20E-06 F whose plates have an area A=3.60E+03 m^2 and separation d=3.50E-03 m is connected via a swith to a 28 Ω resistor and a battery of voltage V_0=16 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=6.00E-04?

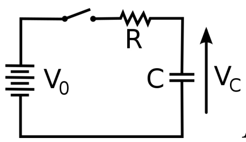
A. 3.751E+03 V/m

B. 4.126E+03 V/m

C. 4.539E+03 V/m

D. 4.993E+03 V/m

E. 5.492E+03 V/m



5. A parallel plate capacitor with a capicatnce C=5.70E-06 F whose plates have an area A=5.60E+03 m^2 and separation d=8.70E-03 m is connected via a swith to a 98 Ω resistor and a battery of voltage V_0=67 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=1.80E-03?

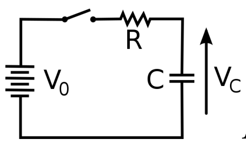
A. 5.050E+03 V/m

B. 5.555E+03 V/m

C. 6.111E+03 V/m

D. 6.722E+03 V/m

E. 7.394E+03 V/m



6. A parallel plate capacitor with a capicatnce C=2.60E-06 F whose plates have an area A=2.60E+03 m^2 and separation d=9.00E-03 m is connected via a swith to a 41 Ω resistor and a battery of voltage V_0=91 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=3.00E-04?

A. 9.505E+03 V/m

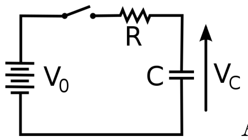
B. 1.046E+04 V/m

C. 1.150E+04 V/m

D. 1.265E+04 V/m

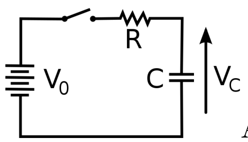
E. 1.392E+04 V/m

The next page might contain more answer choices for this question



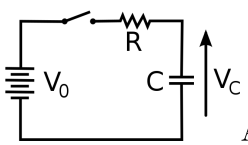
7. A parallel plate capacitor with a capicatnce C=1.30E-06 F whose plates have an area A=1.10E+03 m^2 and separation d=7.60E-03 m is connected via a swith to a 80 Ω resistor and a battery of voltage V_0=5 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=2.30E-04?

A. 4.842E+02 V/m
B. 5.326E+02 V/m
C. 5.858E+02 V/m
D. 6.444E+02 V/m
E. 7.089E+02 V/m



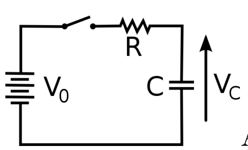
8. A parallel plate capacitor with a capicatnce C=7.30E-06 F whose plates have an area A=4.80E+03 m^2 and separation d=5.80E-03 m is connected via a swith to a 93 Ω resistor and a battery of voltage V_0=48 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=9.00E-04?

A. 5.023E+03 V/m
B. 5.525E+03 V/m
C. 6.078E+03 V/m
D. 6.685E+03 V/m
E. 7.354E+03 V/m



9. A parallel plate capacitor with a capicatnce C=2.60E-06 F whose plates have an area A=2.60E+03 m^2 and separation d=9.00E-03 m is connected via a swith to a 63 Ω resistor and a battery of voltage V_0=86 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=8.00E-04?

A. 7.125E+03 V/m
B. 7.837E+03 V/m
C. 8.621E+03 V/m
D. 9.483E+03 V/m
E. 1.043E+04 V/m



10. A parallel plate capacitor with a capicatnce C=8.20E-06 F whose plates have an area A=4.10E+03 m^2 and separation d=4.40E-03 m is connected via a swith to a 87 Ω resistor and a battery of voltage V_0=37 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=9.20E-04?

A. 4.578E+03 V/m

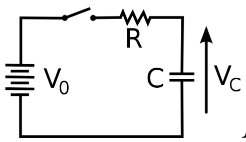
The next page might contain more answer choices for this question

B. 5.036E+03 V/m

C. 5.539E+03 V/m

D. 6.093E+03 V/m

E. 6.703E+03 V/m



11. A parallel plate capacitor with a capicatnce C=5.20E-06 F whose plates have an area A=2.90E+03 m^2 and separation d=4.90E-03 m is connected via a swith to a 93 Ω resistor and a battery of voltage V_0=5 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=2.20E-03?

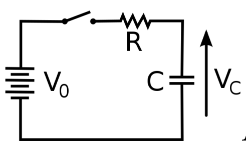
A. 6.896E+02 V/m

B. 7.585E+02 V/m

C. 8.344E+02 V/m

D. 9.178E+02 V/m

E. 1.010E+03 V/m



12. A parallel plate capacitor with a capicatnce C=8.20E-06 F whose plates have an area A=6.20E+03 m^2 and separation d=6.70E-03 m is connected via a swith to a 75 Ω resistor and a battery of voltage V_0=17 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=6.50E-04?

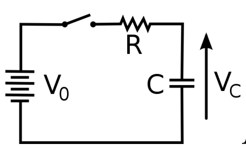
A. 1.505E+03 V/m

B. 1.656E+03 V/m

C. 1.821E+03 V/m

D. 2.003E+03 V/m

E. 2.204E+03 V/m



13. A parallel plate capacitor with a capicatnce C=4.50E-06 F whose plates have an area A=3.30E+03 m^2 and separation d=6.40E-03 m is connected via a swith to a 83 Ω resistor and a battery of voltage V_0=56 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=1.40E-03?

A. 7.767E+03 V/m

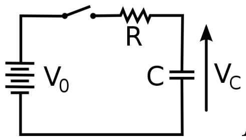
B. 8.544E+03 V/m

C. 9.398E+03 V/m

D. 1.034E+04 V/m

E. 1.137E+04 V/m

The next page might contain more answer choices for this question

14. 

A parallel plate capacitor with a capicatnce C=4.70E-06 F whose plates have an area A=4.20E+03 m^2 and separation d=8.00E-03 m is connected via a swith to a 6 Ω resistor and a battery of voltage V_0=94 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=6.60E-05?

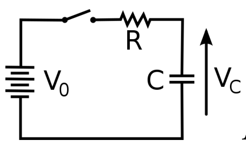
A. 7.253E+03 V/m

B. 7.978E+03 V/m

C. 8.776E+03 V/m

D. 9.653E+03 V/m

E. 1.062E+04 V/m

15. 

A parallel plate capacitor with a capicatnce C=2.00E-06 F whose plates have an area A=1.90E+03 m^2 and separation d=8.60E-03 m is connected via a swith to a 28 Ω resistor and a battery of voltage V_0=45 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=1.30E-04?

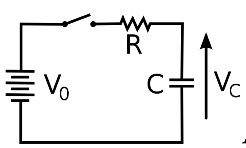
A. 3.223E+03 V/m

B. 3.546E+03 V/m

C. 3.900E+03 V/m

D. 4.290E+03 V/m

E. 4.719E+03 V/m

16. 

A parallel plate capacitor with a capicatnce C=7.90E-06 F whose plates have an area A=6.10E+03 m^2 and separation d=6.80E-03 m is connected via a swith to a 22 Ω resistor and a battery of voltage V_0=6 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=5.20E-04?

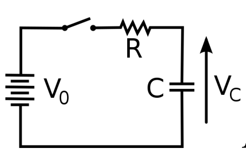
A. 7.619E+02 V/m

B. 8.381E+02 V/m

C. 9.219E+02 V/m

D. 1.014E+03 V/m

E. 1.115E+03 V/m

17. 

A parallel plate capacitor with a capicatnce C=1.40E-06 F whose plates have an area A=980.0 m^2 and separation d=6.20E-03 m is connected via a swith to a 8 Ω resistor and a battery of voltage V_0=53 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=2.40E-05?

A. 5.154E+03 V/m

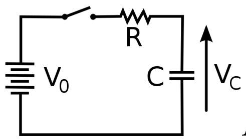
The next page might contain more answer choices for this question

B. 5.669E+03 V/m

C. 6.236E+03 V/m

D. 6.860E+03 V/m

E. 7.545E+03 V/m

18. 

A parallel plate capacitor with a capicatnce C=4.30E-06 F whose plates have an area A=2.80E+03 m^2 and separation d=5.70E-03 m is connected via a swith to a 7 Ω resistor and a battery of voltage V_0=97 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=7.00E-05?

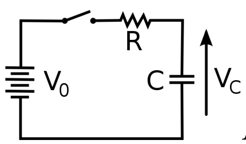
A. 1.049E+04 V/m

B. 1.154E+04 V/m

C. 1.269E+04 V/m

D. 1.396E+04 V/m

E. 1.535E+04 V/m

19. 

A parallel plate capacitor with a capicatnce C=1.60E-06 F whose plates have an area A=890.0 m^2 and separation d=4.90E-03 m is connected via a swith to a 80 Ω resistor and a battery of voltage V_0=44 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the electric field at time t=2.90E-04?

A. 6.651E+03 V/m

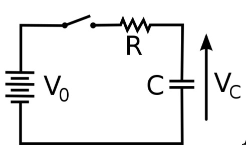
B. 7.316E+03 V/m

C. 8.048E+03 V/m

D. 8.853E+03 V/m

E. 9.738E+03 V/m

d_cp2.16 Q3

1. 

A parallel plate capacitor with a capicatnce C=3.80E-06 F whose plates have an area A=1.80E+03 m^2 and separation d=4.30E-03 m is connected via a swith to a 41 Ω resistor and a battery of voltage V_0=39 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=3.60E-04?

A. 7.089E-02 A

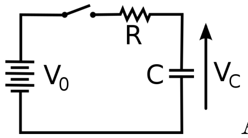
B. 7.798E-02 A

C. 8.578E-02 A

D. 9.436E-02 A

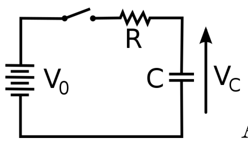
E. 1.038E-01 A

The next page might contain more answer choices for this question



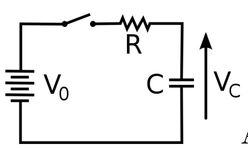
2. A parallel plate capacitor with a capicatnce C=6.90E-06 F whose plates have an area A=5.80E+03 m^2 and separation d=7.40E-03 m is connected via a swith to a 26 Ω resistor and a battery of voltage V_0=9 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=4.70E-04?

   A. 1.894E-02 A
   B. 2.083E-02 A
   C. 2.291E-02 A
   D. 2.520E-02 A
   E. 2.773E-02 A



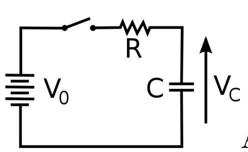
3. A parallel plate capacitor with a capicatnce C=3.20E-06 F whose plates have an area A=2.80E+03 m^2 and separation d=7.80E-03 m is connected via a swith to a 17 Ω resistor and a battery of voltage V_0=94 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=2.20E-04?

   A. 8.809E-02 A
   B. 9.690E-02 A
   C. 1.066E-01 A
   D. 1.173E-01 A
   E. 1.290E-01 A



4. A parallel plate capacitor with a capicatnce C=9.40E-06 F whose plates have an area A=5.00E+03 m^2 and separation d=4.70E-03 m is connected via a swith to a 62 Ω resistor and a battery of voltage V_0=65 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=9.70E-04?

   A. 1.985E-01 A
   B. 2.183E-01 A
   C. 2.401E-01 A
   D. 2.642E-01 A
   E. 2.906E-01 A



5. A parallel plate capacitor with a capicatnce C=7.30E-06 F whose plates have an area A=6.10E+03 m^2 and separation d=7.40E-03 m is connected via a swith to a 18 Ω resistor and a battery of voltage V_0=8 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=2.20E-04?

   A. 6.259E-02 A

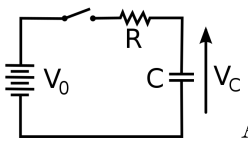
The next page might contain more answer choices for this question

B. 6.885E-02 A

C. 7.573E-02 A

D. 8.331E-02 A

E. 9.164E-02 A

6. 

A parallel plate capacitor with a capicatnce C=7.30E-06 F whose plates have an area A=6.80E+03 m^2 and separation d=8.30E-03 m is connected via a swith to a 84 Ω resistor and a battery of voltage V_0=3 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=2.60E-03?

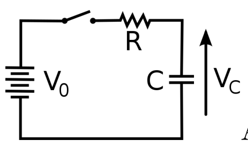
A. 4.678E-04 A

B. 5.145E-04 A

C. 5.660E-04 A

D. 6.226E-04 A

E. 6.848E-04 A

7. 

A parallel plate capacitor with a capicatnce C=6.80E-06 F whose plates have an area A=6.60E+03 m^2 and separation d=8.60E-03 m is connected via a swith to a 62 Ω resistor and a battery of voltage V_0=36 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=6.60E-04?

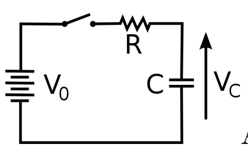
A. 8.288E-02 A

B. 9.117E-02 A

C. 1.003E-01 A

D. 1.103E-01 A

E. 1.213E-01 A

8. 

A parallel plate capacitor with a capicatnce C=4.40E-06 F whose plates have an area A=1.80E+03 m^2 and separation d=3.60E-03 m is connected via a swith to a 87 Ω resistor and a battery of voltage V_0=61 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=6.70E-04?

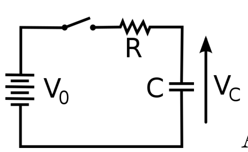
A. 8.320E-02 A

B. 9.152E-02 A

C. 1.007E-01 A

D. 1.107E-01 A

E. 1.218E-01 A

9. 

A parallel plate capacitor with a capicatnce C=3.80E-06 F whose plates have an area A=2.70E+03 m^2 and separation d=6.30E-03 m is connected via a swith to a 85 Ω resistor and a battery of voltage V_0=22 V as

The next page might contain more answer choices for this question

shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=1.50E-03?

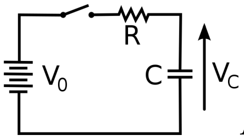
A. 2.058E-03 A

B. 2.263E-03 A

C. 2.490E-03 A

D. 2.739E-03 A

E. 3.013E-03 A

10. 

A parallel plate capacitor with a capicatnce C=6.90E-06 F whose plates have an area A=5.80E+03 m^2 and separation d=7.40E-03 m is connected via a swith to a 78 Ω resistor and a battery of voltage V_0=70 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=2.50E-03?

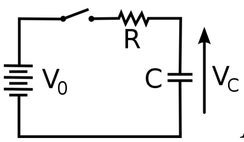
A. 5.890E-03 A

B. 6.479E-03 A

C. 7.126E-03 A

D. 7.839E-03 A

E. 8.623E-03 A

11. 

A parallel plate capacitor with a capicatnce C=7.60E-06 F whose plates have an area A=4.00E+03 m^2 and separation d=4.70E-03 m is connected via a swith to a 38 Ω resistor and a battery of voltage V_0=28 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=8.10E-04?

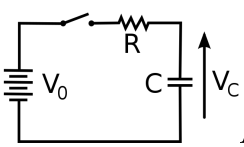
A. 3.351E-02 A

B. 3.686E-02 A

C. 4.054E-02 A

D. 4.460E-02 A

E. 4.906E-02 A

12. 

