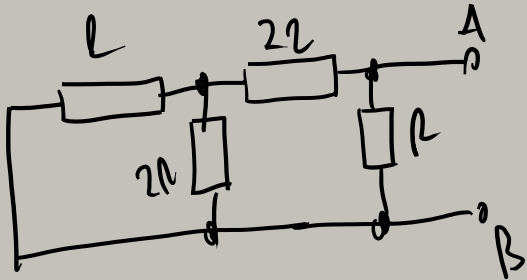


$$u_0 = 10 \text{ V} \quad R = 2 \text{ k}\Omega$$

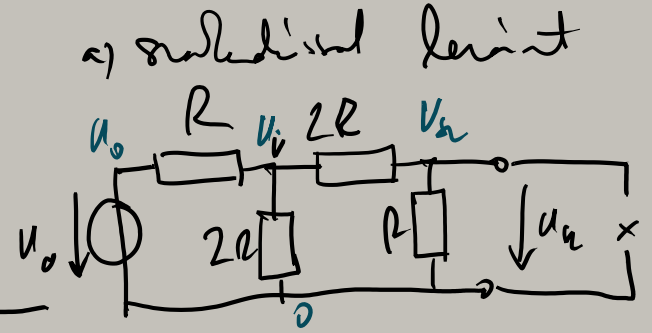
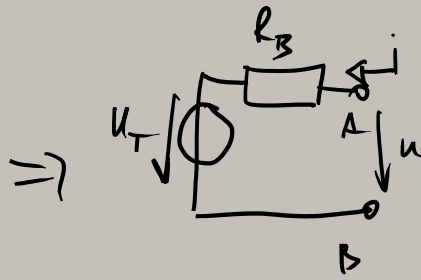
$$\begin{pmatrix} \frac{3}{4} & -\frac{1}{4} \\ -\frac{1}{4} & 1 \end{pmatrix} \begin{pmatrix} u_n \\ u_v \end{pmatrix} = \begin{pmatrix} 0 \\ 5 \end{pmatrix} \Leftrightarrow \begin{pmatrix} \frac{3}{2R} & -\frac{1}{2R} \\ -\frac{1}{2R} & \frac{2}{R} \end{pmatrix} \begin{pmatrix} u_n \\ u_v \end{pmatrix} = \begin{pmatrix} 0 \\ \frac{u_0}{R} \end{pmatrix} \begin{cases} \frac{u_n}{R} + \frac{u_n - u_v}{2R} = 0 \\ \frac{u_v}{2R} + \frac{u_v - u_n}{2R} + \frac{u_v - u_0}{R} = 0 \end{cases}$$

$$u_n = 1,8181 \text{ V} \quad u_v = 5,4545 \text{ V}$$

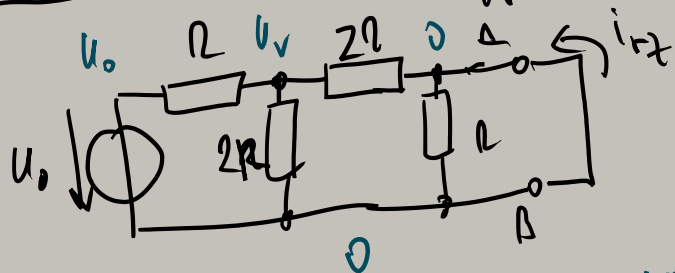
Derivativität berechnet



$$\Leftrightarrow R_B = R \times \left(2\Omega + \overbrace{2\Omega \times 2}^{2\Omega/3} \right) = R \times \frac{8\Omega}{3} = \frac{\frac{8R}{3} \cdot R}{\frac{8R}{3} + R} = \frac{8R}{11} = 1,4545 \text{ k}\Omega$$



