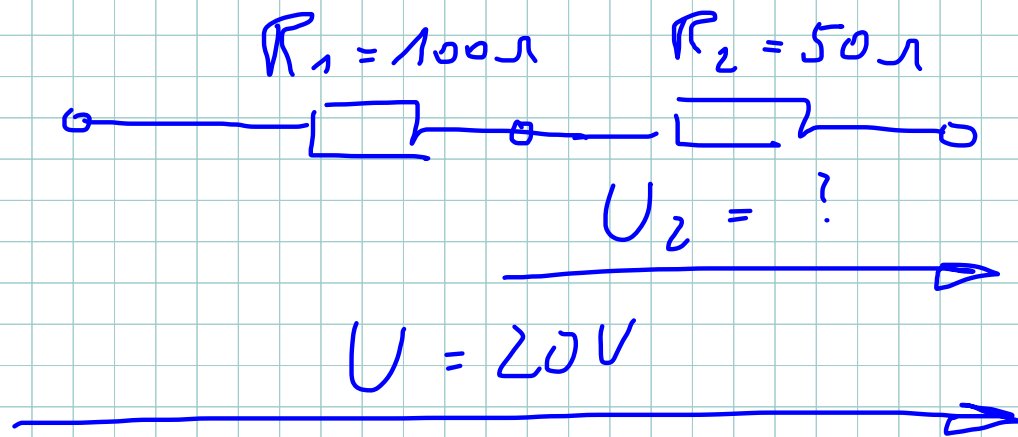


7.1



$$R_g = R_1 + R_2 = 100 + 50 = 150\Omega$$

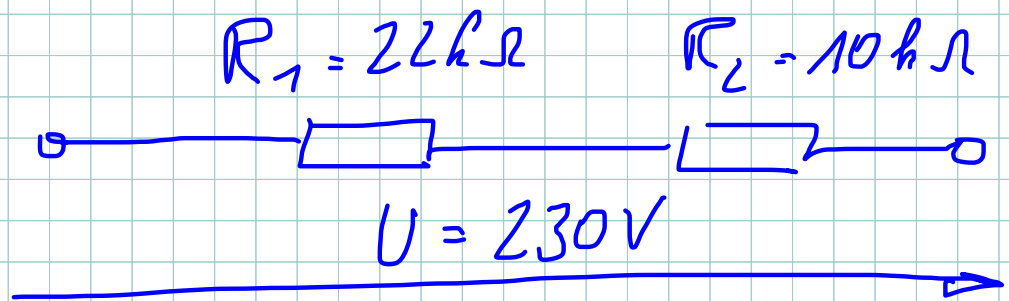
$$I = \frac{U}{R} = \frac{20}{150} = 133\text{ mA}$$

$$U_2 = I \cdot R_2 = 133\text{ mA} \cdot 50 = 6,6\text{ V}$$

$$U_2 = U \cdot \frac{R_2}{R_1 + R_2} =$$

$$= 20 \cdot \frac{50}{100 + 50} = 6,6\text{ V}$$

7.2



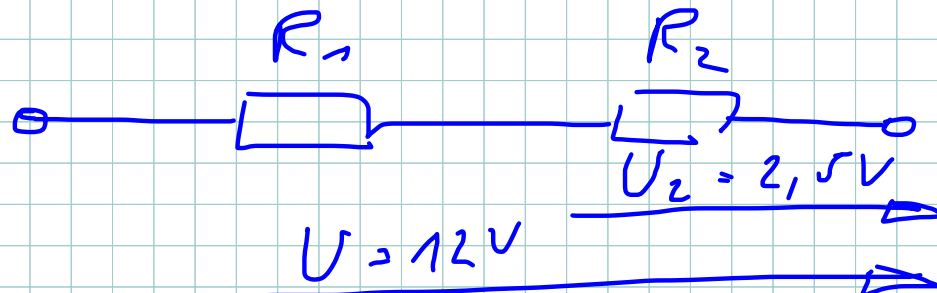
$$R_g = R_1 + R_2 = 22\text{ k} + 10\text{ k} = 32\text{ k}\Omega$$