A parallel plate capacitor with a capicatnce C=1.40E-06 F whose plates have an area A=730.0 m^2 and separation d=4.60E-03 m is connected via a swith to a 96 Ω resistor and a battery of voltage V_0=90 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=3.30E-04?

A. 7.315E-02 A

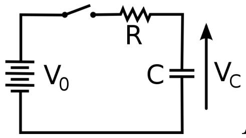
B. 8.047E-02 A

C. 8.851E-02 A

D. 9.737E-02 A

E. 1.071E-01 A

The next page might contain more answer choices for this question

13. 

A parallel plate capacitor with a capicatnce C=4.90E-06 F whose plates have an area A=3.00E+03 m^2 and separation d=5.40E-03 m is connected via a swith to a 10 Ω resistor and a battery of voltage V_0=12 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=2.00E-04?

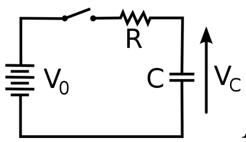
A. 1.841E-02 A

B. 2.026E-02 A

C. 2.228E-02 A

D. 2.451E-02 A

E. 2.696E-02 A

14. 

A parallel plate capacitor with a capicatnce C=9.80E-06 F whose plates have an area A=1.00E+04 m^2 and separation d=9.00E-03 m is connected via a swith to a 15 Ω resistor and a battery of voltage V_0=94 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=6.60E-04?

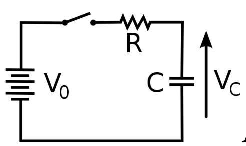
A. 6.394E-02 A

B. 7.033E-02 A

C. 7.736E-02 A

D. 8.510E-02 A

E. 9.361E-02 A

15. 

A parallel plate capacitor with a capicatnce C=3.80E-06 F whose plates have an area A=3.00E+03 m^2 and separation d=7.10E-03 m is connected via a swith to a 78 Ω resistor and a battery of voltage V_0=25 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=1.30E-03?

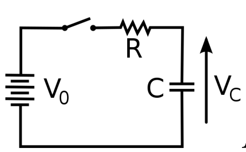
A. 2.998E-03 A

B. 3.298E-03 A

C. 3.628E-03 A

D. 3.991E-03 A

E. 4.390E-03 A

16. 

A parallel plate capacitor with a capicatnce C=9.20E-06 F whose plates have an area A=7.30E+03 m^2 and separation d=7.00E-03 m is connected via a swith to a 75 Ω resistor and a battery of voltage V_0=78 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=1.90E-03?

A. 6.624E-02 A

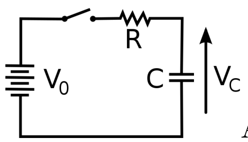
The next page might contain more answer choices for this question

B. 7.287E-02 A

C. 8.016E-02 A

D. 8.817E-02 A

E. 9.699E-02 A

17. 

A parallel plate capacitor with a capicatnce C=5.70E-06 F whose plates have an area A=3.20E+03 m^2 and separation d=5.00E-03 m is connected via a swith to a 27 Ω resistor and a battery of voltage V_0=80 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=1.60E-04?

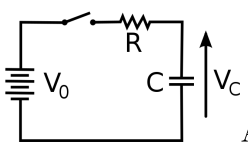
A. 9.524E-01 A

B. 1.048E+00 A

C. 1.152E+00 A

D. 1.268E+00 A

E. 1.394E+00 A

18. 

A parallel plate capacitor with a capicatnce C=6.60E-06 F whose plates have an area A=4.90E+03 m^2 and separation d=6.60E-03 m is connected via a swith to a 20 Ω resistor and a battery of voltage V_0=59 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=1.70E-04?

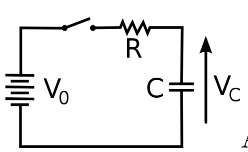
A. 8.138E-01 A

B. 8.952E-01 A

C. 9.847E-01 A

D. 1.083E+00 A

E. 1.191E+00 A

19. 

A parallel plate capacitor with a capicatnce C=5.50E-06 F whose plates have an area A=3.00E+03 m^2 and separation d=4.90E-03 m is connected via a swith to a 55 Ω resistor and a battery of voltage V_0=37 V as shown in the figure. The current starts to flow at time t=0 when the switch is closed. What is the magnitude of the displacement current at time t=9.00E-04?

A. 2.580E-02 A

B. 2.838E-02 A

C. 3.121E-02 A

D. 3.433E-02 A

E. 3.777E-02 A

The next page might contain more answer choices for this question

d_cp2.16 Q4

1. A 46 kW radio transmitter on Earth sends it signal to a satellite 140 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 73 kW?
   - **A. 1.764E+02 km**
   - B. 1.940E+02 km
   - C. 2.134E+02 km
   - D. 2.347E+02 km
   - E. 2.582E+02 km
2. A 59 kW radio transmitter on Earth sends it signal to a satellite 120 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 73 kW?
   - A. 1.003E+02 km
   - B. 1.103E+02 km
   - C. 1.213E+02 km
   - **D. 1.335E+02 km**
   - E. 1.468E+02 km
3. A 57 kW radio transmitter on Earth sends it signal to a satellite 120 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 73 kW?
   - A. 1.020E+02 km
   - B. 1.122E+02 km
   - C. 1.235E+02 km
   - **D. 1.358E+02 km**
   - E. 1.494E+02 km
4. A 58 kW radio transmitter on Earth sends it signal to a satellite 120 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 98 kW?
   - A. 1.418E+02 km
   - **B. 1.560E+02 km**
   - C. 1.716E+02 km
   - D. 1.887E+02 km
   - E. 2.076E+02 km
5. A 55 kW radio transmitter on Earth sends it signal to a satellite 130 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 93 kW?
   - A. 1.270E+02 km
   - B. 1.397E+02 km
   - C. 1.537E+02 km
   - **D. 1.690E+02 km**

The next page might contain more answer choices for this question

E. 1.859E+02 km

6. A 59 kW radio transmitter on Earth sends it signal to a satellite 120 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 84 kW?

   A. 9.780E+01 km
   B. 1.076E+02 km
   C. 1.183E+02 km
   D. 1.302E+02 km
   E. 1.432E+02 km

7. A 49 kW radio transmitter on Earth sends it signal to a satellite 120 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 89 kW?

   A. 1.617E+02 km
   B. 1.779E+02 km
   C. 1.957E+02 km
   D. 2.153E+02 km
   E. 2.368E+02 km

8. A 42 kW radio transmitter on Earth sends it signal to a satellite 130 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 94 kW?

   A. 1.768E+02 km
   B. 1.945E+02 km
   C. 2.139E+02 km
   D. 2.353E+02 km
   E. 2.589E+02 km

9. A 42 kW radio transmitter on Earth sends it signal to a satellite 130 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 98 kW?

   A. 1.641E+02 km
   B. 1.805E+02 km
   C. 1.986E+02 km
   D. 2.184E+02 km
   E. 2.403E+02 km

10. A 41 kW radio transmitter on Earth sends it signal to a satellite 100 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 98 kW?

   A. 1.405E+02 km
   B. 1.546E+02 km
   C. 1.701E+02 km
   D. 1.871E+02 km

The next page might contain more answer choices for this question

E. 2.058E+02 km

11. A 56 kW radio transmitter on Earth sends it signal to a satellite 140 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 72 kW?

  A. 1.084E+02 km
  B. 1.193E+02 km
  C. 1.312E+02 km
  D. 1.443E+02 km
  E. 1.587E+02 km

12. A 48 kW radio transmitter on Earth sends it signal to a satellite 130 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 80 kW?

  A. 1.678E+02 km
  B. 1.846E+02 km
  C. 2.031E+02 km
  D. 2.234E+02 km
  E. 2.457E+02 km

13. A 59 kW radio transmitter on Earth sends it signal to a satellite 150 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 73 kW?

  A. 1.517E+02 km
  B. 1.669E+02 km
  C. 1.835E+02 km
  D. 2.019E+02 km
  E. 2.221E+02 km

14. A 58 kW radio transmitter on Earth sends it signal to a satellite 120 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 88 kW?

  A. 1.111E+02 km
  B. 1.222E+02 km
  C. 1.344E+02 km
  D. 1.478E+02 km
  E. 1.626E+02 km

15. A 46 kW radio transmitter on Earth sends it signal to a satellite 120 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 78 kW?

  A. 1.563E+02 km
  B. 1.719E+02 km
  C. 1.891E+02 km
  D. 2.080E+02 km

The next page might contain more answer choices for this question

E. 2.288E+02 km

16. A 59 kW radio transmitter on Earth sends it signal to a satellite 130 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 76 kW?

    A. 1.008E+02 km
    B. 1.109E+02 km
    C. 1.219E+02 km
    D. 1.341E+02 km
    E. 1.475E+02 km

17. A 41 kW radio transmitter on Earth sends it signal to a satellite 160 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 85 kW?

    A. 2.094E+02 km
    B. 2.304E+02 km
    C. 2.534E+02 km
    D. 2.788E+02 km
    E. 3.066E+02 km

18. A 48 kW radio transmitter on Earth sends it signal to a satellite 150 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 96 kW?

    A. 1.753E+02 km
    B. 1.928E+02 km
    C. 2.121E+02 km
    D. 2.333E+02 km
    E. 2.567E+02 km

19. A 47 kW radio transmitter on Earth sends it signal to a satellite 130 km away. At what distance in the same direction would the signal have the same maximum field strength if the transmitter's output power were increased to 90 kW?

    A. 1.799E+02 km
    B. 1.979E+02 km
    C. 2.177E+02 km
    D. 2.394E+02 km
    E. 2.634E+02 km

d_cp2.16 Q5

1. What is the radiation pressure on an object that is 5.90E+11 m away from the sun and has cross-sectional area of 0.014 m^2? The average power output of the Sun is 3.80E+26 W.

    A. 5.268E-07 N/m^2
    B. 5.795E-07 N/m^2
    C. 6.375E-07 N/m^2

The next page might contain more answer choices for this question

D. 7.012E-07 N/m^2

E. 7.713E-07 N/m^2

2. What is the radiation pressure on an object that is 9.70E+11 m away from the sun and has cross-sectional area of 0.098 m^2? The average power output of the Sun is 3.80E+26 W.

A. 2.144E-07 N/m^2

B. 2.358E-07 N/m^2

C. 2.594E-07 N/m^2

D. 2.854E-07 N/m^2

E. 3.139E-07 N/m^2

3. What is the radiation pressure on an object that is 5.50E+11 m away from the sun and has cross-sectional area of 0.051 m^2? The average power output of the Sun is 3.80E+26 W.

A. 4.555E-07 N/m^2

B. 5.010E-07 N/m^2

C. 5.511E-07 N/m^2

D. 6.063E-07 N/m^2

E. 6.669E-07 N/m^2

4. What is the radiation pressure on an object that is 1.20E+11 m away from the sun and has cross-sectional area of 0.082 m^2? The average power output of the Sun is 3.80E+26 W.

A. 9.568E-06 N/m^2

B. 1.053E-05 N/m^2

C. 1.158E-05 N/m^2

D. 1.274E-05 N/m^2

E. 1.401E-05 N/m^2

5. What is the radiation pressure on an object that is 2.20E+11 m away from the sun and has cross-sectional area of 0.082 m^2? The average power output of the Sun is 3.80E+26 W.

A. 3.131E-06 N/m^2

B. 3.445E-06 N/m^2

C. 3.789E-06 N/m^2

D. 4.168E-06 N/m^2

E. 4.585E-06 N/m^2

6. What is the radiation pressure on an object that is 8.10E+11 m away from the sun and has cross-sectional area of 0.057 m^2? The average power output of the Sun is 3.80E+26 W.

A. 3.075E-07 N/m^2

B. 3.382E-07 N/m^2

C. 3.720E-07 N/m^2

D. 4.092E-07 N/m^2

E. 4.502E-07 N/m^2

7. What is the radiation pressure on an object that is 2.40E+11 m away from the sun and has cross-sectional area of 0.052 m^2? The average power output of the Sun is 3.80E+26 W.

The next page might contain more answer choices for this question

A. 2.392E-06 N/m^2
B. 2.631E-06 N/m^2
C. 2.894E-06 N/m^2
D. 3.184E-06 N/m^2
E. 3.502E-06 N/m^2

8. What is the radiation pressure on an object that is 8.30E+11 m away from the sun and has cross-sectional area of 0.097 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 2.928E-07 N/m^2
   B. 3.221E-07 N/m^2
   C. 3.543E-07 N/m^2
   D. 3.898E-07 N/m^2
   E. 4.287E-07 N/m^2

9. What is the radiation pressure on an object that is 5.50E+11 m away from the sun and has cross-sectional area of 0.016 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 6.669E-07 N/m^2
   B. 7.336E-07 N/m^2
   C. 8.069E-07 N/m^2
   D. 8.876E-07 N/m^2
   E. 9.764E-07 N/m^2

10. What is the radiation pressure on an object that is 8.90E+11 m away from the sun and has cross-sectional area of 0.013 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 2.315E-07 N/m^2
   B. 2.547E-07 N/m^2
   C. 2.801E-07 N/m^2
   D. 3.082E-07 N/m^2
   E. 3.390E-07 N/m^2

11. What is the radiation pressure on an object that is 1.10E+11 m away from the sun and has cross-sectional area of 0.036 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 1.378E-05 N/m^2
   B. 1.516E-05 N/m^2
   C. 1.667E-05 N/m^2
   D. 1.834E-05 N/m^2
   E. 2.017E-05 N/m^2

12. What is the radiation pressure on an object that is 9.70E+11 m away from the sun and has cross-sectional area of 0.099 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 1.464E-07 N/m^2
   B. 1.611E-07 N/m^2
   C. 1.772E-07 N/m^2
   D. 1.949E-07 N/m^2

The next page might contain more answer choices for this question

E. 2.144E-07 N/m^2

13. What is the radiation pressure on an object that is 5.50E+11 m away from the sun and has cross-sectional area of 0.025 m^2? The average power output of the Sun is 3.80E+26 W.

A. 5.511E-07 N/m^2

B. 6.063E-07 N/m^2

C. 6.669E-07 N/m^2

D. 7.336E-07 N/m^2

E. 8.069E-07 N/m^2

14. What is the radiation pressure on an object that is 2.40E+11 m away from the sun and has cross-sectional area of 0.019 m^2? The average power output of the Sun is 3.80E+26 W.

A. 2.392E-06 N/m^2

B. 2.631E-06 N/m^2

C. 2.894E-06 N/m^2

D. 3.184E-06 N/m^2

E. 3.502E-06 N/m^2

15. What is the radiation pressure on an object that is 9.30E+11 m away from the sun and has cross-sectional area of 0.019 m^2? The average power output of the Sun is 3.80E+26 W.

A. 2.332E-07 N/m^2

B. 2.566E-07 N/m^2

C. 2.822E-07 N/m^2

D. 3.104E-07 N/m^2

E. 3.415E-07 N/m^2

16. What is the radiation pressure on an object that is 6.90E+11 m away from the sun and has cross-sectional area of 0.041 m^2? The average power output of the Sun is 3.80E+26 W.

