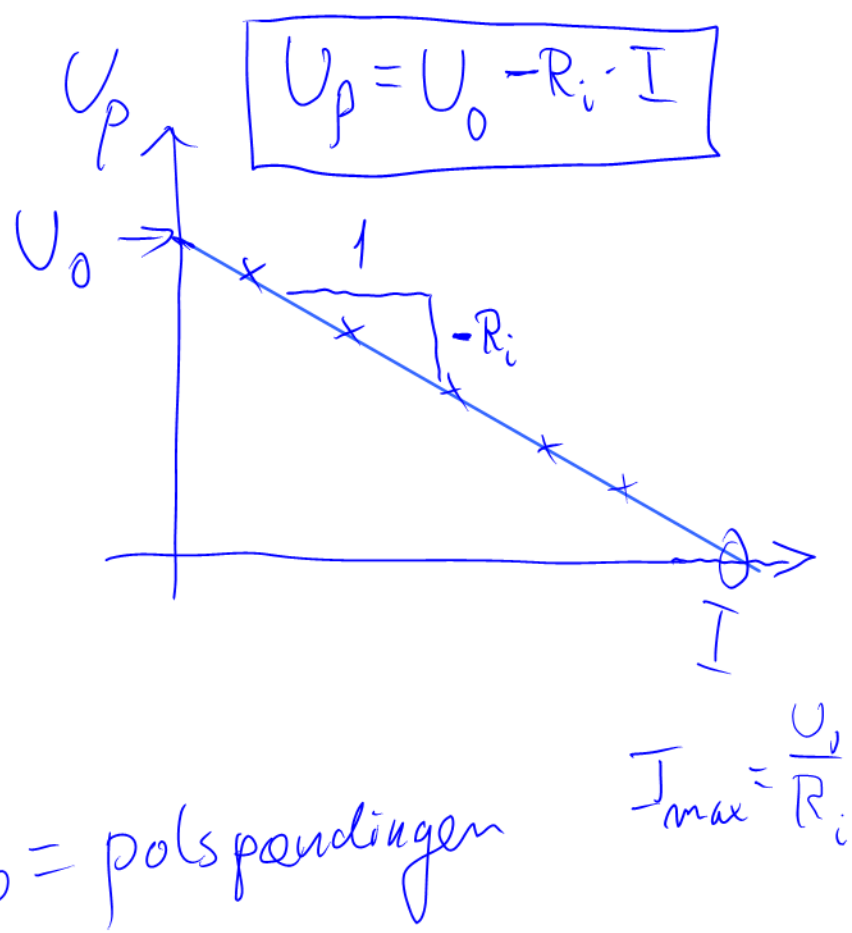
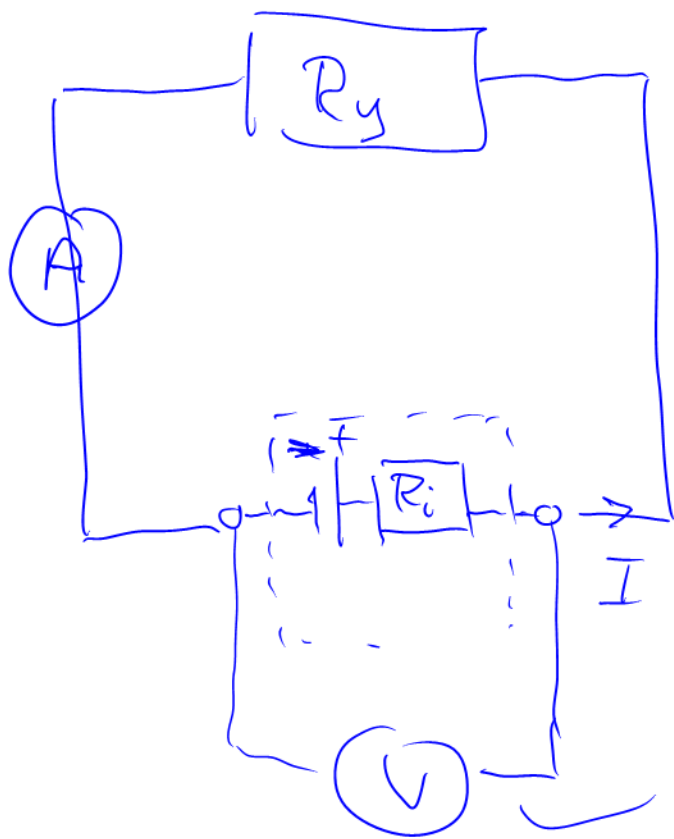


