

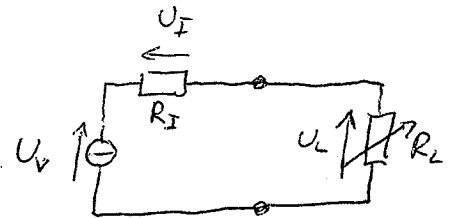
$$P_L = U_L \cdot I$$

$$I = \frac{U_V}{R_{\text{ges}}} = \frac{U_V}{R_I + R_L}$$

$$P_L = \frac{R_L \cdot U_V}{R_I + R_L} \cdot \frac{U_V}{R_I + R_L}$$

$$U_L = R_L \cdot I = \frac{R_L \cdot U_V}{R_I + R_L}$$

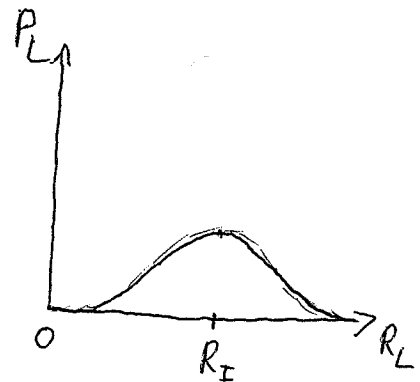
$$P_L = U_V^2 \frac{R_L}{(R_I + R_L)^2}$$



$$\frac{dP_L}{dR_L} = U_V^2 \cdot \frac{1 \cdot (R_I + R_L)^2 - R_L \cdot \{2R_L + 2R_I\}}{(R_I + R_L)^4}$$

$$\frac{dP_L}{dR_L} = U_V^2 \cdot \frac{(R_I + R_L)^2 - 2R_L(R_L + R_I)}{(R_I + R_L)^4}$$

$$\frac{dP_L}{dR_L} = U_V^2 \frac{(R_I + R_L) - 2R_L}{(R_I + R_L)^3}$$



$$\frac{dP_L}{dR_L} = 0 \quad \text{wenn Zähler} = 0 \quad \Rightarrow \quad (R_I + R_L) - 2R_L = 0$$

$$0 = R_I + R_L - 2R_L$$

$$0 = R_I - R_L$$

$$\underline{\underline{R_L = R_I}}$$