

$$4.1 \quad R_1 = 8\Omega \quad R_2 = 12\Omega$$

$$R = \frac{R_1 \cdot R_2}{R_1 + R_2} = \frac{8 \cdot 12}{8 + 12} = 4,8\Omega$$

$$R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}} = \frac{1}{\frac{1}{8} + \frac{1}{12}} = 4,8\Omega$$

$$G = \frac{1}{R} = \frac{1}{4,8} = 0,208\text{ S}$$

Siemens

$$4.2 \quad R_1 = 36\Omega \quad R_2 = 48\Omega \quad R_3 = 60\Omega$$

$$R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}} =$$

$$= \frac{1}{\frac{1}{36} + \frac{1}{48} + \frac{1}{60}}$$

$$= 15,3\Omega$$

$$G = \frac{1}{R} = \frac{1}{15,3} = 65,27 \text{ mS}$$

$$= 0,065 \text{ S}$$

$$\begin{array}{l} 1 \div 36 \\ + \\ 1 \div 48 \\ + \\ 1 \div 60 \\ \hline \end{array}$$

$$4.3 \quad R = 40 \Omega \quad R_1 = 60 \Omega \\ R_2 = ?$$

$$R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2}} \quad | \cdot 1: R$$

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} \quad | - \frac{1}{R_1}$$

$$\frac{1}{R} - \frac{1}{R_1} = \frac{1}{R_2} \quad | \cdot 1: R_2$$

$$R_2 = \frac{1}{\frac{1}{R} - \frac{1}{R_1}}$$

$$= \frac{1}{\frac{1}{40} - \frac{1}{60}} = 120 \Omega$$

$$4.4 \quad R_2 = 2,6 \text{ k}\Omega$$

$$R_1 = 8 \text{ k}\Omega$$

$$R_3 = 10 \text{ k}\Omega$$

$$R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}} \quad | \text{ Kehrwert}$$

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \quad | - \frac{1}{R_1} - \frac{1}{R_3}$$

$$\frac{1}{R} - \frac{1}{R_1} - \frac{1}{R_3} = \frac{1}{R_2} \quad | \text{ Kehrw.}$$

$$R_2 = \frac{1}{\frac{1}{R} - \frac{1}{R_1} - \frac{1}{R_3}}$$

$$= \frac{1}{\frac{1}{2,6 \text{ k}} - \frac{1}{8 \text{ k}} - \frac{1}{10 \text{ k}}} = 6,26 \text{ k}\Omega$$

$$4.5 \quad R_1 = 60 \Omega \quad R_2 = 120 \Omega \\ U = 230 V$$

$$I_1 = \frac{U}{R_1} = \frac{230}{60} = 3,83 A$$

$$I_2 = \frac{U}{R_2} = \frac{230}{120} = 1,916 A$$

$$I = I_1 + I_2 = 3,83 + 1,916 = \\ = 5,75 A$$

$$R = \frac{U}{I} = \frac{230}{5,75} = 40 \Omega$$

$$G = \frac{1}{R} = \frac{1}{40} = 0,025 S \\ = 25 mS$$

$$4.6 \quad R_1 = 50 \text{ M}\Omega \quad R_2 = 800 \text{ k}\Omega$$

$$R_3 = 4,8 \text{ M}\Omega \quad U = 24 \text{ V}$$

$$R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}} =$$
$$= \frac{1}{\frac{1}{50 \text{ M}} + \frac{1}{800 \text{ k}} + \frac{1}{4,8 \text{ M}}} =$$

$$= 676,4 \text{ k}\Omega = 676 \text{ 437 } \Omega$$

$$G = \frac{1}{R} = \frac{1}{676 \text{ k}} = 1,478 \mu\text{S}$$

$$I = \frac{U}{R} = \frac{24}{676 \text{ k}} = 35,48 \mu\text{A}$$

$$I_1 = \frac{U}{R_1} = \frac{24}{50 \text{ M}} = 480 \text{ nA}$$

$$I_2 = \frac{U}{R_2} = \frac{24}{800 \text{ k}} = 30 \mu\text{A}$$

$$I_3 = \frac{U}{R_3} = \frac{24}{4,8 \text{ M}} = 5 \mu\text{A}$$

$$4.7 \quad R_1 = 250 \Omega \quad R_2 = 120 \Omega \\ R_3 = 80 \Omega \quad I = 300 \text{ mA}$$

$$R = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}} \\ = \frac{1}{\frac{1}{250} + \frac{1}{120} + \frac{1}{80}} = 40,27 \Omega$$