Rövidkörtési áram alejtés



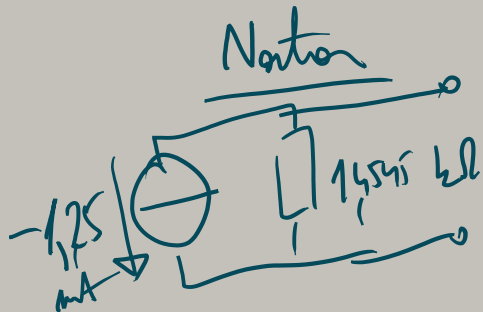
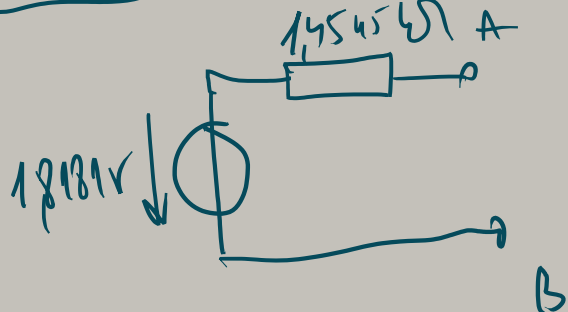
$$\frac{U_V}{2\Omega} + \frac{U_V}{2\Omega} + \frac{U_V - U_0}{\Omega} = 0 \quad U_V = \frac{U_0/\Omega}{\frac{1}{2\Omega} + \frac{1}{2\Omega} + \frac{1}{\Omega}} = \frac{U_0}{2} = 5V$$

$$i_{kz} = \frac{0 - U_V}{2\Omega} = \frac{-U_0}{4\Omega} = \frac{-10}{4\Omega} = -1,25 \text{ mA}$$

$$I_N = -1,25 \text{ mA}$$

$$R_N = \frac{U_{oc}}{-I_N} = \frac{1,8181}{-(-1,25)} = 1,4545 \Omega$$

Thévenin-h.k.



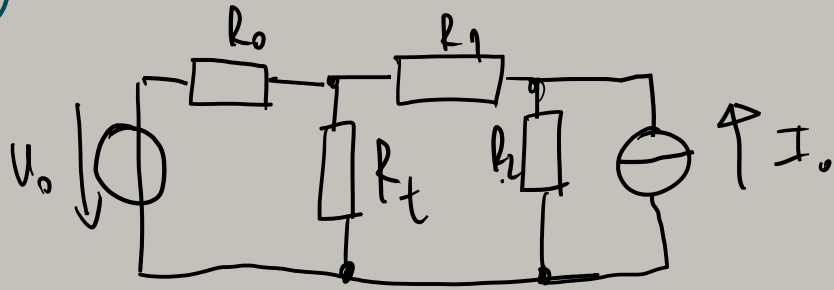
Max-teljesítmény

$$P_{max} = \frac{U_A^2}{4R_B} = 0,5682 \text{ mW}$$

orv

$$P_{max} = \frac{1}{4} \cdot I_N^2 \cdot R_B = 0,5682 \text{ mW}$$

2.)



$$U_0 = 15 \text{ V}; I_0 = 8 \text{ mA};$$

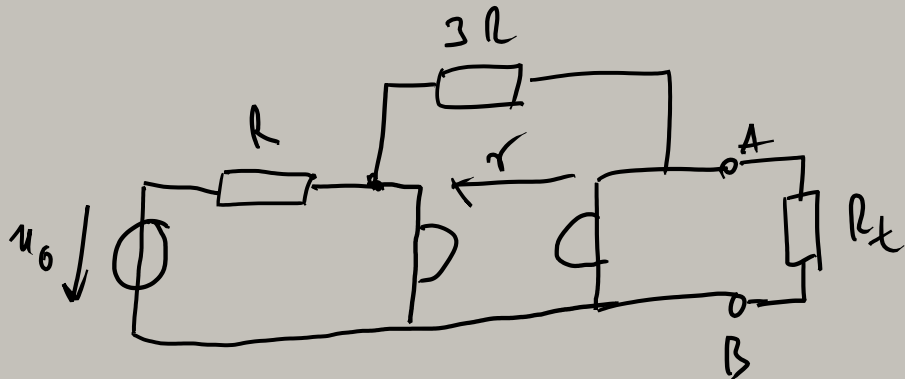
$$R_0 = 1 \text{ k}\Omega; R_1 = 10 \text{ k}\Omega; R_2 = 20 \text{ k}\Omega$$