A. 3.502E-07 N/m^2

B. 3.852E-07 N/m^2

C. 4.237E-07 N/m^2

D. 4.661E-07 N/m^2

E. 5.127E-07 N/m^2

17. What is the radiation pressure on an object that is 1.10E+11 m away from the sun and has cross-sectional area of 0.048 m^2? The average power output of the Sun is 3.80E+26 W.

A. 1.253E-05 N/m^2

B. 1.378E-05 N/m^2

C. 1.516E-05 N/m^2

D. 1.667E-05 N/m^2

E. 1.834E-05 N/m^2

18. What is the radiation pressure on an object that is 9.70E+11 m away from the sun and has cross-sectional area of 0.076 m^2? The average power output of the Sun is 3.80E+26 W.

A. 1.611E-07 N/m^2

The next page might contain more answer choices for this question

B. 1.772E-07 N/m^2

C. 1.949E-07 N/m^2

D. 2.144E-07 N/m^2

E. 2.358E-07 N/m^2

19. What is the radiation pressure on an object that is 5.50E+11 m away from the sun and has cross-sectional area of 0.022 m^2? The average power output of the Sun is 3.80E+26 W.

A. 4.555E-07 N/m^2

B. 5.010E-07 N/m^2

C. 5.511E-07 N/m^2

D. 6.063E-07 N/m^2

E. 6.669E-07 N/m^2

d_cp2.16 Q6

1. What is the radiation force on an object that is 5.20E+11 m away from the sun and has cross-sectional area of 0.04 m^2? The average power output of the Sun is 3.80E+26 W.

A. 2.242E-08 N

B. 2.466E-08 N

C. 2.713E-08 N

D. 2.984E-08 N

E. 3.283E-08 N

2. What is the radiation force on an object that is 3.80E+11 m away from the sun and has cross-sectional area of 0.094 m^2? The average power output of the Sun is 3.80E+26 W.

A. 8.969E-08 N

B. 9.866E-08 N

C. 1.085E-07 N

D. 1.194E-07 N

E. 1.313E-07 N

3. What is the radiation force on an object that is 1.70E+11 m away from the sun and has cross-sectional area of 0.033 m^2? The average power output of the Sun is 3.80E+26 W.

A. 1.904E-07 N

B. 2.094E-07 N

C. 2.303E-07 N

D. 2.534E-07 N

E. 2.787E-07 N

4. What is the radiation force on an object that is 5.50E+11 m away from the sun and has cross-sectional area of 0.096 m^2? The average power output of the Sun is 3.80E+26 W.

A. 4.373E-08 N

B. 4.810E-08 N

C. 5.291E-08 N

The next page might contain more answer choices for this question

D. 5.820E-08 N

E. 6.402E-08 N

5. What is the radiation force on an object that is 2.00E+11 m away from the sun and has cross-sectional area of 0.053 m^2? The average power output of the Sun is 3.80E+26 W.

A. 2.673E-07 N

B. 2.940E-07 N

C. 3.234E-07 N

D. 3.558E-07 N

E. 3.913E-07 N

6. What is the radiation force on an object that is 1.60E+11 m away from the sun and has cross-sectional area of 0.081 m^2? The average power output of the Sun is 3.80E+26 W.

A. 5.275E-07 N

B. 5.803E-07 N

C. 6.383E-07 N

D. 7.021E-07 N

E. 7.723E-07 N

7. What is the radiation force on an object that is 5.50E+11 m away from the sun and has cross-sectional area of 0.075 m^2? The average power output of the Sun is 3.80E+26 W.

A. 5.002E-08 N

B. 5.502E-08 N

C. 6.052E-08 N

D. 6.657E-08 N

E. 7.323E-08 N

8. What is the radiation force on an object that is 3.60E+11 m away from the sun and has cross-sectional area of 0.069 m^2? The average power output of the Sun is 3.80E+26 W.

A. 7.336E-08 N

B. 8.069E-08 N

C. 8.876E-08 N

D. 9.764E-08 N

E. 1.074E-07 N

9. What is the radiation force on an object that is 5.40E+11 m away from the sun and has cross-sectional area of 0.021 m^2? The average power output of the Sun is 3.80E+26 W.

A. 9.923E-09 N

B. 1.092E-08 N

C. 1.201E-08 N

D. 1.321E-08 N

E. 1.453E-08 N

10. What is the radiation force on an object that is 7.60E+11 m away from the sun and has cross-sectional area of 0.052 m^2? The average power output of the Sun is 3.80E+26 W.

The next page might contain more answer choices for this question

A. 1.501E-08 N
B. 1.651E-08 N
C. 1.816E-08 N
D. 1.998E-08 N
E. 2.198E-08 N

11. What is the radiation force on an object that is 7.40E+11 m away from the sun and has cross-sectional area of 0.082 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 2.063E-08 N
   B. 2.270E-08 N
   C. 2.497E-08 N
   D. 2.746E-08 N
   E. 3.021E-08 N

12. What is the radiation force on an object that is 4.70E+11 m away from the sun and has cross-sectional area of 0.015 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 1.029E-08 N
   B. 1.132E-08 N
   C. 1.245E-08 N
   D. 1.370E-08 N
   E. 1.507E-08 N

13. What is the radiation force on an object that is 9.70E+11 m away from the sun and has cross-sectional area of 0.044 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 7.088E-09 N
   B. 7.796E-09 N
   C. 8.576E-09 N
   D. 9.434E-09 N
   E. 1.038E-08 N

14. What is the radiation force on an object that is 2.50E+11 m away from the sun and has cross-sectional area of 0.045 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 1.200E-07 N
   B. 1.320E-07 N
   C. 1.452E-07 N
   D. 1.598E-07 N
   E. 1.757E-07 N

15. What is the radiation force on an object that is 8.10E+11 m away from the sun and has cross-sectional area of 0.053 m^2? The average power output of the Sun is 3.80E+26 W.
   A. 1.630E-08 N
   B. 1.793E-08 N
   C. 1.972E-08 N
   D. 2.169E-08 N

The next page might contain more answer choices for this question

E. 2.386E-08 N

16. What is the radiation force on an object that is 4.70E+11 m away from the sun and has cross-sectional area of 0.098 m^2? The average power output of the Sun is 3.80E+26 W.

A. 7.396E-08 N

B. 8.136E-08 N

C. 8.950E-08 N

D. 9.845E-08 N

E. 1.083E-07 N

17. What is the radiation force on an object that is 9.90E+11 m away from the sun and has cross-sectional area of 0.083 m^2? The average power output of the Sun is 3.80E+26 W.

A. 1.167E-08 N

B. 1.284E-08 N

C. 1.412E-08 N

D. 1.553E-08 N

E. 1.708E-08 N

18. What is the radiation force on an object that is 1.20E+11 m away from the sun and has cross-sectional area of 0.055 m^2? The average power output of the Sun is 3.80E+26 W.

A. 5.263E-07 N

B. 5.789E-07 N

C. 6.368E-07 N

D. 7.005E-07 N

E. 7.705E-07 N

19. What is the radiation force on an object that is 6.70E+11 m away from the sun and has cross-sectional area of 0.095 m^2? The average power output of the Sun is 3.80E+26 W.

A. 3.528E-08 N

B. 3.881E-08 N

C. 4.269E-08 N

D. 4.696E-08 N

E. 5.166E-08 N

30 c24ElectromagneticWaves_displacementCurrent

1. A circular capactitor of radius 4.2 m has a gap of 8 mm, and a charge of 45 µ C. What is the electric field between the plates?[208]

A. 5.16E+04 N/C (or V/m)

B. 6.25E+04 N/C (or V/m)

C. 7.57E+04 N/C (or V/m)

D. 9.17E+04 N/C (or V/m)

E. 1.11E+05 N/C (or V/m)

The next page might contain more answer choices for this question

2. A circlular capactitor of radius 3.2 m has a gap of 13 mm, and a charge of 49 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.[209]
   - A. 3.46E-11 Vs^{2}m^{-1}
   - B. 4.20E-11 Vs^{2}m^{-1}
   - C. 5.08E-11 Vs^{2}m^{-1}
   - **D. 6.16E-11 Vs^{2}m^{-1}**
   - E. 7.46E-11 Vs^{2}m^{-1}

3. A circlular capactitor of radius 4.9 m has a gap of 17 mm, and a charge of 54 μ C. The capacitor is discharged through a 9 kΩ resistor. What is the decay time? [210]
   - A. 2.92E-04 s
   - **B. 3.54E-04 s**
   - C. 4.28E-04 s
   - D. 5.19E-04 s
   - E. 6.29E-04 s

4. A circlular capactitor of radius 3.3 m has a gap of 12 mm, and a charge of 93 μ C. The capacitor is discharged through a 9 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)[211]
   - A. 9.88E-09 Tesla
   - B. 1.24E-08 Tesla
   - C. 1.57E-08 Tesla
   - D. 1.97E-08 Tesla
   - **E. 2.48E-08 Tesla**

30.1 Renditions

c24ElectromagneticWaves_displacementCurrent Q1

1. A circlular capactitor of radius 3.3 m has a gap of 16 mm, and a charge of 68 μ C. What is the electric field between the plates?
   - A. 1.26E+05 N/C (or V/m)
   - B. 1.53E+05 N/C (or V/m)
   - C. 1.85E+05 N/C (or V/m)
   - **D. 2.24E+05 N/C (or V/m)**
   - E. 2.72E+05 N/C (or V/m)

2. A circlular capactitor of radius 4.9 m has a gap of 11 mm, and a charge of 85 μ C. What is the electric field between the plates?
   - **A. 1.27E+05 N/C (or V/m)**
   - B. 1.54E+05 N/C (or V/m)
   - C. 1.87E+05 N/C (or V/m)
   - D. 2.26E+05 N/C (or V/m)
   - E. 2.74E+05 N/C (or V/m)

The next page might contain more answer choices for this question

3. A circlular capactitor of radius 4.4 m has a gap of 18 mm, and a charge of 36 µ C. What is the electric field between the plates?
   - A. 4.55E+04 N/C (or V/m)
   - B. 5.52E+04 N/C (or V/m)
   - **C. 6.68E+04 N/C (or V/m)**
   - D. 8.10E+04 N/C (or V/m)
   - E. 9.81E+04 N/C (or V/m)
4. A circlular capactitor of radius 3.4 m has a gap of 15 mm, and a charge of 63 µ C. What is the electric field between the plates?
   - A. 1.62E+05 N/C (or V/m)
   - **B. 1.96E+05 N/C (or V/m)**
   - C. 2.37E+05 N/C (or V/m)
   - D. 2.88E+05 N/C (or V/m)
   - E. 3.48E+05 N/C (or V/m)
5. A circlular capactitor of radius 3.7 m has a gap of 8 mm, and a charge of 89 µ C. What is the electric field between the plates?
   - A. 1.93E+05 N/C (or V/m)
   - **B. 2.34E+05 N/C (or V/m)**
   - C. 2.83E+05 N/C (or V/m)
   - D. 3.43E+05 N/C (or V/m)
   - E. 4.16E+05 N/C (or V/m)
6. A circlular capactitor of radius 4.4 m has a gap of 18 mm, and a charge of 62 µ C. What is the electric field between the plates?
   - A. 9.50E+04 N/C (or V/m)
   - **B. 1.15E+05 N/C (or V/m)**
   - C. 1.39E+05 N/C (or V/m)
   - D. 1.69E+05 N/C (or V/m)
   - E. 2.05E+05 N/C (or V/m)
7. A circlular capactitor of radius 3.6 m has a gap of 8 mm, and a charge of 53 µ C. What is the electric field between the plates?
   - A. 6.82E+04 N/C (or V/m)
   - B. 8.27E+04 N/C (or V/m)
   - C. 1.00E+05 N/C (or V/m)
   - D. 1.21E+05 N/C (or V/m)
   - **E. 1.47E+05 N/C (or V/m)**
8. A circlular capactitor of radius 4.8 m has a gap of 14 mm, and a charge of 75 µ C. What is the electric field between the plates?
   - A. 5.43E+04 N/C (or V/m)
   - B. 6.58E+04 N/C (or V/m)

The next page might contain more answer choices for this question

C. 7.97E+04 N/C (or V/m)
D. 9.66E+04 N/C (or V/m)
E. 1.17E+05 N/C (or V/m)

9. A circlular capactitor of radius 4.3 m has a gap of 7 mm, and a charge of 47 µ C. What is the electric field between the plates?
   A. 7.54E+04 N/C (or V/m)
   B. 9.14E+04 N/C (or V/m)
   C. 1.11E+05 N/C (or V/m)
   D. 1.34E+05 N/C (or V/m)
   E. 1.63E+05 N/C (or V/m)

10. A circlular capactitor of radius 4.1 m has a gap of 14 mm, and a charge of 24 µ C. What is the electric field between the plates?
   A. 4.24E+04 N/C (or V/m)
   B. 5.13E+04 N/C (or V/m)
   C. 6.22E+04 N/C (or V/m)
   D. 7.53E+04 N/C (or V/m)
   E. 9.13E+04 N/C (or V/m)

11. A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 55 µ C. What is the electric field between the plates?
   A. 6.37E+04 N/C (or V/m)
   B. 7.71E+04 N/C (or V/m)
   C. 9.34E+04 N/C (or V/m)
   D. 1.13E+05 N/C (or V/m)
   E. 1.37E+05 N/C (or V/m)

12. A circlular capactitor of radius 3.7 m has a gap of 10 mm, and a charge of 41 µ C. What is the electric field between the plates?
   A. 1.08E+05 N/C (or V/m)
   B. 1.30E+05 N/C (or V/m)
   C. 1.58E+05 N/C (or V/m)
   D. 1.91E+05 N/C (or V/m)
   E. 2.32E+05 N/C (or V/m)

13. A circlular capactitor of radius 3.7 m has a gap of 10 mm, and a charge of 12 µ C. What is the electric field between the plates?
   A. 2.15E+04 N/C (or V/m)
   B. 2.60E+04 N/C (or V/m)
   C. 3.15E+04 N/C (or V/m)
   D. 3.82E+04 N/C (or V/m)
   E. 4.63E+04 N/C (or V/m)

The next page might contain more answer choices for this question

14. A circlular capactitor of radius 3.2 m has a gap of 12 mm, and a charge of 84 µ C. What is the electric field between the plates?
    - A. 1.37E+05 N/C (or V/m)
    - B. 1.66E+05 N/C (or V/m)
    - C. 2.01E+05 N/C (or V/m)
    - D. 2.43E+05 N/C (or V/m)
    - **E. 2.95E+05 N/C (or V/m)**

15. A circlular capactitor of radius 3.9 m has a gap of 19 mm, and a charge of 66 µ C. What is the electric field between the plates?
    - A. 1.29E+05 N/C (or V/m)
    - **B. 1.56E+05 N/C (or V/m)**
    - C. 1.89E+05 N/C (or V/m)
    - D. 2.29E+05 N/C (or V/m)
    - E. 2.77E+05 N/C (or V/m)

16. A circlular capactitor of radius 4.4 m has a gap of 12 mm, and a charge of 72 µ C. What is the electric field between the plates?
    - A. 6.21E+04 N/C (or V/m)
    - B. 7.52E+04 N/C (or V/m)
    - C. 9.11E+04 N/C (or V/m)
    - D. 1.10E+05 N/C (or V/m)
    - **E. 1.34E+05 N/C (or V/m)**

17. A circlular capactitor of radius 3.5 m has a gap of 14 mm, and a charge of 21 µ C. What is the electric field between the plates?
    - **A. 6.16E+04 N/C (or V/m)**
    - B. 7.47E+04 N/C (or V/m)
    - C. 9.05E+04 N/C (or V/m)
    - D. 1.10E+05 N/C (or V/m)
    - E. 1.33E+05 N/C (or V/m)

18. A circlular capactitor of radius 3.3 m has a gap of 14 mm, and a charge of 11 µ C. What is the electric field between the plates?
    - A. 2.04E+04 N/C (or V/m)
    - B. 2.47E+04 N/C (or V/m)
    - C. 3.00E+04 N/C (or V/m)
    - **D. 3.63E+04 N/C (or V/m)**
    - E. 4.40E+04 N/C (or V/m)

19. A circlular capactitor of radius 4.2 m has a gap of 12 mm, and a charge of 94 µ C. What is the electric field between the plates?
    - **A. 1.92E+05 N/C (or V/m)**
    - B. 2.32E+05 N/C (or V/m)

The next page might contain more answer choices for this question

C. 2.81E+05 N/C (or V/m)

D. 3.41E+05 N/C (or V/m)

E. 4.13E+05 N/C (or V/m)

20. A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 45 µ C. What is the electric field between the plates?

A. 6.31E+04 N/C (or V/m)

B. 7.65E+04 N/C (or V/m)

C. 9.26E+04 N/C (or V/m)

D. 1.12E+05 N/C (or V/m)

E. 1.36E+05 N/C (or V/m)

21. A circlular capactitor of radius 3.1 m has a gap of 9 mm, and a charge of 11 µ C. What is the electric field between the plates?