$$G = \frac{1}{R} = \frac{1}{40,27} = 24,83 \text{ mS}$$

$$U = I \cdot R = 300 \text{ mA} \cdot 40,27 = \\ = 12,08 \text{ V}$$

$$I_1 = \frac{U}{R_1} = \frac{12}{250} = 48 \text{ mA}$$

$$I_2 = \frac{U}{R_2} = \frac{12}{120} = 100 \text{ mA}$$

$$I_3 = I - I_1 - I_2 = 300 \text{ mA} - 48 - \dots$$

$$4.8 \quad U = 24V \quad I = 2A \quad I_2 = 0,8A$$

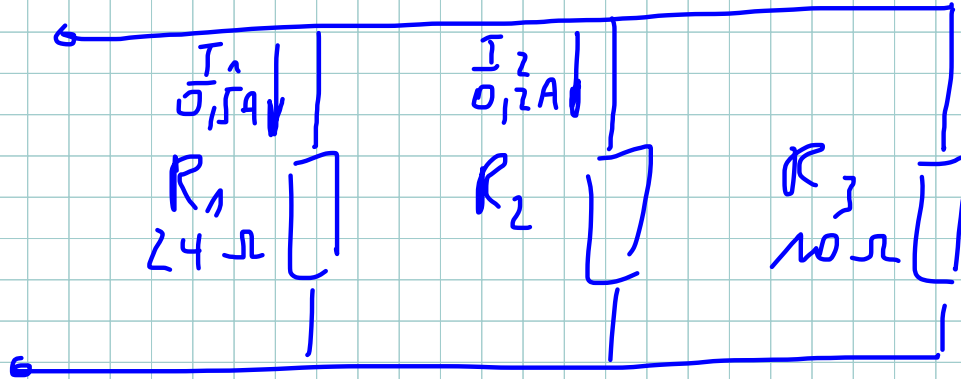
$$R = \frac{U}{I} = \frac{24}{2} = 12 \Omega$$

$$I_1 = I - I_2 = 2 - 0,8 = 1,2A$$

$$R_1 = \frac{U}{I_1} = \frac{24}{1,2} = 20 \Omega$$

$$R_2 = \frac{U}{I_2} = \frac{24}{0,8} = 30 \Omega$$

4.9



$$U = R_1 \cdot I_1 = 24 \cdot 0,5 = 12 \text{ V}$$

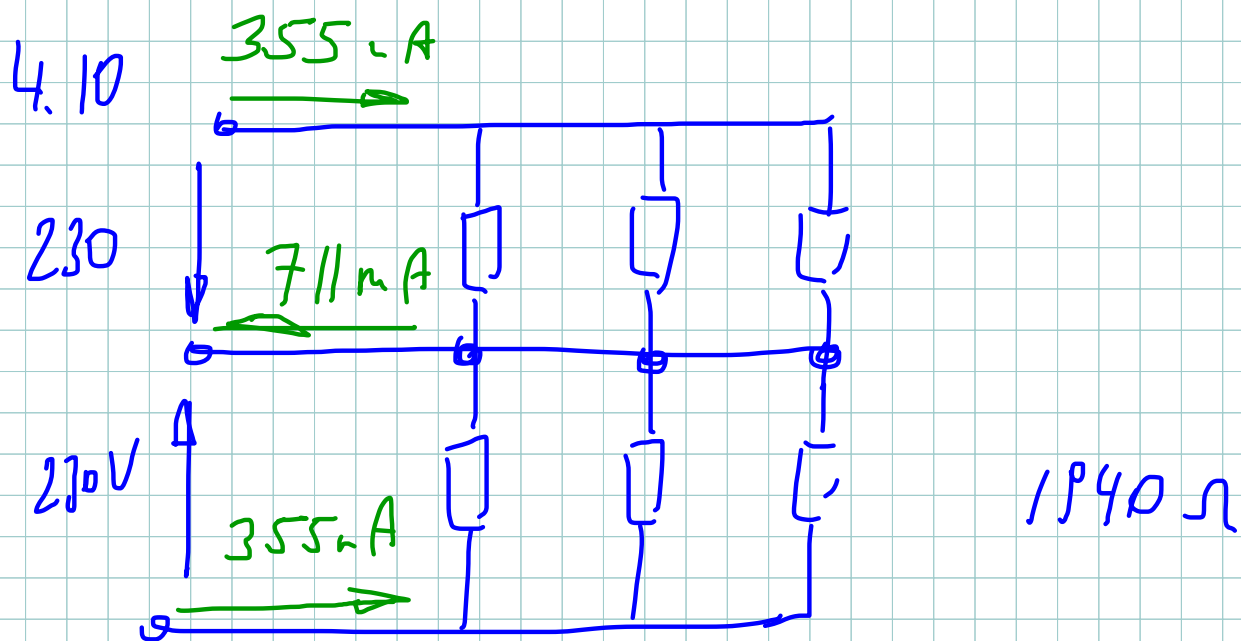
$$R_2 = \frac{U}{I_2} = \frac{12}{0,2} = 60 \Omega$$

$$I_3 = \frac{U}{R_3} = \frac{12}{10} = 1,2 \text{ A}$$

$$I = I_1 + I_2 + I_3 = 0,5 + 0,2 + 1,2 = 1,9 \text{ A}$$

$$R = \frac{U}{I} = \frac{12}{1,9} = 6,32 \Omega$$





Obere Schwmpfad:

$$R_g = \frac{R}{3} = \frac{1940}{3} = 646,6 \Omega$$

$$I_{Lampe} = \frac{U}{R} = \frac{230}{1940} = 118 \text{ mA}$$

$$I_g = 6 \cdot I_L = 6 \cdot 118 = 711 \text{ mA}$$