$$I = \frac{U}{R} = \frac{230}{32\text{ k}} = 7,18\text{ mA}$$

$$U_1 = I \cdot R_1 = 7,18\text{ mA} \cdot 22\text{ k} = 158,2\text{ V}$$

$$U_2 = I \cdot R_2 = 7,18\text{ mA} \cdot 10\text{ k} = 71,8\text{ V}$$

7.1



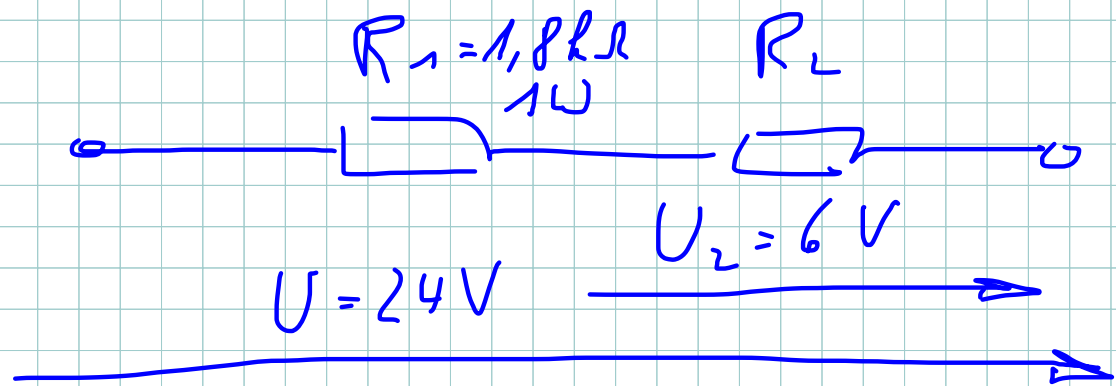
$$R_g = 300 \Omega \text{ (max 1 A)}$$

$$I = \frac{U}{R} = \frac{12}{300} = 40 \text{ mA}$$

$$R_2 = \frac{U_2}{I} = \frac{2,5}{40 \text{ mA}} = 62,5 \Omega$$

$$R_1 = R - R_2 = 300 - 62,5 = 237,5 \Omega$$

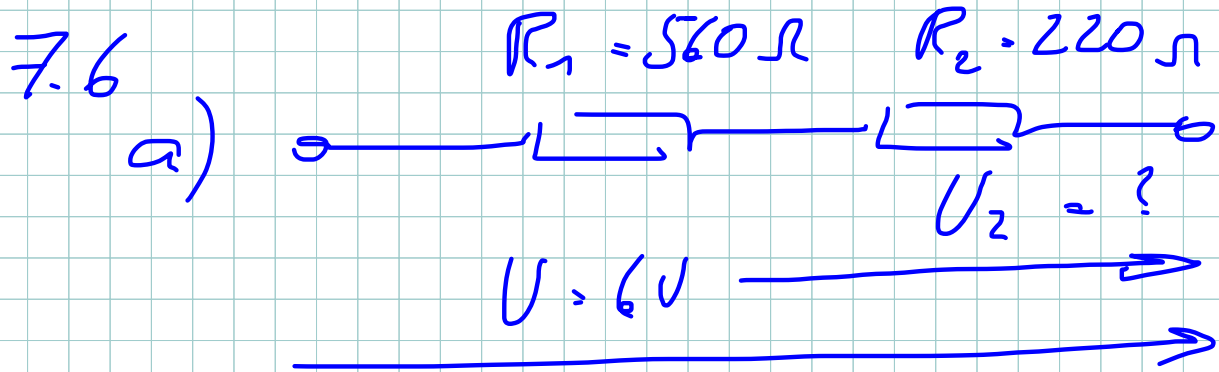
7.4



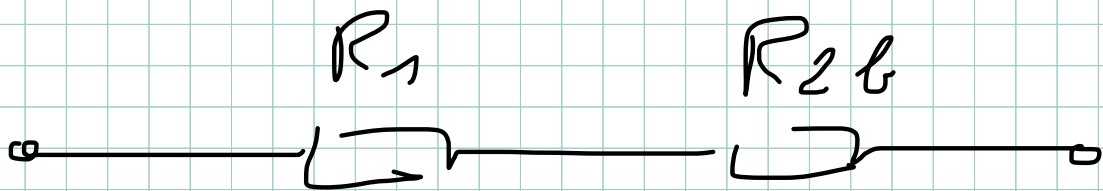
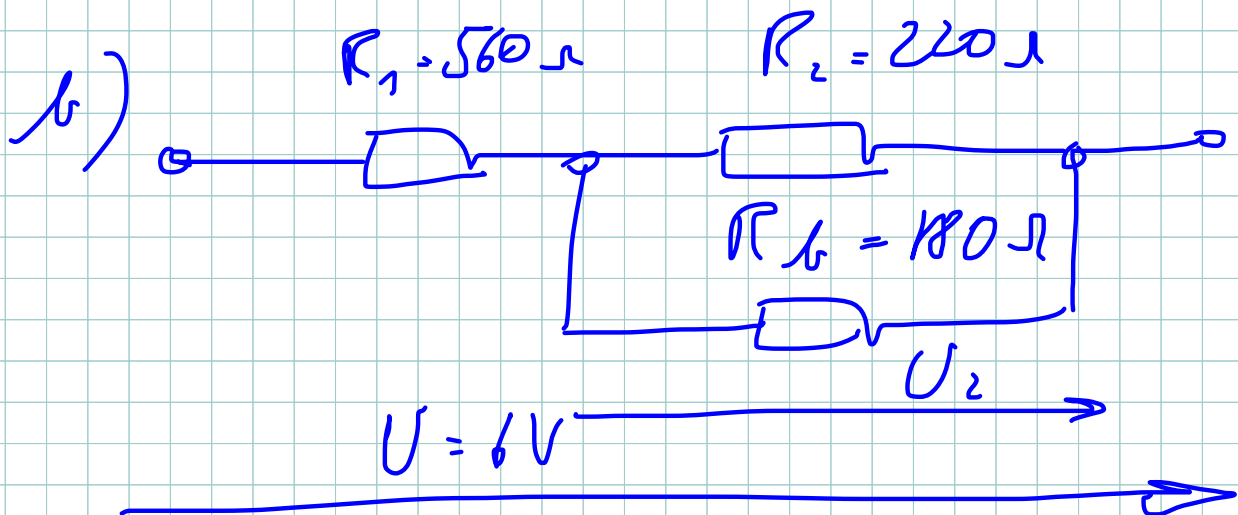
$$U_1 = U - U_2 = 24 - 6 = 18V$$

$$I = \frac{U_1}{R_1} = \frac{18}{1,8k} = 10mA$$