A. 2.80E+04 N/C (or V/m)

B. 3.40E+04 N/C (or V/m)

C. 4.12E+04 N/C (or V/m)

D. 4.99E+04 N/C (or V/m)

E. 6.04E+04 N/C (or V/m)

22. A circlular capactitor of radius 3.4 m has a gap of 7 mm, and a charge of 95 µ C. What is the electric field between the plates?

A. 2.44E+05 N/C (or V/m)

B. 2.95E+05 N/C (or V/m)

C. 3.58E+05 N/C (or V/m)

D. 4.34E+05 N/C (or V/m)

E. 5.25E+05 N/C (or V/m)

c24ElectromagneticWaves_displacementCurrent Q2

1. A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 77 µ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

A. 6.59E-11 $\mathrm{Vs^2m^{-1}}$

B. 7.99E-11 $\mathrm{Vs^2m^{-1}}$

C. 9.68E-11 $\mathrm{Vs^2m^{-1}}$

D. 1.17E-10 $\mathrm{Vs^2m^{-1}}$

E. 1.42E-10 $\mathrm{Vs^2m^{-1}}$

2. A circlular capactitor of radius 4.5 m has a gap of 19 mm, and a charge of 13 µ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

A. 1.35E-11 $\mathrm{Vs^2m^{-1}}$

B. 1.63E-11 $\mathrm{Vs^2m^{-1}}$

C. 1.98E-11 $\mathrm{Vs^2m^{-1}}$

D. 2.40E-11 $\mathrm{Vs^2m^{-1}}$

The next page might contain more answer choices for this question

E. 2.91E-11 Vs^2m^{-1}

3. A circular capactitor of radius 4.4 m has a gap of 8 mm, and a charge of 85 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
   A. 4.96E-11 Vs^2m^{-1}
   B. 6.01E-11 Vs^2m^{-1}
   C. 7.28E-11 Vs^2m^{-1}
   D. 8.82E-11 Vs^2m^{-1}
   E. 1.07E-10 Vs^2m^{-1}

4. A circular capactitor of radius 4.3 m has a gap of 11 mm, and a charge of 66 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
   A. 6.85E-11 Vs^2m^{-1}
   B. 8.29E-11 Vs^2m^{-1}
   C. 1.00E-10 Vs^2m^{-1}
   D. 1.22E-10 Vs^2m^{-1}
   E. 1.47E-10 Vs^2m^{-1}

5. A circular capactitor of radius 3.2 m has a gap of 19 mm, and a charge of 46 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
   A. 5.78E-11 Vs^2m^{-1}
   B. 7.00E-11 Vs^2m^{-1}
   C. 8.48E-11 Vs^2m^{-1}
   D. 1.03E-10 Vs^2m^{-1}
   E. 1.25E-10 Vs^2m^{-1}

6. A circular capactitor of radius 3.2 m has a gap of 18 mm, and a charge of 82 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
   A. 5.79E-11 Vs^2m^{-1}
   B. 7.02E-11 Vs^2m^{-1}
   C. 8.51E-11 Vs^2m^{-1}
   D. 1.03E-10 Vs^2m^{-1}
   E. 1.25E-10 Vs^2m^{-1}

7. A circular capactitor of radius 3.7 m has a gap of 17 mm, and a charge of 80 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
   A. 4.67E-11 Vs^2m^{-1}
   B. 5.65E-11 Vs^2m^{-1}
   C. 6.85E-11 Vs^2m^{-1}
   D. 8.30E-11 Vs^2m^{-1}
   E. 1.01E-10 Vs^2m^{-1}

8. A circular capactitor of radius 4.1 m has a gap of 7 mm, and a charge of 50 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
   A. 2.92E-11 Vs^2m^{-1}

The next page might contain more answer choices for this question

B. 3.53E-11 Vs^2m^{-1}
C. 4.28E-11 Vs^2m^{-1}
D. 5.19E-11 Vs^2m^{-1}
E. 6.28E-11 Vs^2m^{-1}

9. A circlular capactitor of radius 4.3 m has a gap of 19 mm, and a charge of 83 µ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
A. 5.87E-11 Vs^2m^{-1}
B. 7.11E-11 Vs^2m^{-1}
C. 8.61E-11 Vs^2m^{-1}
D. 1.04E-10 Vs^2m^{-1}
E. 1.26E-10 Vs^2m^{-1}

10. A circlular capactitor of radius 4.8 m has a gap of 12 mm, and a charge of 29 µ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
A. 2.05E-11 Vs^2m^{-1}
B. 2.48E-11 Vs^2m^{-1}
C. 3.01E-11 Vs^2m^{-1}
D. 3.64E-11 Vs^2m^{-1}
E. 4.42E-11 Vs^2m^{-1}

11. A circlular capactitor of radius 4.4 m has a gap of 17 mm, and a charge of 65 µ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
A. 5.56E-11 Vs^2m^{-1}
B. 6.74E-11 Vs^2m^{-1}
C. 8.17E-11 Vs^2m^{-1}
D. 9.90E-11 Vs^2m^{-1}
E. 1.20E-10 Vs^2m^{-1}

12. A circlular capactitor of radius 3.8 m has a gap of 14 mm, and a charge of 61 µ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
A. 7.67E-11 Vs^2m^{-1}
B. 9.29E-11 Vs^2m^{-1}
C. 1.13E-10 Vs^2m^{-1}
D. 1.36E-10 Vs^2m^{-1}
E. 1.65E-10 Vs^2m^{-1}

13. A circlular capactitor of radius 4.1 m has a gap of 8 mm, and a charge of 24 µ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.
A. 2.05E-11 Vs^2m^{-1}
B. 2.49E-11 Vs^2m^{-1}
C. 3.02E-11 Vs^2m^{-1}
D. 3.65E-11 Vs^2m^{-1}
E. 4.43E-11 Vs^2m^{-1}

The next page might contain more answer choices for this question

14. A circlular capactitor of radius 3.8 m has a gap of 14 mm, and a charge of 83 μ C. Compute the surface integral $c^{-2}\oint\vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

    A. 7.11E-11 Vs^{2}m^{-1}
    B. 8.61E-11 Vs^{2}m^{-1}
    C. 1.04E-10 Vs^{2}m^{-1}
    D. 1.26E-10 Vs^{2}m^{-1}
    E. 1.53E-10 Vs^{2}m^{-1}

15. A circlular capactitor of radius 4.4 m has a gap of 16 mm, and a charge of 41 μ C. Compute the surface integral $c^{-2}\oint\vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

    A. 3.51E-11 Vs^{2}m^{-1}
    B. 4.25E-11 Vs^{2}m^{-1}
    C. 5.15E-11 Vs^{2}m^{-1}
    D. 6.24E-11 Vs^{2}m^{-1}
    E. 7.56E-11 Vs^{2}m^{-1}

16. A circlular capactitor of radius 4.8 m has a gap of 17 mm, and a charge of 73 μ C. Compute the surface integral $c^{-2}\oint\vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

    A. 9.17E-11 Vs^{2}m^{-1}
    B. 1.11E-10 Vs^{2}m^{-1}
    C. 1.35E-10 Vs^{2}m^{-1}
    D. 1.63E-10 Vs^{2}m^{-1}
    E. 1.98E-10 Vs^{2}m^{-1}

17. A circlular capactitor of radius 4.3 m has a gap of 14 mm, and a charge of 15 μ C. Compute the surface integral $c^{-2}\oint\vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

    A. 8.75E-12 Vs^{2}m^{-1}
    B. 1.06E-11 Vs^{2}m^{-1}
    C. 1.28E-11 Vs^{2}m^{-1}
    D. 1.56E-11 Vs^{2}m^{-1}
    E. 1.88E-11 Vs^{2}m^{-1}

18. A circlular capactitor of radius 4.5 m has a gap of 18 mm, and a charge of 92 μ C. Compute the surface integral $c^{-2}\oint\vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

    A. 7.88E-11 Vs^{2}m^{-1}
    B. 9.54E-11 Vs^{2}m^{-1}
    C. 1.16E-10 Vs^{2}m^{-1}
    D. 1.40E-10 Vs^{2}m^{-1}
    E. 1.70E-10 Vs^{2}m^{-1}

19. A circlular capactitor of radius 4.3 m has a gap of 12 mm, and a charge of 85 μ C. Compute the surface integral $c^{-2}\oint\vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

    A. 7.28E-11 Vs^{2}m^{-1}
    B. 8.82E-11 Vs^{2}m^{-1}

The next page might contain more answer choices for this question

C. 1.07E-10 Vs^2m^{-1}

D. 1.29E-10 Vs^2m^{-1}

E. 1.57E-10 Vs^2m^{-1}

20. A circlular capactitor of radius 3.7 m has a gap of 8 mm, and a charge of 34 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

A. 2.40E-11 Vs^2m^{-1}

B. 2.91E-11 Vs^2m^{-1}

C. 3.53E-11 Vs^2m^{-1}

D. 4.27E-11 Vs^2m^{-1}

E. 5.18E-11 Vs^2m^{-1}

21. A circlular capactitor of radius 3.4 m has a gap of 8 mm, and a charge of 34 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

A. 3.53E-11 Vs^2m^{-1}

B. 4.27E-11 Vs^2m^{-1}

C. 5.18E-11 Vs^2m^{-1}

D. 6.27E-11 Vs^2m^{-1}

E. 7.60E-11 Vs^2m^{-1}

22. A circlular capactitor of radius 3.9 m has a gap of 19 mm, and a charge of 78 μ C. Compute the surface integral $c^{-2}\oint \vec{E}\cdot d\vec{A}$ over an inner face of the capacitor.

A. 4.55E-11 Vs^2m^{-1}

B. 5.51E-11 Vs^2m^{-1}

C. 6.68E-11 Vs^2m^{-1}

D. 8.09E-11 Vs^2m^{-1}

E. 9.80E-11 Vs^2m^{-1}

c24ElectromagneticWaves_displacementCurrent Q3

1. A circlular capactitor of radius 4.6 m has a gap of 11 mm, and a charge of 60 μ C. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?

A. 3.28E-04 s

B. 3.97E-04 s

C. 4.82E-04 s

D. 5.83E-04 s

E. 7.07E-04 s

2. A circlular capactitor of radius 3.7 m has a gap of 15 mm, and a charge of 36 μ C. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?

A. 1.04E-04 s

B. 1.26E-04 s

C. 1.52E-04 s

D. 1.85E-04 s

The next page might contain more answer choices for this question

E. 2.24E-04 s

3. A circlular capactitor of radius 3.3 m has a gap of 14 mm, and a charge of 43 μ C. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?

   A. 1.95E-04 s

   B. 2.36E-04 s

   C. 2.86E-04 s

   D. 3.46E-04 s

   E. 4.20E-04 s

4. A circlular capactitor of radius 4.6 m has a gap of 7 mm, and a charge of 18 μ C. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?

   A. 6.25E-04 s

   B. 7.57E-04 s

   C. 9.17E-04 s

   D. 1.11E-03 s

   E. 1.35E-03 s

5. A circlular capactitor of radius 3.1 m has a gap of 11 mm, and a charge of 76 μ C. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?

   A. 1.94E-04 s

   B. 2.36E-04 s

   C. 2.85E-04 s

   D. 3.46E-04 s

   E. 4.19E-04 s

6. A circlular capactitor of radius 3.6 m has a gap of 14 mm, and a charge of 98 μ C. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?

   A. 1.40E-04 s

   B. 1.70E-04 s

   C. 2.06E-04 s

   D. 2.50E-04 s

   E. 3.02E-04 s

7. A circlular capactitor of radius 4.3 m has a gap of 8 mm, and a charge of 12 μ C. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?

   A. 3.07E-04 s

   B. 3.71E-04 s

   C. 4.50E-04 s

   D. 5.45E-04 s

   E. 6.61E-04 s

8. A circlular capactitor of radius 4.3 m has a gap of 13 mm, and a charge of 44 μ C. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?

   A. 2.00E-04 s

The next page might contain more answer choices for this question

B. 2.43E-04 s

C. 2.94E-04 s

D. 3.56E-04 s

E. 4.31E-04 s

9. A circlular capactitor of radius 4 m has a gap of 16 mm, and a charge of 48 µ C. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?

A. 1.16E-04 s

B. 1.41E-04 s

C. 1.71E-04 s

D. 2.07E-04 s

E. 2.50E-04 s

10. A circlular capactitor of radius 4.8 m has a gap of 16 mm, and a charge of 89 µ C. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?

A. 1.98E-04 s

B. 2.40E-04 s

C. 2.91E-04 s

D. 3.53E-04 s

E. 4.27E-04 s

11. A circlular capactitor of radius 4.1 m has a gap of 11 mm, and a charge of 51 µ C. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?

A. 3.40E-04 s

B. 4.12E-04 s

C. 4.99E-04 s

D. 6.05E-04 s

E. 7.33E-04 s

12. A circlular capactitor of radius 3.8 m has a gap of 12 mm, and a charge of 56 µ C. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?

A. 2.68E-04 s

B. 3.24E-04 s

C. 3.93E-04 s

D. 4.76E-04 s

E. 5.77E-04 s

13. A circlular capactitor of radius 4.2 m has a gap of 18 mm, and a charge of 97 µ C. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?

A. 1.91E-04 s

B. 2.31E-04 s

C. 2.80E-04 s

D. 3.39E-04 s

E. 4.11E-04 s

The next page might contain more answer choices for this question

14. A circlular capactitor of radius 4.7 m has a gap of 19 mm, and a charge of 27 µ C. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?

