1. \( \oint \text{d}l = 2\pi r = 2(\pi)(4.7) = 29.53 \text{ m} \)

2. \( \oint \text{d}l = I = 2\pi r \cdot H = I \)
   \[ H = \frac{I}{2\pi r} = \frac{8.5 \text{ amps}}{2\pi (4.7 \text{ meters})} \approx 0.2878 \text{ amp/meter} \]

4. \( r = \sqrt{3.4389^2 + 3.2037^2} = 4.69997 \approx 4.7 \text{ m} \)
   \[ H = \frac{I}{2\pi r} = \frac{8.5}{2\pi (4.7)} = \frac{0.2878 \text{ A/m}}{??} \]

The calculation is true, but not what was asked. What was asked for the \( y \)-component.

\[ H_y = -H \sin \theta \]
\[ = +H \cos \theta \]
\[ = (H) \frac{3.4389}{4.6997} \]
\[ = 0.2106 \text{ A/m} \]

**Yes**
First find \( H \)

\[
SH \cdot dl = N i \quad N = \# \text{turns}
\]

\[
\begin{array}{c}
\text{140 m long} \\
\text{1331 turns} \\
\text{8.5 Amps}
\end{array}
\]

\[
SH \cdot dl = (H)(\text{length}) = H(140) = (1331)(8.5)
\]

\[
H = \frac{(1331)(8.5)}{140}
\]

But \( B = \mu_0 H \)

\[
\mu_0 = 4\pi \times 10^{-7}
\]

\[
\mu_0 H = \frac{(1331)(8.6)(4\pi)}{140} \times 10^{-7} = B
\]

\[
B = .000115 = 1.15 \times 10^{-4} \text{ Tesla}
\]

Same as before except that we don't know if the path.
Does path include center?

\[ S_{H \cdot dl} = H(98+25) \text{ if yes} \]
\[ H(98-25) \text{ if no} \]

\[ H = \frac{(1770 \text{ turns})(9.6 \text{ Amps})}{140 \text{ meters}} \sin \theta \quad S_{H \cdot dl} = I \cdot N \]

\[ = 121.37 \text{ A/m} \quad \frac{98}{+25} \]

\[ S_{H \cdot dl} = 123 = 98+25 \text{ if yes} \]
\[ 73 = 98-25 \text{ if no} \]

\[ H_{S \cdot dl} = 121.37(123) = 1.49E4 \text{ if yes} \]
\[ H_{S \cdot dl} = 121.37(73) = 8.86E3 \text{ if no} \]

**BOTH ARE WRONG**