

66. Assuming  $\vec{J}$  is directed along the wire (with no radial flow) we integrate, starting with Eq. 27-4,

$$i = \int |\vec{J}| dA = \int_{R/2}^R kr \, 2\pi r \, dr = \frac{2}{3} k\pi \left( R^3 - \frac{R^3}{8} \right)$$

where  $k = 3.0 \times 10^8$  and SI units understood. Therefore, if  $R = 0.00200$  m, we obtain  $i = 4.40$  A.