   A. 1.60E-04 s
   B. 1.94E-04 s
   C. 2.35E-04 s
   D. 2.85E-04 s
   E. 3.45E-04 s

15. A circlular capactitor of radius 4 m has a gap of 14 mm, and a charge of 24 µ C. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?

   A. 1.84E-04 s
   B. 2.23E-04 s
   C. 2.70E-04 s
   D. 3.27E-04 s
   E. 3.96E-04 s

16. A circlular capactitor of radius 3.3 m has a gap of 12 mm, and a charge of 63 µ C. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?

   A. 9.94E-05 s
   B. 1.20E-04 s
   C. 1.46E-04 s
   D. 1.77E-04 s
   E. 2.14E-04 s

17. A circlular capactitor of radius 3.2 m has a gap of 8 mm, and a charge of 12 µ C. The capacitor is discharged through a 7 kΩ resistor. What is the decay time?

   A. 2.49E-04 s
   B. 3.02E-04 s
   C. 3.66E-04 s
   D. 4.43E-04 s
   E. 5.37E-04 s

18. A circlular capactitor of radius 4.9 m has a gap of 13 mm, and a charge of 35 µ C. The capacitor is discharged through a 5 kΩ resistor. What is the decay time?

   A. 2.57E-04 s
   B. 3.11E-04 s
   C. 3.77E-04 s
   D. 4.57E-04 s
   E. 5.53E-04 s

19. A circlular capactitor of radius 4.1 m has a gap of 14 mm, and a charge of 71 µ C. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?

   A. 1.65E-04 s
   B. 2.00E-04 s

The next page might contain more answer choices for this question

C. 2.43E-04 s
D. 2.94E-04 s
E. 3.56E-04 s

20. A circlular capactitor of radius 3.2 m has a gap of 12 mm, and a charge of 33 µ C. The capacitor is discharged through a 6 kΩ resistor. What is the decay time?
   A. 1.42E-04 s
   B. 1.73E-04 s
   C. 2.09E-04 s
   D. 2.53E-04 s
   E. 3.07E-04 s

21. A circlular capactitor of radius 3.4 m has a gap of 8 mm, and a charge of 64 µ C. The capacitor is discharged through a 9 kΩ resistor. What is the decay time?
   A. 3.62E-04 s
   B. 4.38E-04 s
   C. 5.31E-04 s
   D. 6.43E-04 s
   E. 7.79E-04 s

22. A circlular capactitor of radius 3.1 m has a gap of 15 mm, and a charge of 73 µ C. The capacitor is discharged through a 8 kΩ resistor. What is the decay time?
   A. 6.62E-05 s
   B. 8.02E-05 s
   C. 9.71E-05 s
   D. 1.18E-04 s
   E. 1.43E-04 s

c24ElectromagneticWaves_displacementCurrent Q4

1. A circlular capactitor of radius 4.1 m has a gap of 11 mm, and a charge of 66 µ C. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
   A. 6.33E-09 Tesla
   B. 7.96E-09 Tesla
   C. 1.00E-08 Tesla
   D. 1.26E-08 Tesla
   E. 1.59E-08 Tesla

2. A circlular capactitor of radius 4.4 m has a gap of 15 mm, and a charge of 63 µ C. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
   A. 7.92E-09 Tesla
   B. 9.97E-09 Tesla

The next page might contain more answer choices for this question

C. 1.26E-08 Tesla

D. 1.58E-08 Tesla

E. 1.99E-08 Tesla

3. A circlular capactitor of radius 4 m has a gap of 13 mm, and a charge of 89 μ C. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 8.62E-09 Tesla
    B. 1.09E-08 Tesla
    C. 1.37E-08 Tesla
    D. 1.72E-08 Tesla
    E. 2.17E-08 Tesla

4. A circlular capactitor of radius 4.3 m has a gap of 10 mm, and a charge of 46 μ C. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 8.32E-09 Tesla
    B. 1.05E-08 Tesla
    C. 1.32E-08 Tesla
    D. 1.66E-08 Tesla
    E. 2.09E-08 Tesla

5. A circlular capactitor of radius 4.1 m has a gap of 15 mm, and a charge of 90 μ C. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 1.41E-08 Tesla
    B. 1.78E-08 Tesla
    C. 2.24E-08 Tesla
    D. 2.82E-08 Tesla
    E. 3.55E-08 Tesla

6. A circlular capactitor of radius 4.6 m has a gap of 12 mm, and a charge of 52 μ C. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 3.30E-09 Tesla
    B. 4.15E-09 Tesla
    C. 5.23E-09 Tesla
    D. 6.58E-09 Tesla
    E. 8.29E-09 Tesla

7. A circlular capactitor of radius 3.6 m has a gap of 19 mm, and a charge of 98 μ C. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 1.90E-08 Tesla
    B. 2.40E-08 Tesla

The next page might contain more answer choices for this question

C. 3.02E-08 Tesla

D. 3.80E-08 Tesla

E. 4.78E-08 Tesla

8. A circlular capactitor of radius 4.6 m has a gap of 18 mm, and a charge of 44 μ C. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

A. 6.64E-09 Tesla

B. 8.36E-09 Tesla

C. 1.05E-08 Tesla

D. 1.32E-08 Tesla

E. 1.67E-08 Tesla

9. A circlular capactitor of radius 4.9 m has a gap of 18 mm, and a charge of 45 μ C. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

A. 2.82E-09 Tesla

B. 3.54E-09 Tesla

C. 4.46E-09 Tesla

D. 5.62E-09 Tesla

E. 7.07E-09 Tesla

10. A circlular capactitor of radius 4.3 m has a gap of 15 mm, and a charge of 21 μ C. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

A. 1.62E-09 Tesla

B. 2.04E-09 Tesla

C. 2.57E-09 Tesla

D. 3.23E-09 Tesla

E. 4.07E-09 Tesla

11. A circlular capactitor of radius 4.7 m has a gap of 16 mm, and a charge of 12 μ C. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

A. 6.62E-10 Tesla

B. 8.33E-10 Tesla

C. 1.05E-09 Tesla

D. 1.32E-09 Tesla

E. 1.66E-09 Tesla

12. A circlular capactitor of radius 4.9 m has a gap of 16 mm, and a charge of 46 μ C. The capacitor is discharged through a 9 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

A. 5.00E-09 Tesla

B. 6.29E-09 Tesla

The next page might contain more answer choices for this question

C. 7.92E-09 Tesla

D. 9.97E-09 Tesla

E. 1.26E-08 Tesla

13. A circlular capactitor of radius 4.9 m has a gap of 14 mm, and a charge of 56 μ C. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 3.18E-09 Tesla

    B. 4.00E-09 Tesla

    C. 5.04E-09 Tesla

    D. 6.34E-09 Tesla

    E. 7.99E-09 Tesla

14. A circlular capactitor of radius 4.8 m has a gap of 14 mm, and a charge of 55 μ C. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 3.95E-09 Tesla

    B. 4.97E-09 Tesla

    C. 6.26E-09 Tesla

    D. 7.88E-09 Tesla

    E. 9.92E-09 Tesla

15. A circlular capactitor of radius 4.4 m has a gap of 12 mm, and a charge of 85 μ C. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 5.39E-09 Tesla

    B. 6.79E-09 Tesla

    C. 8.55E-09 Tesla

    D. 1.08E-08 Tesla

    E. 1.35E-08 Tesla

16. A circlular capactitor of radius 3.1 m has a gap of 9 mm, and a charge of 85 μ C. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 2.33E-08 Tesla

    B. 2.93E-08 Tesla

    C. 3.69E-08 Tesla

    D. 4.65E-08 Tesla

    E. 5.85E-08 Tesla

17. A circlular capactitor of radius 4.6 m has a gap of 15 mm, and a charge of 57 μ C. The capacitor is discharged through a 9 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)

    A. 4.43E-09 Tesla

    B. 5.57E-09 Tesla

The next page might contain more answer choices for this question

C. 7.02E-09 Tesla
D. 8.83E-09 Tesla
E. 1.11E-08 Tesla

18. A circlular capactitor of radius 4 m has a gap of 14 mm, and a charge of 78 μ C. The capacitor is discharged through a 5 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
    A. 9.77E-09 Tesla
    B. 1.23E-08 Tesla
    C. 1.55E-08 Tesla
    D. 1.95E-08 Tesla
    E. 2.45E-08 Tesla

19. A circlular capactitor of radius 3.5 m has a gap of 14 mm, and a charge of 88 μ C. The capacitor is discharged through a 7 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
    A. 1.86E-08 Tesla
    B. 2.34E-08 Tesla
    C. 2.95E-08 Tesla
    D. 3.72E-08 Tesla
    E. 4.68E-08 Tesla

20. A circlular capactitor of radius 3.9 m has a gap of 8 mm, and a charge of 55 μ C. The capacitor is discharged through a 8 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
    A. 5.30E-09 Tesla
    B. 6.67E-09 Tesla
    C. 8.39E-09 Tesla
    D. 1.06E-08 Tesla
    E. 1.33E-08 Tesla

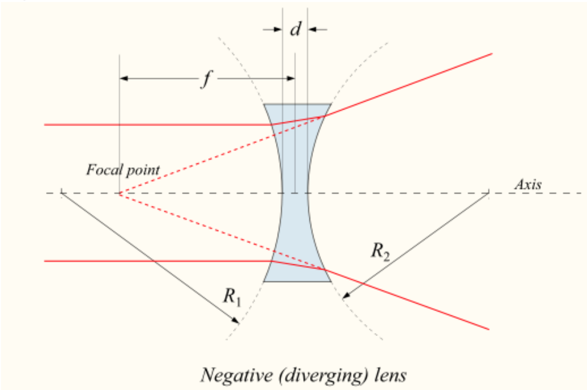
21. A circlular capactitor of radius 4.8 m has a gap of 9 mm, and a charge of 53 μ C. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
    A. 3.26E-09 Tesla
    B. 4.11E-09 Tesla
    C. 5.17E-09 Tesla
    D. 6.51E-09 Tesla
    E. 8.19E-09 Tesla

22. A circlular capactitor of radius 4.1 m has a gap of 9 mm, and a charge of 79 μ C. The capacitor is discharged through a 6 kΩ resistor. What is what is the maximum magnetic field at the edge of the capacitor? (There are two ways to do this; you should know both.)
    A. 7.80E-09 Tesla
    B. 9.82E-09 Tesla
    C. 1.24E-08 Tesla
    D. 1.56E-08 Tesla
    E. 1.96E-08 Tesla

The next page might contain more answer choices for this question

31 a25GeometricOptics_image

1. figure:



Shown is a corrective lens by a person who needs glasses. This ray diagram illustrates[212]

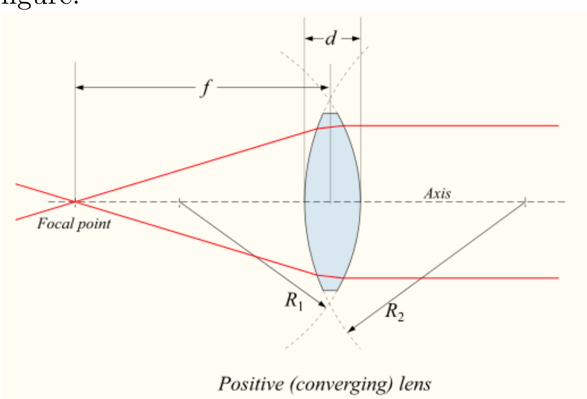
A. how a nearsighted person might see a distant object

B. how a nearsighted person might see an object that is too close for comfort

C. how a farsighted person might see an object that is too close for comfort

D. how a farsighted person might see a distant object

2. figure:



Shown is a corrective lens by a person who needs glasses. This ray diagram illustrates[213]

A. how a nearsighted person might see a distant object

B. how a farsighted person might see a distant object

C. how a farsighted person might see an object that is too close for comfort

D. how a nearsighted person might see an object that is too close for comfort

3. In optics, "'normal"' means[214]

A. to the left of the optical axis

B. parallel to the surface

C. perpendicular to the surface

D. to the right of the optical axis

4. The law of reflection applies to[215]

A. only light in a vacuum

B. telescopes but not microscopes

The next page might contain more answer choices for this question

C. curved surfaces

D. both flat and curved surfaces

E. flat surfaces

5. When light passes from air to glass[216]

A. the frequency decreases

B. the frequency increases

C. it bends away from the normal

D. it bends towards the normal

E. it does not bend

6. When light passes from glass to air[217]

A. it does not bend

B. the frequency decreases

C. the frequency increases

D. it bends towards the normal

E. it bends away from the normal

7. An important principle that allows fiber optics to work is[218]

A. the invariance of the speed of light

B. total internal reflection

C. total external refraction

D. partial internal absorption

E. the Doppler shift

8. The focal point is where[219]

A. rays meet whenever they pass through a lens

B. rays meet if they were parallel to the optical axis before striking a lens

C. rays meet whenever they are forming an image

D. rays meet if they are parallel to each other

E. the center of the lens

32 a25GeometricOptics_thinLenses

1. An object is placed 5.8 cm to the left of a diverging lens with a focal length of 4.9 cm. How far is the image from the lens?[220]

A. 4.72×10^{-1} cm

B. 8.4×10^{-1} cm

C. 1.49×10^{0} cm

D. 2.66×10^{0} cm

E. 4.72×10^{0} cm

2. An object is placed 6.05 cm to the left of a converging lens with a focal length of 5.4 cm. How far is the image from the lens?[221]

The next page might contain more answer choices for this question

A. 5.03×10^{1} cm
B. 8.94×10^{1} cm
C. 1.59×10^{2} cm
D. 2.83×10^{2} cm
E. 5.03×10^{2} cm

3. An object of height 0.59 cm is placed 149 cm behind a diverging lens with a focal length of 57 cm. What is the height of the image?[222]

A. 1.63×10^{-1} cm
B. 1.96×10^{-1} cm
C. 2.35×10^{-1} cm
D. 2.82×10^{-1} cm
E. 3.39×10^{-1} cm

4. An object is placed 12.1 cm to the left of a diverging lens with a focal length of 15.4 cm. On the side, at a distance of 6.5 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?16.65[223]

A. 5.72×10^{0} cm
B. 1.81×10^{1} cm
C. 5.72×10^{1} cm
D. 1.81×10^{2} cm
E. 5.72×10^{2} cm

32.1 Renditions

a25GeometricOptics_thinLenses Q1

1. An object is placed 8 cm to the left of a diverging lens with a focal length of 4.3 cm. How far is the image from the lens?

A. 2.8×10^{0} cm
B. 4.97×10^{0} cm
C. 8.84×10^{0} cm
D. 1.57×10^{1} cm
E. 2.8×10^{1} cm

2. An object is placed 6.3 cm to the left of a diverging lens with a focal length of 8.9 cm. How far is the image from the lens?

A. 1.17×10^{0} cm
B. 2.07×10^{0} cm
C. 3.69×10^{0} cm
D. 6.56×10^{0} cm
E. 1.17×10^{1} cm

3. An object is placed 7.8 cm to the left of a diverging lens with a focal length of 3.6 cm. How far is the image from the lens?

The next page might contain more answer choices for this question

A. 7.79×10^{-1} cm
B. 1.39×10^{0} cm
C. 2.46×10^{0} cm
D. 4.38×10^{0} cm
E. 7.79×10^{0} cm

4. An object is placed 3.5 cm to the left of a diverging lens with a focal length of 5.6 cm. How far is the image from the lens?

