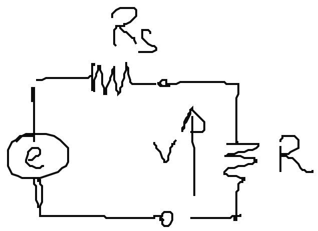
4.3



$P = \frac{V_{eff}^2}{R}$ et $V = \frac{eR}{R+R_s}$ $\Big\} \Rightarrow P = \left(\frac{ER}{R+R_s}\right)^2 \cdot \frac{1}{R}$

$$P = \frac{E^2 \cdot R}{(R+R_s)^2}$$

$$\frac{\partial P}{\partial R} = \frac{E^2 (R+R_s)^2 - E^2 R (2)(R+R_s)}{(R+R_s)^4} = 0 \;?$$

$$E^2 \left[R^2 + R_s^2 + \cancel{2RR_s} - 2R^2 - \cancel{2RR_s} \right] = 0 \Rightarrow R_s^2 - R^2 = 0$$

$$R = R_s \Rightarrow P_{max} = \frac{E^2 R_s}{4R_s^2} = \frac{E^2}{4R_s} = 0{,}3\,mW.$$

si $R = 330\,\Omega \Rightarrow P = 0{,}1\,mW.$