

43. (a) We use Eq. 30-26. The inner radius is $r = 15.0$ cm, so the field there is

$$B = \frac{\mu_0 i N}{2\pi r} = \frac{(4\pi \times 10^{-7} \text{ T} \cdot \text{m/A})(0.800 \text{ A})(500)}{2\pi(0.150 \text{ m})} = 5.33 \times 10^{-4} \text{ T} .$$

- (b) The outer radius is $r = 20.0$ cm. The field there is

$$B = \frac{\mu_0 i N}{2\pi r} = \frac{(4\pi \times 10^{-7} \text{ T} \cdot \text{m/A})(0.800 \text{ A})(500)}{2\pi(0.200 \text{ m})} = 4.00 \times 10^{-4} \text{ T} .$$