A. 2.15×10^{-1} cm
B. 3.83×10^{-1} cm
C. 6.81×10^{-1} cm
D. 1.21×10^{0} cm
E. 2.15×10^{0} cm

5. An object is placed 8.4 cm to the left of a diverging lens with a focal length of 6.2 cm. How far is the image from the lens?

A. 2.01×10^{0} cm
B. 3.57×10^{0} cm
C. 6.34×10^{0} cm
D. 1.13×10^{1} cm
E. 2.01×10^{1} cm

6. An object is placed 8.6 cm to the left of a diverging lens with a focal length of 6.3 cm. How far is the image from the lens?

A. 3.64×10^{-1} cm
B. 6.47×10^{-1} cm
C. 1.15×10^{0} cm
D. 2.04×10^{0} cm
E. 3.64×10^{0} cm

7. An object is placed 8.6 cm to the left of a diverging lens with a focal length of 9.1 cm. How far is the image from the lens?

A. 2.49×10^{0} cm
B. 4.42×10^{0} cm
C. 7.86×10^{0} cm
D. 1.4×10^{1} cm
E. 2.49×10^{1} cm

a25GeometricOptics_thinLenses Q2

1. An object is placed 4.15 cm to the left of a converging lens with a focal length of 3.6 cm. How far is the image from the lens?

A. 8.59×10^{0} cm
B. 1.53×10^{1} cm

The next page might contain more answer choices for this question

C. 2.72×10^{1} cm

D. 4.83×10^{1} cm

E. 8.59×10^{1} cm

2. An object is placed 4.85 cm to the left of a converging lens with a focal length of 4 cm. How far is the image from the lens?

A. 4.06×10^{0} cm

B. 7.22×10^{0} cm

C. 1.28×10^{1} cm

D. 2.28×10^{1} cm

E. 4.06×10^{1} cm

3. An object is placed 6.55 cm to the left of a converging lens with a focal length of 5.4 cm. How far is the image from the lens?

A. 3.08×10^{0} cm

B. 5.47×10^{0} cm

C. 9.73×10^{0} cm

D. 1.73×10^{1} cm

E. 3.08×10^{1} cm

4. An object is placed 4.65 cm to the left of a converging lens with a focal length of 6.2 cm. How far is the image from the lens?

A. 1.86×10^{0} cm

B. 3.31×10^{0} cm

C. 5.88×10^{0} cm

D. 1.05×10^{1} cm

E. 1.86×10^{1} cm

5. An object is placed 3.15 cm to the left of a converging lens with a focal length of 6.7 cm. How far is the image from the lens?

A. 3.34×10^{0} cm

B. 5.95×10^{0} cm

C. 1.06×10^{1} cm

D. 1.88×10^{1} cm

E. 3.34×10^{1} cm

6. An object is placed 3.55 cm to the left of a converging lens with a focal length of 6.8 cm. How far is the image from the lens?

A. 4.18×10^{0} cm

B. 7.43×10^{0} cm

C. 1.32×10^{1} cm

D. 2.35×10^{1} cm

E. 4.18×10^{1} cm

The next page might contain more answer choices for this question

7. An object is placed 4.35 cm to the left of a converging lens with a focal length of 5.7 cm. How far is the image from the lens?
   A. 1.03×10^{1} cm
   B. 1.84×10^{1} cm
   C. 3.27×10^{1} cm
   D. 5.81×10^{1} cm
   E. 1.03×10^{2} cm

a25GeometricOptics_thinLenses Q3

1. An object of height 0.54 cm is placed 131 cm behind a diverging lens with a focal length of 71 cm. What is the height of the image?
   A. 9.15×10^{-2} cm
   B. 1.1×10^{-1} cm
   C. 1.32×10^{-1} cm
   D. 1.58×10^{-1} cm
   E. 1.9×10^{-1} cm

2. An object of height 0.67 cm is placed 106 cm behind a diverging lens with a focal length of 61 cm. What is the height of the image?
   A. 1.18×10^{-1} cm
   B. 1.42×10^{-1} cm
   C. 1.7×10^{-1} cm
   D. 2.04×10^{-1} cm
   E. 2.45×10^{-1} cm

3. An object of height 0.67 cm is placed 107 cm behind a diverging lens with a focal length of 70 cm. What is the height of the image?
   A. 2.65×10^{-1} cm
   B. 3.18×10^{-1} cm
   C. 3.82×10^{-1} cm
   D. 4.58×10^{-1} cm
   E. 5.49×10^{-1} cm

4. An object of height 0.68 cm is placed 140 cm behind a diverging lens with a focal length of 87 cm. What is the height of the image?
   A. 1.26×10^{-1} cm
   B. 1.51×10^{-1} cm
   C. 1.81×10^{-1} cm
   D. 2.17×10^{-1} cm
   E. 2.61×10^{-1} cm

5. An object of height 0.64 cm is placed 112 cm behind a diverging lens with a focal length of 65 cm. What is the height of the image?

The next page might contain more answer choices for this question

A. 1.36×10^{-1} cm
B. 1.63×10^{-1} cm
C. 1.96×10^{-1} cm
D. 2.35×10^{-1} cm
E. 2.82×10^{-1} cm

6. An object of height 0.7 cm is placed 117 cm behind a diverging lens with a focal length of 70 cm. What is the height of the image?
   A. 2.62×10^{-1} cm
   B. 3.14×10^{-1} cm
   C. 3.77×10^{-1} cm
   D. 4.53×10^{-1} cm
   E. 5.43×10^{-1} cm

7. An object of height 0.75 cm is placed 147 cm behind a diverging lens with a focal length of 86 cm. What is the height of the image?
   A. 2.77×10^{-1} cm
   B. 3.32×10^{-1} cm
   C. 3.99×10^{-1} cm
   D. 4.78×10^{-1} cm
   E. 5.74×10^{-1} cm

a25GeometricOptics_thinLenses Q4

1. An object is placed 13.2 cm to the left of a diverging lens with a focal length of 17.1 cm. On the side, at a distance of 5.1 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
   A. 1.86×10^{-1} cm
   B. 5.87×10^{-1} cm
   C. 1.86×10^{0} cm
   D. 5.87×10^{0} cm
   E. 1.86×10^{1} cm

2. An object is placed 10.8 cm to the left of a diverging lens with a focal length of 15.6 cm. On the side, at a distance of 5.7 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?
   A. 5.98×10^{-1} cm
   B. 1.89×10^{0} cm
   C. 5.98×10^{0} cm
   D. 1.89×10^{1} cm
   E. 5.98×10^{1} cm

3. An object is placed 12.1 cm to the left of a diverging lens with a focal length of 16.9 cm. On the side, at a distance of 6.7 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?

The next page might contain more answer choices for this question

A. 5.64×10^{0} cm

B. 1.78×10^{1} cm

C. 5.64×10^{1} cm

D. 1.78×10^{2} cm

E. 5.64×10^{2} cm

4. An object is placed 13.7 cm to the left of a diverging lens with a focal length of 17.7 cm. On the side, at a distance of 5.5 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?

A. 5.73×10^{-2} cm

B. 1.81×10^{-1} cm

C. 5.73×10^{-1} cm

D. 1.81×10^{0} cm

E. 5.73×10^{0} cm

5. An object is placed 10.2 cm to the left of a diverging lens with a focal length of 16.6 cm. On the side, at a distance of 5.6 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?

A. 6.02×10^{-1} cm

B. 1.9×10^{0} cm

C. 6.02×10^{0} cm

D. 1.9×10^{1} cm

E. 6.02×10^{1} cm

6. An object is placed 10.9 cm to the left of a diverging lens with a focal length of 16.4 cm. On the side, at a distance of 6.8 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?

A. 1.81×10^{-1} cm

B. 5.71×10^{-1} cm

C. 1.81×10^{0} cm

D. 5.71×10^{0} cm

E. 1.81×10^{1} cm

7. An object is placed 10.9 cm to the left of a diverging lens with a focal length of 16.3 cm. On the side, at a distance of 5.7 cm from the diverging lens is a converging lens with focal length equal to 4 cm. How far is the final image from the converging lens?

A. 1.88×10^{0} cm

B. 5.94×10^{0} cm

C. 1.88×10^{1} cm

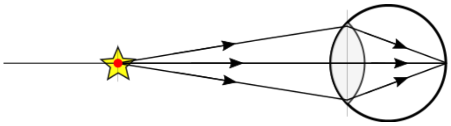
D. 5.94×10^{1} cm

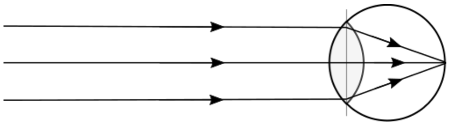
E. 1.88×10^{2} cm

The next page might contain more answer choices for this question

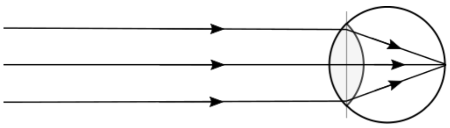
33 a25GeometricOptics_vision

1. Which lens has the shorter focal length?[224]

   A.  **The lens shown above-left.**

   B.  The lens shown above-left.

   C. Both lenses have the same the same focal length

2.  Refer to the figure to the left and above: If this represents the eye looking at an object, where is this object?[225]

   A. One focal length in front of the eye

   B. Very far away

   C. One focal length behind the eye

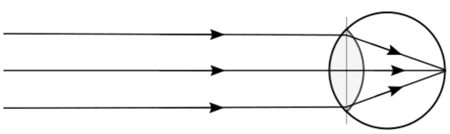
   D. at the eye's cornea

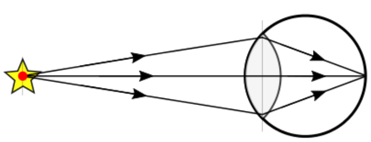
   E. at eye's retina

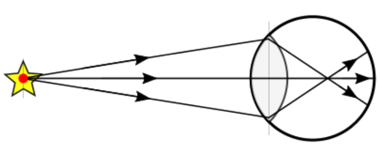
3. The focal point is where the rays from an object meet after they have passed through a lens.[226]

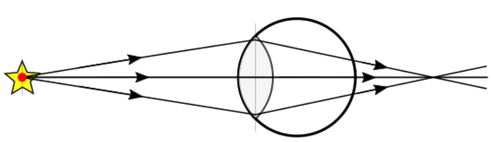
   A. False

   B. True

4.  Mr. Smith is gazing at something in the figure shown above and to the left. Suppose the object is suddenly moved closer, but for some reason Mr. Smith does not refocus his eyes. Which drawing below best depicts the rays' paths.[227]

   A.  The drawing shown above-left

   B.  The drawing shown above-left

   C.  **The drawing shown above-left**

The next page might contain more answer choices for this question

34 d_Bell.photon

1. If the wavelength "λ " associated with a photon is cut in half, the photon's energy "E"[228]
   - A. is cut in half
   - B. is reduced by a factor of 4
   - C. stays the same
   - **D. becomes twice as big**
   - E. becomes 4 times as big
2. If the wavelength "λ " associated with a photon doubles, the photon's frequency "f"[229]
   - **A. is cut in half**
   - B. is reduced by a factor of 4
   - C. stays the same
   - D. becomes twice as big
   - E. becomes 4 times as big
3. If the frequency "f" associated with a photon increases by a factor of 4, the photon's wavelength "λ "[230]
   - A. is cut in half
   - **B. is reduced by a factor of 4**
   - C. stays the same
   - D. becomes twice as big
   - E. becomes 4 times as big
4. If the frequency "f" associated with a photon increases by a factor of 4, the photon's energy "E"[231]
   - A. is cut in half
   - B. is reduced by a factor of 4
   - C. stays the same
   - D. becomes twice as big
   - **E. becomes 4 times as big**
5. If an atom emits two photons in a cascade emission and both photons have 2 eV of energy, the atom's energy[232]
   - A. stays the same
   - B. increases by 2 eV
   - C. increases by 4 eV
   - D. decreases by 2 eV
   - **E. decreases by 4 eV**
6. If an atom absorbs a photon with 2 eV energy, the atom's energy[233]
   - A. stays the same
   - **B. increases by 2 eV**
   - C. increases by 4 eV
   - D. decreases by 2 eV
   - E. decreases by 4 eV

The next page might contain more answer choices for this question

7. If a 3 eV photon strikes a metal plate and causes an electron to escape, that electron will have a kinetic energy that is[234]
   A. zero
   B. less than 3 eV
   C. equal to 3 eV
   D. greater than 3 eV
   E. equal to 6 eV

8. In the PhET Interactive Simulation for photoelectric effect, how was the electron's kinetic energy measured?[235]
   A. measuring spin
   B. measuring polarization
   C. measuring both spin and polarization
   D. deflecting the electron with a magnetic field
   E. stopping the electron with an applied voltage

9. If an atom absorbs a photon with 4 eV energy, the atom's energy[236]
   A. stays the same
   B. increases by 2 eV
   C. increases by 4 eV
   D. decreases by 2 eV
   E. decreases by 4 eV

10. If 10^{18} photons pass through a small hole in your roof every second, how many photons would pass through it if you doubled the diameter?[237]
   A. 10^{18}
   B. $2x10^{18}$
   C. $4x10^{18}$
   D. $6x10^{18}$
   E. $8x10^{18}$

11. Two black bodies of are created by cutting identical small holes in two large containers. The holes are oriented so that all the photons leaving one will enter the other. The objects have different temperature and different volume. Which object has the greater electromagnetic ("photon") energy density (energy per unit volume)?[238]
   A. The hotter object has a greater energy density.
   B. The larger object has a greater energy density.
   C. They have the same energy density (since the holes are identical).
   D. No unique answer exists because two variables are involved (temperature and volume).

12. Two black bodies of are created by cutting identical small holes two large containers. The holes are oriented so that all the photons leaving one will enter the other. The objects have different temperature and different volume. Which object emits more photons per second (above a given threshold energy)?[239]
   A. The object with the greater temperature emits more.
   B. The object with the greater volume.
   C. They both emit the same number of photons (since the holes are identical).

The next page might contain more answer choices for this question

D. No unique answer exists because two variables are involved (temperature and volume).

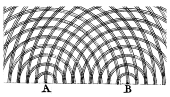
13. Two black bodies of are created by cutting identical small holes in two large containers. The holes are oriented so that all the photons leaving one will enter the other. The objects have different temperature and different volume. Which object has the greater electromagnetic ("photon") energy?[240]

A. The hotter object has a greater energy.

B. The larger object has a greater energy.

C. They have the same energy (since the holes are identical).

D. No unique answer exists because two variables are involved (temperature and volume).

14.  This figure is associated with [241]

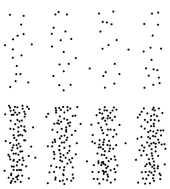
A. Photons striking metal and ejecting electrons (photo-electric effect explained in 1905)

B. Diffraction observed in light so faint that photons seemed to have no mechanism to interact with each other

C. A system similar to the one that led to the 1901 proposal that light energy is quantized as integral multiples of hf (except that Plank assumed that the walls were conductive.)