a) $R_t = ?$ max. teljesítmény R_t -re

b) $P_{\text{max}} = ?$

c) R_t -u P_{max} érték a forrásból teljesítmény?

3)



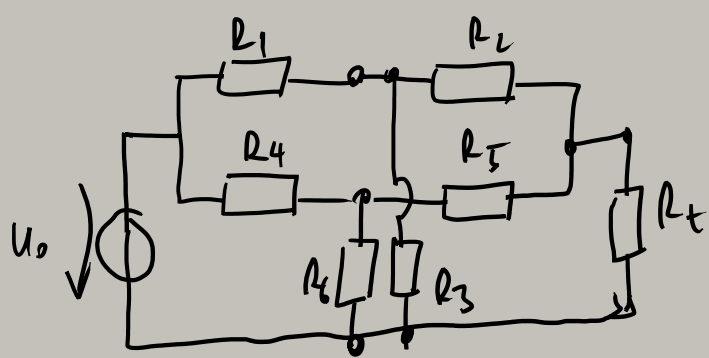
$$R = 40 \text{ k}\Omega; U_0 = 20 \text{ V}; r = R/2$$

a) $R_x = ?$ $P_{\max} = ?$

b) helyettesítő kapacitás

c) forrás felől nézve teljesítmény-
ellenőrzés milyen ellenállású
kötés a hálózat?

4)



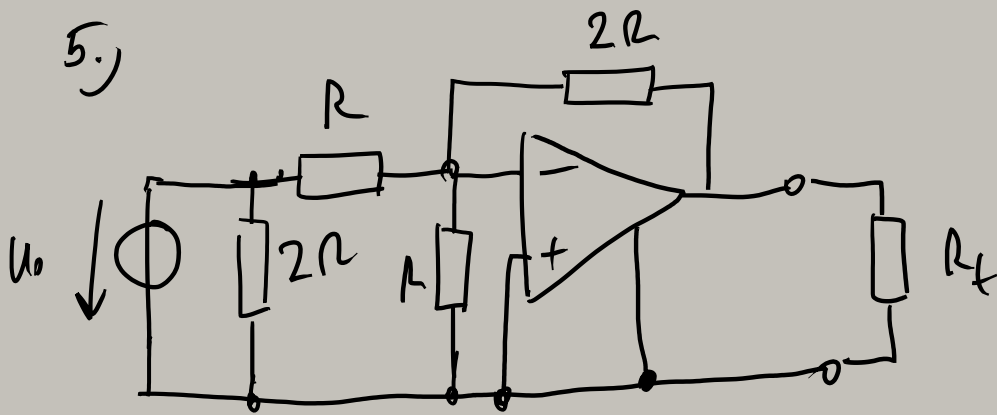
$$R_1 = R_5 = 150 \Omega; \quad R_2 = R_4 = 200 \Omega; \quad R_3 = 100 \Omega; \quad R_6 = 80 \Omega$$

$$U_0 = 12 \text{ V}$$

a) $R_t = ?$ teljesítményi kérés

$$b) P_{\max} = ?$$

5.)



