49. (a) The magnitude of the magnetic dipole moment is given by $\mu = NiA$, where $N$ is the number of turns, $i$ is the current, and $A$ is the area. We use $A = \pi R^2$, where $R$ is the radius. Thus,

$$\mu = Ni\pi R^2 = (300)(4.0\text{ A})(\pi)(0.025\text{ m})^2 = 2.4\text{ A} \cdot \text{m}^2.$$ 

(b) The magnetic field on the axis of a magnetic dipole, a distance $z$ away, is given by Eq. 29-27:

$$B = \frac{\mu_0 \mu}{2\pi z^3}.$$ 

We solve for $z$:

$$z = \left(\frac{\mu_0 \mu}{2\pi B}\right)^{1/3} = \left[\frac{(4\pi \times 10^{-7} \text{ T} \cdot \text{m/A})(2.36\text{ A} \cdot \text{m}^2)}{2\pi(5.0 \times 10^{-6} \text{ T})}\right]^{1/3} \approx 46\text{ cm}.$$