D. Evidence presented in 1800 that light is a wave.

E. The transfer of energy and momentum of a high energy photon of a nearly free electron.

15.  This figure is associated with [242]

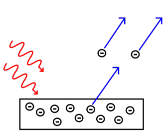
A. Photons striking metal and ejecting electrons (photo-electric effect explained in 1905)

B. Diffraction observed in light so faint that photons seemed to have no mechanism to interact with each other

C. A system similar to the one that led to the 1901 proposal that light energy is quantized as integral multiples of hf (except that Plank assumed that the walls were conductive.)

D. Evidence presented in 1800 that light is a wave.

E. The transfer of energy and momentum of a high energy photon of a nearly free electron.

16.  This figure is associated with [243]

A. Photons striking metal and ejecting electrons (photo-electric effect explained in 1905)

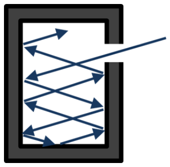
B. Diffraction observed in light so faint that photons seemed to have no mechanism to interact with each other

C. A system similar to the one that led to the 1901 proposal that light energy is quantized as integral multiples of hf (except that Plank assumed that the walls were conductive.)

D. Evidence presented in 1800 that light is a wave.

E. The transfer of energy and momentum of a high energy photon of a nearly free electron.

The next page might contain more answer choices for this question

17.  This figure is associated with [244]

A. Photons striking metal and ejecting electrons (photo-electric effect explained in 1905)

B. Diffraction observed in light so faint that photons seemed to have no mechanism to interact with each other

C. A system similar to the one that led to the 1901 proposal that light energy is quantized as integral multiples of hf

D. Evidence presented in 1800 that light is a wave.

E. The transfer of energy and momentum of a high energy photon of a nearly free electron.

18. A photon is polarized at 5° when it encounters a filter oriented at 35°. What is the probability that it passes?[245]

A. 0

B. 1/4

C. 1/2

D. 3/4

E. 1

19. A photon is polarized at 10° when it encounters a filter oriented at 55°. What is the probability that it passes?[246]

A. 0

B. 1/4

C. 1/2

D. 3/4

E. 1

20. A photon is polarized at 10° when it encounters a filter oriented at 70°. What is the probability that it passes?[247]

A. 0

B. 1/4

C. 1/2

D. 3/4

E. 1

21. A photon is polarized at 10° when it encounters a filter oriented at 40°. What is the probability that it is blocked?[248]

A. 0

B. 1/4

C. 1/2

D. 3/4

E. 1

22. A photon is polarized at 5° when it encounters a filter oriented at 50°. What is the probability that it is blocked?[249]

A. 0

The next page might contain more answer choices for this question

B. 1/4

C. 1/2

D. 3/4

E. 1

23. A photon is polarized at 5° when it encounters a filter oriented at 65°. What is the probability that it is blocked?[250]

A. 0

B. 1/4

C. 1/2

D. 3/4

E. 1

24. A photon is polarized at 10° when it encounters a filter oriented at 100°. What is the probability that it passes?[251]

A. 0

B. 1/4

C. 1/2

D. 3/4

E. 1

25. A photon is polarized at 10° when it encounters a filter oriented at 100°. What is the probability that it is blocked?[252]

A. 0

B. 1/4

C. 1/2

D. 3/4

E. 1

35 d_Bell.polarization

1. The light is linearly polarized, the electric field is oriented _______ to the direction of motion[253]

A. parallel

B. perpendicular

C. at 45 degrees

D. all of these are possible

2. Hold a pendulum a moderate distance from equilibrium and release it by tossing it in a direction perpendicular to the displacement of the mass from equilibrium. The resulting polarization will be _____ (pick the best answer)[254]

A. linear

B. circular

C. circular or linear

D. circular or elliptical

E. linear or elliptical

The next page might contain more answer choices for this question

3. A mathematically pure (monochromatic) ---------- wave or oscillation that is unpolarized cannot be created if it is[255]
   - A. electromagnetic
   - B. a pendulum
   - **C. either electromagnetic or a pendulum**
   - D. both oscillations can be created as pure (monochromatic) oscillations
4. To create an unpolarized pendulum oscillation[256]
   - A. create an elliptically polarized wave with an ε¿0.2
   - B. create an elliptically polarized wave with an ε¡0.8
   - C. create an elliptically polarized wave with an 0.2¡ε¡0.8
   - **D. start with a linear, circular, or elliptical wave and evolve it randomly to different polarizations**
5. If the hypotenuse of a 45°-45° right triangle has a length of $\sqrt{2}$ what is the length of each side?[257]
   - A. $\frac{1}{2}$
   - B. $\frac{1}{\sqrt{2}}$
   - C. 1
   - **D.** $\sqrt{2}$
   - E. $2\sqrt{2}$
6. If the hypotenuse of a 45°-45° right triangle has a length of 1 what is the length of each side?[258]
   - A. $\frac{1}{2}$
   - **B.** $\frac{1}{\sqrt{2}}$
   - C. 1
   - D. $\sqrt{2}$
   - E. $2\sqrt{2}$
7. If the hypotenuse of a 60°-30° right triangle has a length of 1 what is the length of the shorter side?[259]
   - A. $\frac{1}{4}$
   - B. $\frac{1}{\sqrt{2}}$
   - **C.** $\frac{1}{2}$
   - D. $\frac{\sqrt{3}}{2}$
   - E. $\frac{3}{4}$
8. If the hypotenuse of a 60°-30° right triangle has a length of 1 what is the length of the longer side?[260]
   - A. $\frac{1}{4}$
   - B. $\frac{1}{\sqrt{2}}$
   - C. $\frac{1}{2}$
   - **D.** $\frac{\sqrt{3}}{2}$
   - E. $\frac{3}{4}$

The next page might contain more answer choices for this question

9. A linear polarizer selects a component of the electric field. Also, the energy density of light is proportional to the square of the electric field. By what factor does a filter reduce the electric field if it is oriented 30° to that field?[261]

   A. $\frac{1}{4}$
   B. $\frac{1}{\sqrt{2}}$
   C. $\frac{1}{2}$
   D. $\frac{\sqrt{3}}{2}$
   E. $\frac{3}{4}$

10. A linear polarizer selects a component of the electric field. Also, the energy density of light is proportional to the square of the electric field. By what factor does a filter reduce the electric field if it is oriented 60° to that field?[262]

   A. $\frac{1}{4}$
   B. $\frac{1}{\sqrt{2}}$
   C. $\frac{1}{2}$
   D. $\frac{\sqrt{3}}{2}$
   E. $\frac{3}{4}$

11. A linear polarizer selects a component of the electric field. Also, the energy density of light is proportional to the square of the electric field. A 12 mW laser strikes a polarizing filter oriented 30° to the incoming axis of polarization. How much power passes the filter?[263]

   A. 3mW
   B. 4mW
   C. 6mW
   D. 8mW
   E. 9mW

12. A linear polarizer selects a component of the electric field. Also, the energy density of light is proportional to the square of the electric field. A 12 mW laser strikes a polarizing filter oriented 30° to the incoming axis of polarization. How much power is blocked by the filter?[264]

   A. 3mW
   B. 4mW
   C. 6mW
   D. 8mW
   E. 9mW

13. A linear polarizer selects a component of the electric field. Also, the energy density of light is proportional to the square of the electric field. A 12 mW laser strikes a polarizing filter oriented 60° to the incoming axis of polarization. How much power is blocked by the filter?[265]

   A. 3mW
   B. 4mW
   C. 6mW
   D. 8mW

The next page might contain more answer choices for this question

E. 9mW

14. A linear polarizer selects a component of the electric field. Also, the energy density of light is proportional to the square of the electric field. A 12 mW laser strikes a polarizing filter oriented 60° to the incoming axis of polarization. How much power is passed by the filter?[266]

    A. 3mW

    B. 4mW

    C. 6mW

    D. 8mW

    E. 9mW

15. A linear polarizer selects a component of the electric field. Also, the energy density of light is proportional to the square of the electric field. A 12 mW laser strikes a polarizing filter oriented 45° to the incoming axis of polarization. How much power is passed by the filter?[267]

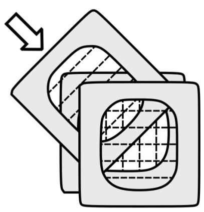
    A. 3mW

    B. 4mW

    C. 6mW

    D. 8mW

    E. 9mW



16. A linear polarizer selects a component of the electric field. Also, the energy density of light is proportional to the square of the electric field. Unpolarized light impinges on three linear filters, each oriented 45° to the previous, as shown. What fraction of the power incident on the first filter emerges from the last?[268]

    A. 1/32

    B. 1/16

    C. 3/32

    D. 1/8

    E. 3/16

17. Hold a pendulum a moderate distance from equilibrium and release it by tossing it in a direction parallel to the displacement of the mass from equilibrium. The resulting polarization will be _____ (pick the best answer)[269]

    A. linearly

    B. circular

    C. circular or linear

    D. circular or elliptical

    E. linear or elliptical

18. A linear polarizer selects a component of the electric field. Also, the energy density of light is proportional to the square of the electric field. Unpolarized light impinges on three linear filters. The second is oriented 30° from the first, and the third is rotated by an additional 60°, making it at right angles from the first filter. What fraction of the power incident on the first filter emerges from the last?[270]

The next page might contain more answer choices for this question

A. 1/32
B. 1/16
C. 3/32
D. 1/8
E. 3/16

36 b_QuantumTimeline

1. Excepting cases where where quantum jumps in energy are induced in another object (i.e., using only the uncertainty principle), which would NOT put a classical particle into the quantum regime?[271]
   A. high speed
   B. confinement to a small space
   C. low speed
   D. low mass

2. How does the Bohr atom differ from Newton's theory of planetary orbits?[272]
   A. The force between proton and electron is not attractive for the atom, but it is for planets and the sun.
   B. The force between planets and the sun is not attractive for the atom, but it is for proton and electron.
   C. planets make elliptical orbits while the electron makes circular orbits
   D. electrons make elliptical orbits while planets make circular orbits

3. What are the units of Plank's constant?[273]
   A. mass x velocity x distance
   B. energy x time
   C. momentum x distance
   D. all of the above
   E. none of the above

4. What are the units of Plank's constant?[274]
   A. mass x energy
   B. energy x distance
   C. momentum x time x mass
   D. all of the above
   E. none of the above

5. How would you describe Old Quantum Theory[275]
   A. complete and self-consistent
   B. complete but not self-consistent
   C. self-consistent but not complete
   D. neither complete nor self-consistent

6. The first paper that introduced quantum mechanics was Plank's study of [276]
   A. light

The next page might contain more answer choices for this question

B. electrons

C. protons

D. energy

7. What are examples of energy?[277]

A. $\frac{1}{2}mv^2$

B. mgh where m is mass, g is gravity, and h is height

C. heat

D. all of the above

E. none of the above

8. What are examples of energy?[278]

A. $\frac{m}{v}$

B. force

C. mg where m is mass, g is gravity, and h is height

D. all of the above

E. none of the above

9. What was Plank's understanding of the significance of his work on blackbody radiation?[279]

A. he was afraid to publish it for fear of losing his reputation

B. he eventually convinced his dissertation committee that the theory was correct

C. the thought it was some sort of mathematical trick

D. he knew it would someday win him a Nobel prize

10. What was "spooky" about Taylor's 1909 experiment with wave interference?[280]

A. The light was so dim that the photoelectric effect couldn't occur

B. The light was dim, but it didn't matter because he was blind.

C. The light was so dim that only one photon at a time was near the slits.

D. The interference pattern mysteriously disappeared.

11. The pilot wave hypothesis was that the Schroedinger wave described the electron's charge density.[281]

A. True

B. False

12. The pilot wave hypothesis was that the Schroedinger wave described the electron's probability density.[282]

A. True

B. False

13. The pilot wave hypothesis was that the Schroedinger wave described a force on the electron.[283]

A. True

B. False

The next page might contain more answer choices for this question

37 b_WhyIsSkyDarkAtNight

1. Approximately how often does a supernovae occur in a typical galaxy?[284]
   - A. once a 5 months
   - B. once every 5 years
   - **C. once every 50 years**
2. If a star were rushing towards Earth at a high speed[285]
   - **A. there would be a blue shift in the spectral lines**
   - B. there would be a red shift in the spectral lines
   - C. there would be no shift in the spectral lines
3. An example of a standard candle is[286]
   - A. any part of the nighttime sky that is giving off light
   - B. any part of the nighttime sky that is dark
   - **C. a supernova in a distant galaxy**
   - D. all of these are standard candles
4. If a galaxy that is 10 Mpc away is receding at 700km/s, how far would a galaxy be receding if it were 20 Mpc away?[287]
   - A. 350km/s
   - B. 700km/s
   - **C. 1400km/s**
5. The "apparent" magnitude of a star is[288]
   - A. How bright it would be if you were exactly one light year away
   - B. How bright it would be if it were not receding due to Hubble expansion
   - **C. How bright it is as viewed from Earth**
6. In the essay "Why the sky is dark at night", a graph of velocity versus distance is shown. What is odd about those galaxies in the Virgo cluster (circled in the graph)?[289]
   - A. they all have nearly the same speed
   - **B. they have a wide variety of speeds**
   - C. they are not receding away from us
   - D. the cluster is close to us
7. Why was it important to observe supernovae in galaxies that are close to us?[290]
   - **A. we have other ways of knowing the distances to the nearby galaxies; this gives us the opportunity to study supernovae of known distance and ascertain their absolute magnitude.**
   - B. they have less of a red-shift, and interstellar gas absorbs red light
   - C. it is easier to measure the doppler shift, and that is not always easy to measure.
   - D. because supernovea are impossible to see in distant galaxies
8. What if clouds of dust blocked the light from distant stars? Could that allow for an infinite and static universe?[291]
   - **A. No, the clouds would get hot**
   - B. No, if there were clouds, we wouldn't see the distant galaxies
   - C. No, there are clouds, but they remain too cold to resolve the paradox
   - D. Yes, that is an actively pursued hypothesis

The next page might contain more answer choices for this question

38 d_Bell.binomial

1. The normal distribution (often called a ”bell curve”) is never skewed[292]
   A. True
   B. False
2. The normal distribution (often called a ”bell curve”) is usually skewed[293]
   A. True
   B. False
3. By definition, a skewed distribution[294]
   A. is broader than an unskewed distribution
   B. includes negative values of the observed variable
   C. is a ”normal” distribution
   D. is asymmetric about its peak value
   E. contains no outliers
4. The binomial distribution results from observing n outcomes, each having a probability p of ”success”[295]
   A. True
   B. False
5. What is the probability of success, p, for a binary distribution using a six-sided die, with success defined as ”two”?[296]
   A. 3/6
   B. 2/6
   C. 1/6
   D. 5/6
   E. 4/6
6. What is the probability of success, p, for a binary distribution using a six-sided die, with success defined as anything but ”two”?[297]
   A. 3/6
   B. 2/6
   C. 1/6
   D. 5/6
   E. 4/6
7. What is the probability of success, p, for a binary distribution using a six-sided die, with success defined as either a ”two” or a ”three”?[298]
   A. 3/6
   B. 2/6
   C. 1/6
   D. 5/6
   E. 4/6

The next page might contain more answer choices for this question

8. How would you describe the "skew" of a binary distribution?[299]
   - **A. The binary distribution is always skewed, but has little skew for a large number of trials n.**
   - B. The binary distribution is always skewed, but has little skew for a small number of trials n.
   - C. The binary distribution is never skewed if it is a true binary distribution.
   - D. Distributions are never skewed. Only experimental measurements of them are skewed.
   - E. None of these are true.

