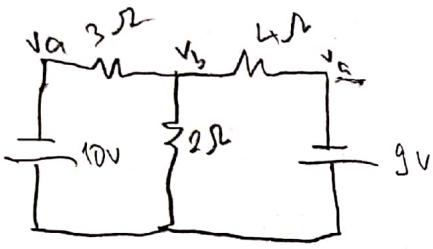
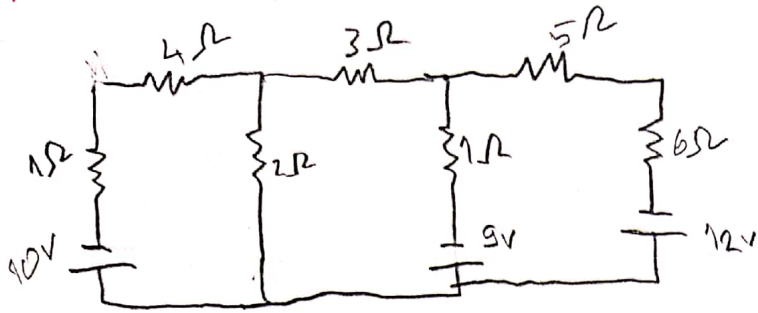


Müşahit Kurtlar 19290259

*[Signature]*

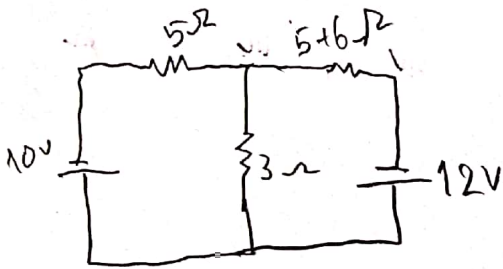
1



$$\frac{V_a - V_b}{4} + \frac{V_a - V_b}{9} = \frac{V_b}{2}$$

$$2 - \frac{V_b}{5} + 2,25 - \frac{V_b}{4} = \frac{V_b}{2}$$

$$V_b = \frac{4,25 \cdot 20}{19} \approx 4,47 \text{ V}$$



$$\frac{V_a - V_b}{5} + \frac{V_a - V_b}{11} = V_b$$

$$2 - \frac{V_b}{5} + \frac{12 - V_b}{11} = V_b$$

$$\frac{34}{11} = \frac{71V_b}{55} \Rightarrow V_b = \frac{34,55}{11,71}$$

$$V_b \approx 2,4 \text{ V}$$

$$\Rightarrow I_{1\Omega} = -0,8 \text{ A}$$

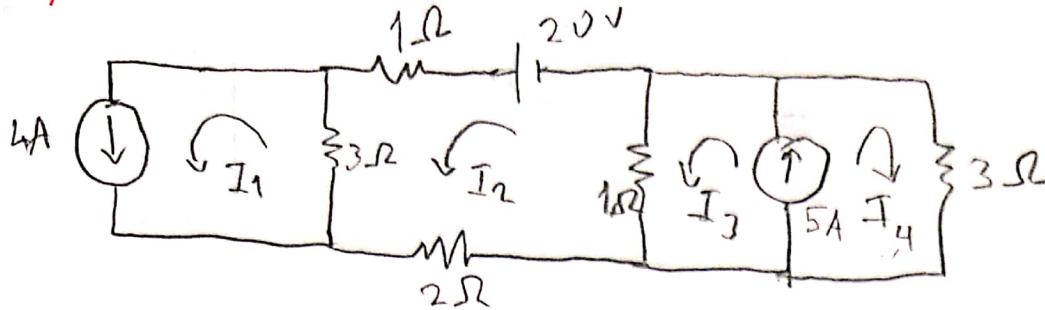
$$I_{2\Omega} = 2,3 \text{ A}$$

$$I_{3\Omega} = -1,2 \text{ A}$$

$$I_{4\Omega} = 1,1 \text{ A}$$

$$I_{5\Omega} = 0,35 \text{ A}$$

2)



$$20 = 7I_2 - 3I_1 - I_3$$

$$4 = I_1 - I_2$$

$$5 = I_3 - I_2$$

$$I_1 = \frac{\begin{vmatrix} 20 & 7 & -1 \\ 4 & -1 & 0 \\ 5 & -1 & 1 \end{vmatrix}}{-3} = \frac{-49}{-3} = 16,33$$