$$R = 1 \Omega; U_0 = 3V$$

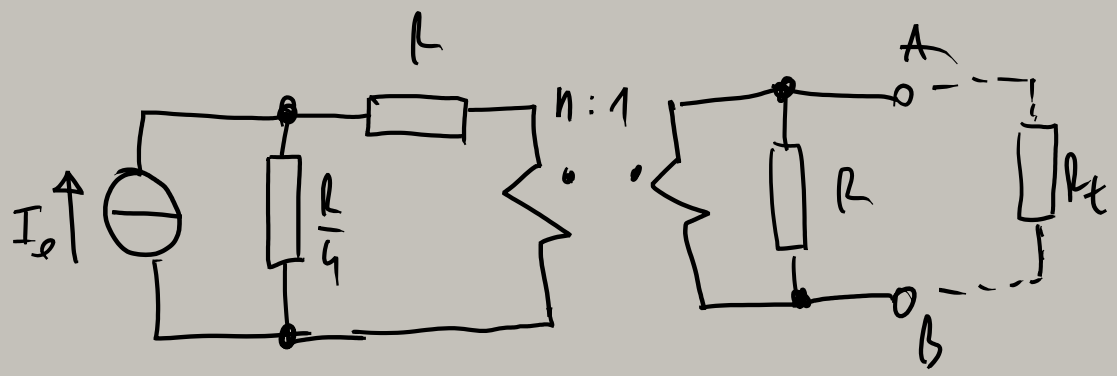
a) $R_t = 1$

b) $P_{max} = ?$

c) Thévenin-kl.

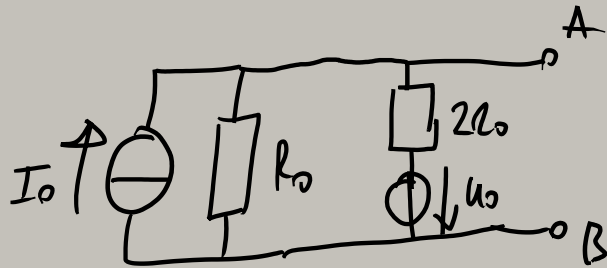
Norton-kl.

7.)



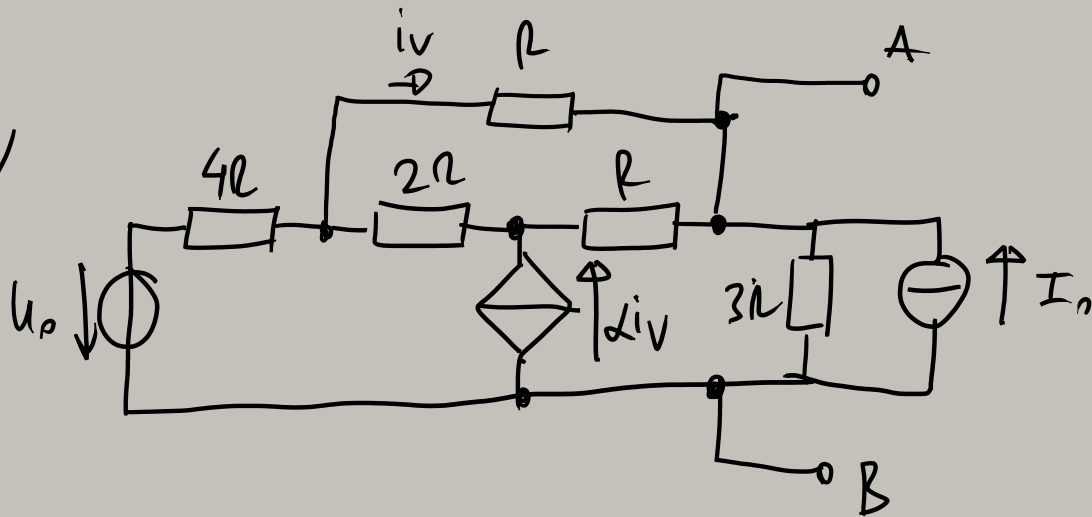
- a) Norton - h.k. AB -ve
- b) Thévenin - h.k. $-v-$
- c) telj. illentés

8.)



U_T, I_N, R_B

9.)



A-B közötti helyettesítő
kiszámlálás