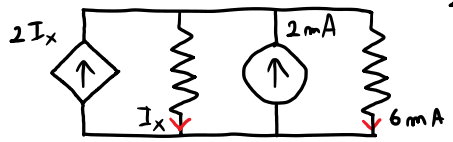
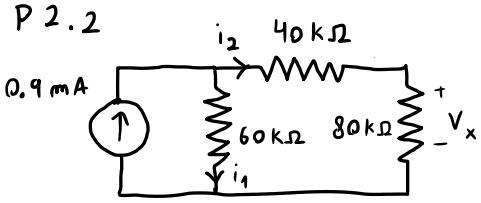
P2.1



$2I_x - I_x + 2\,mA - 6\,mA = 0 \Leftrightarrow$

$\Leftrightarrow I_x = 4\,mA$

P2.2



Temos: $0.9\,mA = i_2 + i_1$

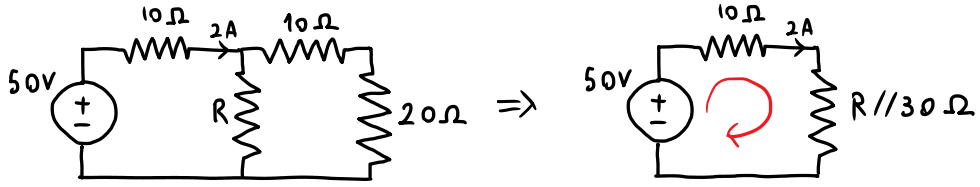
E: $i_2(40k\Omega + 80k\Omega) = i_1 \cdot 60k\Omega$

Logo $i_1 = 0,6\,mA$

$i_2 = 0,3\,mA$

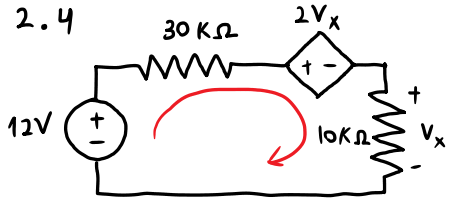
$V_x = i_2 \cdot 80k\Omega = 24\,V$

P2.3



$50\,V = 10\Omega \cdot 2\,A + (R//30\Omega)\cdot 2\,A \Leftrightarrow \quad 15 = \left(\frac{1}{R} + \frac{1}{30}\right)^{-1} \Leftrightarrow \frac{1}{15} - \frac{1}{30} = \frac{1}{R} \Leftrightarrow R = 30\,\Omega$

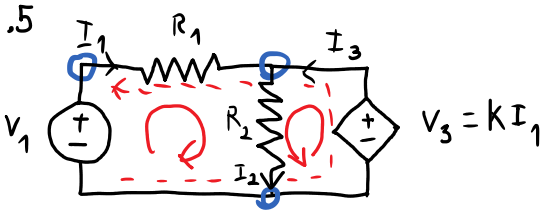
P2.4



$$\begin{cases} 12\,V = 30k\Omega \cdot I + 2V_x + V_x \\ I = \frac{V_x}{10k\Omega} \end{cases} \Rightarrow \begin{cases} V_x = 2\,V \\ I = 0.2\,mA \end{cases}$$

$P = V \cdot I = R \cdot I^2 = 1,2\,mW$

P2.5



$V_1 = 10\,V$

$R_1 = 100\,\Omega$

$R_2 = 200\,\Omega$

$K = 300\,\Omega$

a) nó: 3

malha: 3

malha elementar: 2

b)

$$\begin{cases} R_2 I_2 = V_3 \\ V_1 = R_1 I_1 + R_2 I_2 \\ I_1 + I_3 = I_2 \\ V_3 = K I_1 \end{cases} \Leftrightarrow \begin{cases} \frac{2}{3} I_2 = I_1 \\ I_3 = \frac{1}{3} I_2 \\ 10 = \left(\frac{200}{3} + 200\right) I_2 \\ - \end{cases} \Leftrightarrow \begin{cases} I_1 = 25\,mA \\ I_2 = 37.5\,mA \\ I_3 = 12.5\,mA \\ V_3 = 7.5\,V \end{cases}$$

P2.6