$$R_2 = \frac{U_2}{I} = \frac{6}{10mA} = 600\Omega$$



$$U_2 = U \cdot \frac{R_2}{R_1 + R_2} = 6 \cdot \frac{220}{560 + 220} = 1,7V$$



$$R_{2b} = \frac{R_2 \cdot R_b}{R_2 + R_b} = \frac{220 \cdot 180}{220 + 180} = 99 \Omega$$

$$R_g = R_1 + R_{2b} = 560 + 99 = 659 \Omega$$

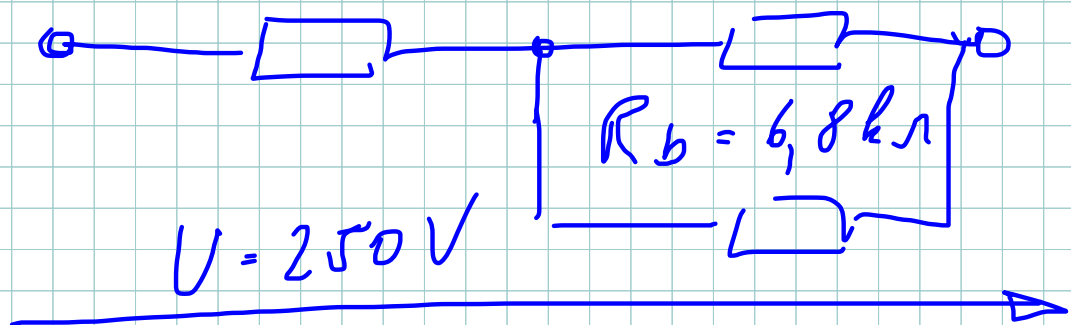
$$I = \frac{U}{R} = \frac{6}{650} = 9,1 \text{ mA}$$

$$U_2 = I \cdot R_2 = 9,1 \text{ mA} \cdot 10 \text{ k}\Omega = 0,91 \text{ V}$$

7.7

$$R_1 = 15 \text{ k}\Omega$$

$$R_2 = 3,9 \text{ k}\Omega$$



$$\begin{aligned} a) \quad U_2 &= U \cdot \frac{R_2}{R_1 + R_2} = \\ &= 250 \cdot \frac{3,9 \text{ k}}{15 \text{ k} + 3,9 \text{ k}} = 51,6 \text{ V} \end{aligned}$$

