

79. Let the power supplied be  $P_s$  and that dissipated be  $P_d$ . Since  $P_d = i^2 R$  and  $i = P_s/\mathcal{E}$ , we have  $P_d = P_s^2/\mathcal{E}^2 R \propto \mathcal{E}^{-2}$ . The ratio is then

$$\frac{P_d(\mathcal{E} = 110,000 \text{ V})}{P_d(\mathcal{E} = 110 \text{ V})} = \left( \frac{110 \text{ V}}{110,000 \text{ V}} \right)^2 = 1.0 \times 10^{-6} .$$