

36. (a) Replacing $i/\pi R^2$ with $J = 100 \text{ A/m}^2$, in Eq. 30-22, we have

$$|\vec{B}| = \left(\frac{\mu_0 J}{2} \right) r = 1.3 \times 10^{-7} \text{ T}$$

where $r = 0.0020 \text{ m}$.

- (b) Similarly, writing $i = J\pi R^2$ in Eq. 30-19 yields

$$|\vec{B}| = \frac{\mu_0 J R^2}{2r} = 1.4 \times 10^{-7} \text{ T}$$

where $r = 0.0040 \text{ m}$.