9. For a binomial distribution with n trials, the variance is σ^2=np(1-p). If 90 trials are observed, then 68% of the time the observed number of positive outcomes will fall within ±___ of the expected value if p=.11 is the probability of a positive outcome. Make the approximation that this binomial distribution is approximately a Gaussian (normal) distribution).[300]
   - A. 6
   - B. 18
   - **C. 3**
   - D. 9
   - E. 1

10. For a binomial distribution with n trials, the variance is σ^2=np(1-p). If 40 trials are observed, then 68% of the time the observed number of positive outcomes will fall within ±___ of the expected value if p=.11 is the probability of a positive outcome. Make the approximation that this binomial distribution is approximately a Gaussian (normal) distribution).[301]
    - A. 6
    - B. 18
    - C. 3
    - D. 9
    - **E. 2**

11. For a binomial distribution with n trials, the variance is σ^2=np(1-p). If 40 trials are made and p=.11, the expected number of positive outcomes is__. Make the approximation that this binomial distribution is approximately a Gaussian (normal) distribution.[302]
    - **A. 4.4**
    - B. 2.2
    - C. 9.9
    - D. 3.3
    - E. 1.1

12. For a binomial distribution with n trials, the variance is σ^2=np(1-p). If 90 trials are made and p=.11, the expected number of positive outcomes is__. Make the approximation that this binomial distribution is approximately a Gaussian (normal) distribution.[303]
    - A. 2.2
    - **B. 9.9**
    - C. 3.3
    - D. 1.1

The next page might contain more answer choices for this question

13. Recall that only 4.6% of the outcomes for a normal distribution lie outside of two standard deviations from the mean, and approximate the binomial distribution as normal for large numbers. If the variance is σ^2=np(1-p) where n is the number of trials and p=.11 is the probability of a positive outcome for 40 trials, roughly 98% of the outcomes will be smaller than approximately __[304]

    A. 6

    B. 8

    C. 12

    D. 16

    E. 22

14. Recall that only 4.6% of the outcomes for a normal distribution lie outside of two standard deviations from the mean, and approximate the binomial distribution as normal for large numbers. If the variance is σ^2=np(1-p) where n is the number of trials and p=.11 is the probability of a positive outcome for 90 trials, roughly 98% of the outcomes will be smaller than approximately __[305]

    A. 6

    B. 8

    C. 12

    D. 16

    E. 22

15. A local college averages 2500 new incoming students each year. Suppose the pool of potential high school graduates in the local area is so large that the probability of a given student selecting this college is small, and assume a variance of σ^2 equal to p(1-p). What standard deviation would you expect in the yearly total of new enrollees, assuming nothing changes in this population from year to year? [306]

    A. 50

    B. 150

    C. 500

    D. 200

    E. 250

16. A local college averages 1600 new incoming students each year. Suppose the pool of potential high school graduates in the local area is so large that the probability of a given student selecting this college is small, and assume a variance of σ^2 equal to p(1-p). What standard deviation would you expect in the yearly total of new enrollees, assuming nothing changes in this population from year to year? [307]

    A. 16

    B. 160

    C. 40

    D. 10

    E. 32

39 d_Bell.partners

1. When is the referee allowed to observe Alice and Bob?[308]

    A. never

The next page might contain more answer choices for this question

B. While they are discussing strategy (phase 1), but not while their backs are turned to each other.

C. While their backs are turned, but not while they are discussing strategy (phase 1)

D. The referee should carefully observe Alice and Bob all the time

2. Is it cheating for one of the partners to change their mind in after communication ceases?[309]

A. It is cheating and the game should be terminated if the partners are caught doing this

B. It is cheating, but fortunately the penalty allows partners to do it

C. It is not cheating, but allowing to partners to do so violates the spirit of the game as a Bell's test experiment simulation.

D. It is not cheating, and allowing to partners to do this is in the spirit of the game as a Bell's test experiment simulation.

3. The β -strategy is a new strategy introduced in the couples version of the card game that calls for[310]

A. Alice and Bob to sometimes give different answers (one ”even” while the other ”odd”)

B. Alice and Bob to always give different answers (one ”even” while the other ”odd”)

C. Alice and Bob to always answer ”even”

D. Alice and Bob to always answer ”odd”

E. None of these describes the β -strategy

4. The α -strategy in the couples version of the card game is similar to the strategy introduced in the solitaire version, and calls for[311]

A. Alice and Bob to sometimes give different answers (one ”even” while the other ”odd”)

B. Alice and Bob to always give different answers (one ”even” while the other ”odd”)

C. Alice and Bob to always answer ”even”

D. Alice and Bob to always answer ”odd”

E. None of these describes the α -strategy

5. Suppose the referee gives Alice and Bob receive question cards of the different suit (different questions). What are the best and worst possible outcomes for the partners? (Assume for this question that $Q > 3$)[312]

A. Best for partners: +1 ... Worst: $-Q$

B. Best for partners: +1 **... Worst:** -3

C. Best for partners: 0 ... Worst: $-Q$

D. Best for partners: 0 ... Worst: -3

E. None of these is correct

6. Suppose the referee gives Alice and Bob receive question cards of the same suit (same questions). What are the best and worst possible outcomes for the partners? (Assume for this question that $Q > 3$)[313]

A. Best for partners: +1 ... Worst: $-Q$

B. Best for partners: +1 ... Worst: -3

C. Best for partners: 0 **... Worst:** $-Q$

D. Best for partners: 0 ... Worst: -3

E. None of these is correct

7. Suppose the partners choose the β strategy (which was not available in the solitaire version). What are the best and worst possible outcomes for the partners? (Assume for this question that $Q > 3$)[314]

The next page might contain more answer choices for this question

A. Best for partners: $+1$ **... Worst:** $-Q$

B. Best for partners: $+1$ ... Worst: -3

C. Best for partners: 0 ... Worst: $-Q$

D. Best for partners: 0 ... Worst: -3

E. None of these is correct

8. Suppose both partners choose to answer "even" to any question that is asked. What are the best and worst possible outcomes for the partners? (Assume for this question that $Q > 3$)[315]

A. Best for partners: $+1$ **... Worst:** $-Q$

B. Best for partners: $+1$ ... Worst: -3

C. Best for partners: 0 ... Worst: $-Q$

D. Best for partners: 0 **... Worst:** -3

E. None of these is correct

9. Suppose both partners choose to answer "even" to any question that is asked. Why would such a strategy ever be adopted? (Assume for this question that $Q > 3$)[316]

A. The partners might have cheated so much in the past that they need to lose a round.

B. One partner might announce that all answers will be "even", while the other is certain that the both question cards will have the same suit.

C. Both partners agree that there is a 90

D. Two of these reasons for this strategy might be valid

E. There is no reason for the partners to ever adopt this strategy

10. How much do the partners win or lose if Alice answers 4♠ to K♠ while Bob answers 4♡ to A♡?[317]

A. win 1 point

B. lose Q points

C. no points awarded or lost

D. lose 3 points

11. How much do the partners win or lose if Alice answers 4♠ to K♠ while Bob answers 5♡ to A♡?[318]

A. win 1 point

B. lose Q points

C. no points awarded or lost

D. lose 3 points

12. How much do the partners win or lose if Alice answers 4♠ to K♠ while Bob answers 4♠ to A♠? [319]

A. win 1 point

B. lose Q points

C. no points awarded or lost

D. lose 3 points

13. How much do the partners win or lose if Alice answers 4♠ to K♠ while Bob answers 5♠ to A♠? [320]

A. win 1 point

B. lose Q points

The next page might contain more answer choices for this question

C. no points awarded or lost

D. lose 3 points

14. Suppose referee adopts neutral scoring with Q=4 and asks the same question with a probability P_S=0.25. This reduces the average loss rate for their partners for the following reason: Consider a probability space with[321]

A. 3 equally probable events: On two they are given different questions, winning twice. On the third event they are given the same answer and lose a point.

B. 3 equally probable events: On two they are given different questions, winning once and losing once. On the third event they are given the same answer and lose a point.

C. 3 equally probable events: On two they are given different questions, winning once and losing once. On the third event they are given the same answer and neither gain nor lose a point.

D. 4 equally probable events: On three they are given different questions, winning once but losing twice. On the fourth event they are given the same answer and lose a point.

E. 4 equally probable events: On three they are given different questions, winning twice but losing once. On the fourth event they are given the same answer and neither gain nor lose a point.

15. Although it decreases the rate at which the partners lose point, increasing the probability of asking the same question is more effective at persuading students to act as particles by relying on the α -strategy because relying on a larger penalty for giving different answers to the same question will tempt students to use the β -strategy only briefly (hoping never to be caught) and then requesting a break to "re-establish" quantum entanglement.[322]

A. True

B. False

16. Suppose the referee selects neutral scoring with $Q = \frac{4}{3}\left(\frac{1-P_S}{P_S}\right)$. What number does the penalty approach as the probability of asking the same question goes to 1?[323]

A. 0

B. ∞

C. 3

D. 4

E. 4/3

17. Suppose the referee selects neutral scoring with $Q = \frac{4}{3}\left(\frac{1-P_S}{P_S}\right)$. What number does the penalty approach as the probability of asking the same question goes to 0?[324]

A. 0

B. ∞

C. 3

D. 4

E. 4/3

18. Suppose the referee selects neutral scoring with $Q = \frac{4}{3}\left(\frac{1-P_S}{P_S}\right)$. What is the penalty if the probability of asking the same question is 0.25?[325]

A. 0

B. ∞

The next page might contain more answer choices for this question

C. 3

D. 4

E. 4/3

19. Suppose the referee selects neutral scoring with $Q = \frac{4}{3}\left(\frac{1-P_S}{P_S}\right)$. What is the penalty if the probability of asking the same question is 0.5?[326]

A. 0

B. ∞

C. 3

D. 4

E. 4/3

40 d_Bell.solitaire

1. Your solitaire deck uses ♡ ♠ ♣ and your answer cards are 4 and 5. You select 4♠, 4♣, and 5♡. If the questions were Q♠ and Q♣, you would___[327]

A. lose 3 points

B. lose 1 point

C. win 1 point

D. win 3 points

E. be disqualified for cheating

2. Your solitaire deck uses ♡ ♠ ♣ and your answer cards are 4 and 5. You select 4♠, 5♣, and 5♡. If the questions were Q♠ and Q♣, you would___[328]

A. lose 3 points

B. lose 1 point

C. win 1 point

D. win 3 points

E. be disqualified for cheating

3. You solitaire deck uses ♡ ♠ ♣ and your answer cards are 4 and 5. You select 4♠, 5♣, and 5♡. If the questions were Q♠ and Q♣. Which of the following wins?[329]

A. K♡ and K♠

B. K♠ and K♣

C. K♡ and K♣

D. two of these are true

E. none of these are true

4. You solitaire deck uses ♡ ♠ ♣ and your answer cards are 4 and 5. You select 4♠, 5♣, and 5♡. If the questions were Q♠ and Q♣. Which of the following loses?[330]

A. K♡ and K♠

B. K♠ and K♣

C. K♡ and K♣

The next page might contain more answer choices for this question

D. two of these are true

E. none of these are true

5. If you play the solitaire game 6 times, you will on average win ____ times.[331]

A. 4

B. 2

C. 3

D. 6

E. 5

6. If you play the solitaire game 3 times, you will on average lose ____ times.[332]

A. 1

B. 2

C. 3

D. 4

E. 5

7. If you play the solitaire game 6 times, you will on average lose ____ times.[333]

A. 4

B. 2

C. 3

D. 6

E. 5

8. If you play the solitaire game 3 times, you will on average win ____ times.[334]

A. 1

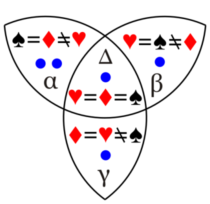
B. 2

C. 3

D. 4

E. 5

41 d_Bell.Venn

1. 

Calculate the measured probability: P(♠,♢) = ? Assume the dots represent five observations.[335]

A. 2/4=1/2

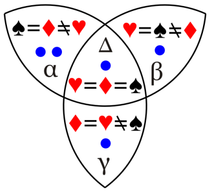
B. 2/5

C. 3/5

D. 3/4

E. 5/6

The next page might contain more answer choices for this question

2. 

Calculate the measured probability: P(♠,♡) = ? Assume the dots represent five observations.[336]

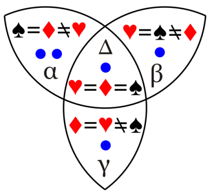
A. 2/4=1/2

B. 2/5

C. 3/5

D. 3/4

E. 5/6

3. 

Calculate the probability P(♠,♢)+P(♠,♡)+P(♡,♢) = ? Assume the dots represent five observations.[337]

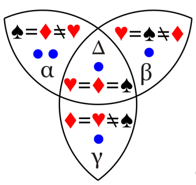
A. 4/5

B. 5/6

C. 5/4

D. 6/5

E. 7/5

4. 

Calculate the quantum correlation: C(♠,♢) = ? Assume the dots represent five observations.[338]

A. −2/5

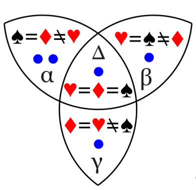
B. −1/5

C. 0

D. +1/5

E. +2/5

F. +1

5. 

Calculate the measured quantum correlation: C(♠,♡) = ? Assume the dots represent five observations.[339]

A. −2/5

B. −1/5

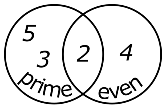
C. 0

The next page might contain more answer choices for this question

D. +1/5

E. +2/5

F. +1

6. 

If a number is randomly selected from the set 2,3,4,5, what is P(even), or the probability that the number is even?[340]

A. 0

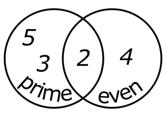
B. 1/4

C. 1/2

D. 3/4

E. 1

F. 5/4

7. 

If a number is randomly selected from the set 2,3,4,5, what is P(prime), or the probability that the number is prime?[341]

A. 0

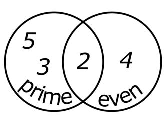
B. 1/4

C. 1/2

D. 3/4

E. 1

F. 5/4

8. 

If a number is randomly selected from the set 2,3,4,5, what is P(prime)+P(even), or the sum of the probability that it is even, plus the probability that it is prime?[342]

A. 0

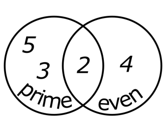
B. 1/4

C. 1/2

D. 3/4

E. 1

F. 5/4

9. 

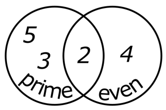
If a number is randomly selected from the set 2,3,4,5, what is the probability that it is both even and prime?[343]

A. 0

B. 1/4

The next page might contain more answer choices for this question

C. 1/2
D. 3/4
E. 1
F. 5/4

10. 

If a number is randomly selected from the set 2,3,4,5, what is the probability that it is either even or prime?[344]

A. 0
B. 1/4
C. 1/2
D. 3/4
E. 1
F. 5/4

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The next page might contain more answer choices for this question

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