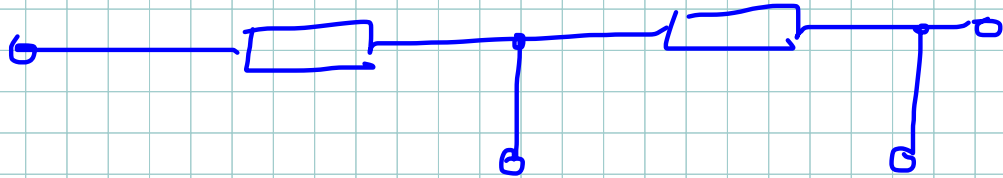
$$\begin{aligned} b) \quad R_{2b} &= \frac{R_2 \cdot R_b}{R_2 + R_b} = \frac{3,9 \text{ k} \cdot 6,8 \text{ k}}{3,9 \text{ k} + 6,8 \text{ k}} = \\ &= 2,48 \text{ k}\Omega \end{aligned}$$

$$\begin{aligned} U_{2b} &= U \cdot \frac{R_{2b}}{R_1 + R_{2b}} = \frac{250 \cdot 2,48 \text{ k}}{15 \text{ k} + 2,48 \text{ k}} = \\ &= 35,5 \text{ V} \end{aligned}$$

7.8

$$R_1 = 220 \text{ k}\Omega$$

$$R_2 = 150 \text{ k}\Omega$$



$$U = 270\text{V}$$

$$\begin{aligned} a) \quad U_2 &= U \cdot \frac{R_2}{R_1 + R_2} = \\ &= 270 \cdot \frac{150 \text{ k}}{220 \text{ k} + 150 \text{ k}} = \\ &= 109,5 \text{ V} \end{aligned}$$

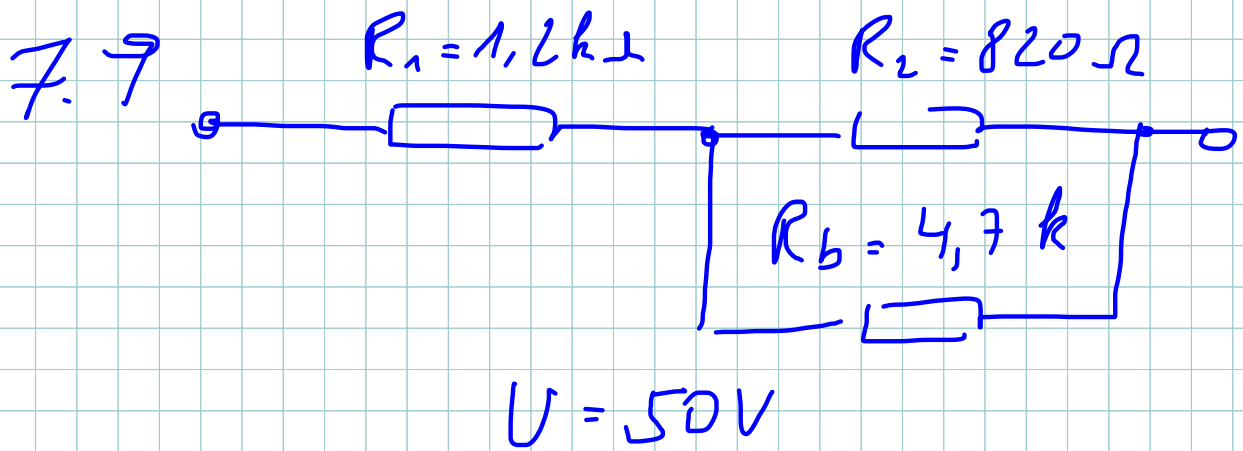
$$\begin{aligned} b) \quad R_{2\parallel} &= \frac{R_2 \cdot R_{\parallel}}{R_2 + R_{\parallel}} = \\ &= \frac{150 \text{ k} \cdot 1\text{M}}{150 \text{ k} + 1\text{M}} = 130,4 \text{ k}\Omega \\ &= \frac{150 \text{ k} \cdot 100 \text{ k}}{150 \text{ k} + 100 \text{ k}} = 60 \text{ k}\Omega \\ &= \frac{150 \text{ k} \cdot 10 \text{ k}}{150 \text{ k} + 10 \text{ k}} = 9,4 \text{ k}\Omega \end{aligned}$$

$$U_{2b} = U \cdot \frac{R_{2b}}{R_1 + R_{2b}} =$$

$$= 270 \cdot \frac{130,4 \text{ k}}{220 \text{ k} + 130,4 \text{ k}} = 100 \text{ V}$$

$$= 270 \cdot \frac{60 \text{ k}}{220 \text{ k} + 60 \text{ k}} = 58 \text{ V}$$

$$= 270 \cdot \frac{9,4 \text{ k}}{220 \text{ k} + 9,4 \text{ k}} = 11 \text{ V}$$



a)