U_0
 HVILESPÆNDING
 TOMGANGSPÆNDING
 ELEKTROMOTORISK
 KRAFT



$$U_p = U_0 - R_i \cdot I \quad U_p = R_y \cdot I$$

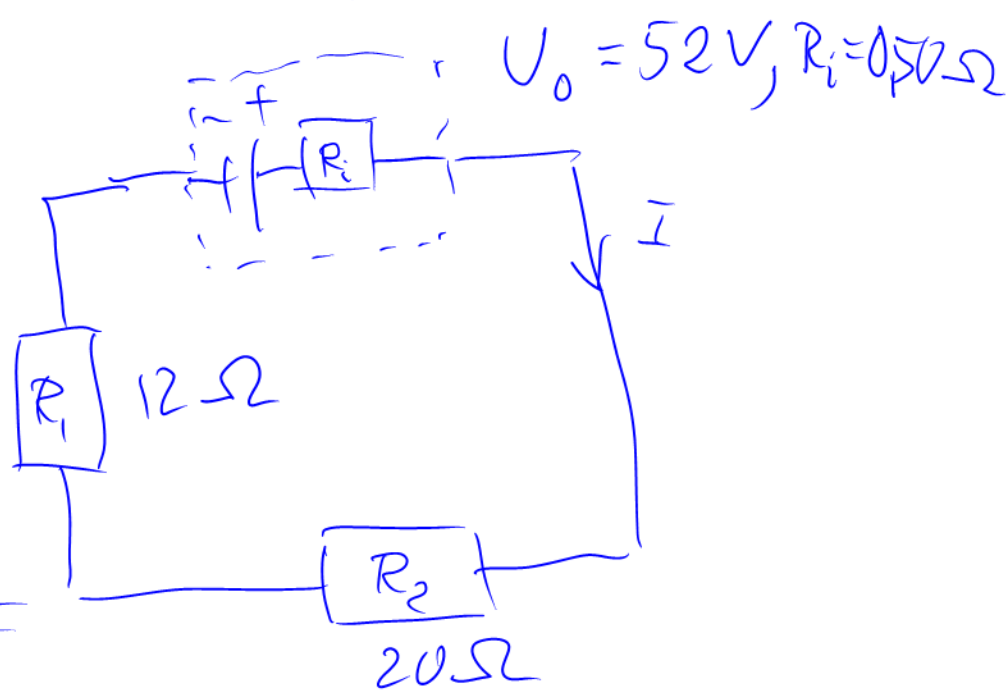
$$U_0 = (R_i + R_y) I$$

$$(U = R \cdot I)$$

EKSEMPEL 9/11

a) $R_y = R_1 + R_2 = 12 + 20 = 32 \Omega$

$$I = \frac{U_0}{R_i + R_y} = \frac{52}{0,50 + 32} = \frac{52}{32,5} = \underline{\underline{1,6 \text{ A}}}$$



b) $U_p = R_y \cdot I = 32 \cdot 1,6 = 51,2 \text{ V} \approx \underline{\underline{51 \text{ V}}}$

c) $P = U_p \cdot I = 51,2 \cdot 1,6 = 81,92 \text{ W} = \underline{\underline{82 \text{ W}}}$

d) $P_{indre} = R_i \cdot I^2 = 0,5 \cdot 1,6^2 = 1,28 \text{ W} = \underline{\underline{1,3 \text{ W}}}$

e) $P_{totale} = U_0 \cdot I = 52 \cdot 1,6 = 83,2 \text{ W} = \underline{\underline{83 \text{ W}}}$

Begynd med 9/3 - 9/7 (Opg 9/1 - 9/2) BAGTIL
LÆS SIDE 81

$$U_0 = 9,0 \text{ V} \quad R_i = 0,40 \Omega$$

$$R_y = R = 20 \Omega$$

OP6 9/3

$$a) U_0 = (R_i + R_y) \cdot I \Leftrightarrow I = \frac{U_0}{R_i + R_y} = \frac{9,0}{0,40 + 20}$$

$$I = 0,4418 \text{ A}$$

$$\underline{\underline{I = 0,44 \text{ A}}}$$

$$b) U_p = R_y \cdot I = 20 \cdot 0,4418 = 8,8255 \text{ V}$$

$$\underline{\underline{U_p = 8,8 \text{ V}}}$$

$$U_0 = 26,0 \text{ V} \quad R_1 = 12,0 \Omega \quad R_2 = 20,0 \Omega \quad \underline{\underline{\text{OP6 9/4}}}$$

$$I = 0,800 \text{ A}$$

$$a) R_y = R_1 + R_2 = 12,0 + 20,0 = 32,0 \Omega$$

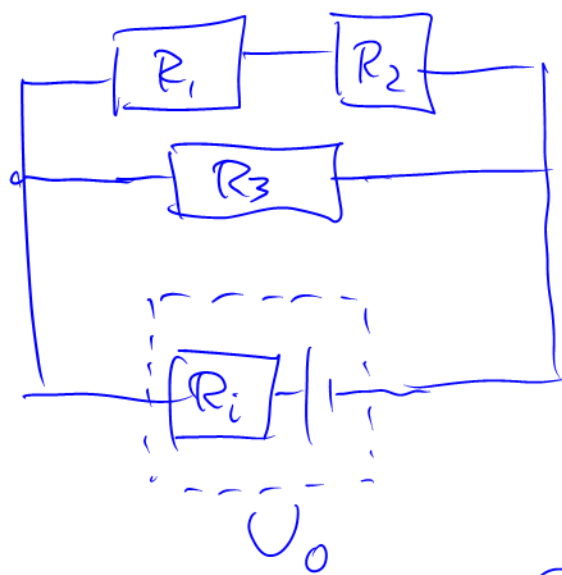
$$U_0 = (R_i + R_y) \cdot I \Leftrightarrow \frac{U_0}{I} = R_i + R_y \Leftrightarrow \frac{U_0}{I} - R_y = R_i$$

