

50. We use Eq. 30-28 and note that the contributions to  $\vec{B}_P$  from the two coils are the same. Thus,

$$B_P = \frac{2\mu_0 i R^2 N}{2[R^2 + (R/2)^2]^{3/2}} = \frac{8\mu_0 N i}{5\sqrt{5}R} .$$

$\vec{B}_P$  is in the positive  $x$  direction.