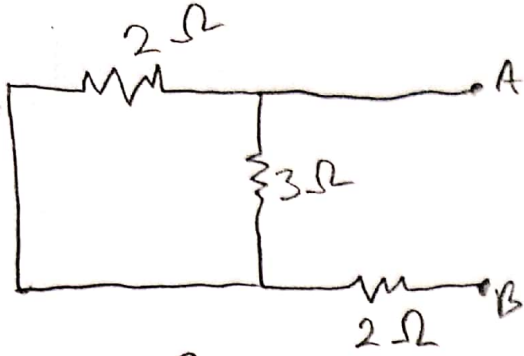
$$\det(I) = \begin{vmatrix} -3 & 7 & -1 \\ 1 & -1 & 0 \\ 0 & -1 & 1 \end{vmatrix} = -4 - 7 = -11$$

$$\begin{array}{cccc} 0 & -3 & 7 & -1 & 3 \\ 0 & 1 & -1 & 0 & 1 \\ 7 & & & & 0 \\ \hline 7 & & & & 4 \end{array}$$

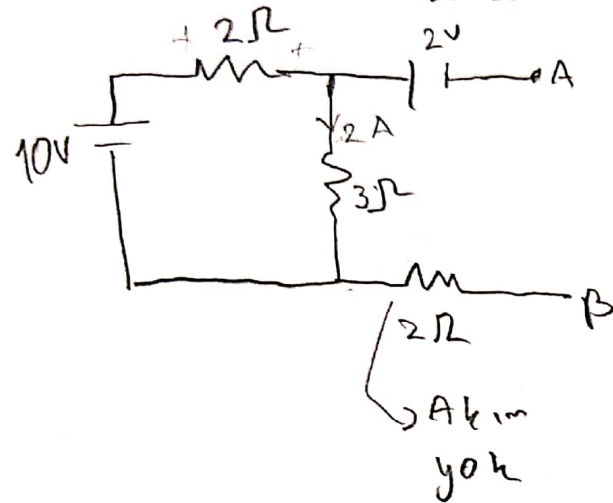
$$I_2 = \frac{\begin{vmatrix} -3 & 20 & -1 \\ 1 & 4 & 0 \\ 0 & 5 & 1 \end{vmatrix}}{-3} = 12,33 \text{ A}$$

$$V_{4\Omega} = 4 \cdot 12,33 = 36,6 \text{ V}$$

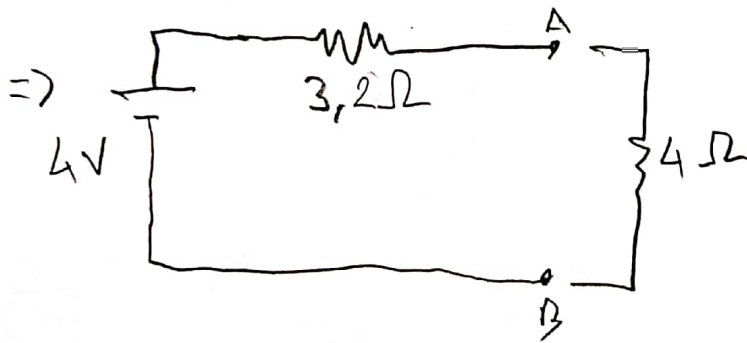
3)



$$R_{eq} = \frac{2 \cdot 3}{2 + 3} + 2 = 3,2 \Omega$$



$$V_{eq} = 2 \cdot 3 - 2 = 4 V$$



$$I_{4\Omega} = \frac{4}{7,2}$$

$$\Rightarrow I_{4\Omega} \approx 0,56 A$$