$$R_i = \frac{26,0}{0,800} - 32,0 = \underline{\underline{0,500 \Omega}}$$

$$b) U_p = R_y \cdot I = 32,0 \cdot 0,800 = \underline{\underline{25,6 \text{ V}}}$$

$$c) P_{\text{ydre}} = U_p \cdot I = 25,6 \cdot 0,800 = 20,48 \text{ W}$$

$$\underline{\underline{P_{\text{ydre}} = 20,5 \text{ W}}}$$



Oppg 9/5

$$R_{12} = R_1 + R_2 = 40\Omega + 60\Omega = 100\Omega$$

$$R_{3,12} = \left(\frac{1}{R_3} + \frac{1}{R_{12}} \right)^{-1} = \left(\frac{1}{15\Omega} + \frac{1}{100\Omega} \right)^{-1}$$

$$R_y = R_{3,12} = 6,0\Omega$$

a/

$$I = \frac{U_0}{R_i + R_y} = \frac{9,0}{0,40 + 6,0} = 1,40625\text{ A}$$

$$\underline{\underline{I = 1,4\text{ A}}}$$

b/ $U_p = R_y \cdot I = 6,0 \cdot 1,40625 = 8,4375\text{ V}$

DETTE ER OGSÅ SPENNINGEN OVER FØRST. R_3 , DERFOR:

$$U_p = R_3 \cdot I_2 \Leftrightarrow I_2 = \frac{U_p}{R_3} = \frac{8,4375}{15} = 0,5625\text{ A}$$

$$\underline{\underline{I_2 = 0,56\text{ A}}}$$

$$I = I_1 + I_2 \Leftrightarrow I_1 = I - I_2 = 1,40625 - 0,5625 = 0,84375\text{ A}$$

$$\underline{\underline{I_1 = 0,84\text{ A}}}$$

OPG 9/6

$$a) R_{12} = \left(\frac{1}{R_1} + \frac{1}{R_2} \right)^{-1} = \left(\frac{1}{10} + \frac{1}{15} \right)^{-1} = 6,0 \Omega$$

$$R_y = R_{12} + R_3 = 6,0 + 5,2 = 11,2 \Omega$$

$$\underline{\underline{R_y = 11 \Omega}}$$

$$b) I = \frac{U_0}{R_i + R_y} = \frac{6,0 \text{ V}}{0,80 \Omega + 11,2 \Omega} = 0,50 \text{ A} \quad \underline{\underline{I = 0,50 \text{ A}}}$$

$$c) U_{AB} = R_{12} \cdot I = 6,0 \Omega \cdot 0,50 \text{ A} = 3,0 \text{ V} \quad \left(\text{DETTE ER OGSÅ SPÆNDINGEN OVER } R_1 \right)$$
$$P_1 = \frac{U_{AB}^2}{R_1} = \frac{3,0^2}{10} = \underline{\underline{0,90 \text{ W}}}$$

OPG 9/7

$$a) U_p = U_0 - R_i \cdot I = 95 \text{ V} - 0,80 \Omega \cdot 2,5 \text{ A} = 93 \text{ V}$$

$$\underline{\underline{U_p = 93 \text{ V}}}$$

$$b) U_p = R_y \cdot I \Leftrightarrow R_y = \frac{U_p}{I} = \frac{93 \text{ V}}{2,5 \text{ A}} = 37,2 \Omega$$

$$\underline{\underline{R_y = 37 \Omega}}$$

$$c) R_{34} = \left(\frac{1}{R_3} + \frac{1}{R_4} \right)^{-1} = \left(\frac{1}{30} + \frac{1}{90} \right)^{-1} = 22,5 \Omega$$

$$R_{1(34)} = R_1 + R_{34} = 7,5 + 22,5 = 30 \Omega$$

$$R_{2,1(34)} = \left(\frac{1}{R_2} + \frac{1}{R_{1(34)}} \right)^{-1} = \left(\frac{1}{60} + \frac{1}{30} \right)^{-1} = 20$$

$$R_y = R_{2,1(34)} + R_x \Leftrightarrow R_x = R_y - R_{2,1(34)} \\ = 372 - 20 = 17,2 \Omega$$

$$\underline{\underline{R_x = 17 \Omega}}$$

$$d) U_{AB} = R_{2,1(34)} \cdot I = 20 \cdot 2,5 = 50 \text{ V}$$

$$P_2 = \frac{U_{AB}^2}{R_2} = \frac{50^2}{60} = 41,667 \text{ W}$$

$$\underline{\underline{P_2 = 42 \text{ W}}}$$