

67. (First problem of **Cluster**)

(a) We are told that $r_B = \frac{1}{2}r_A$ and $L_B = 2L_A$. Thus, using Eq. 27-16,

$$R_B = \rho \frac{L_B}{\pi r_B^2} = \rho \frac{2L_A}{\frac{1}{4} \pi r_A^2} = 8R_A = 64 \, \Omega .$$

(b) The current-densities are assumed uniform.

$$\frac{J_A}{J_B} = \frac{\frac{i}{\pi r_A^2}}{\frac{i}{\pi r_B^2}} = \frac{\frac{i}{\pi r_A^2}}{\frac{1}{4} \frac{i}{\pi r_A^2}} = \frac{1}{4} .$$