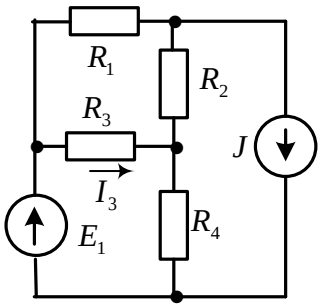
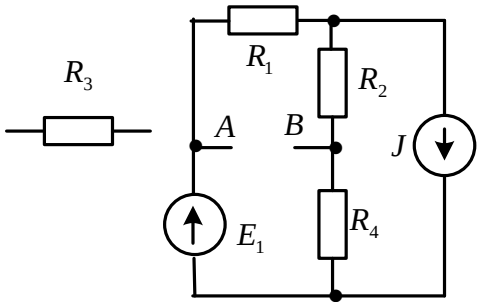
Exemplo Teorema de Thevenin

Calcular a corrente assinalada no circuito dado utilizando o Teorema de Thevenin.

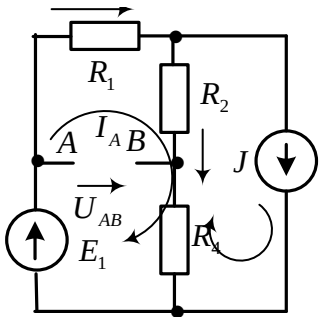
$E_1 = 100\,V\ ;\ J = 6\ A;\ R_1 = 2{,}5\,\Omega$

$R_2 = 10\,\Omega\ ;\ R_3 = 40\,\Omega\ ;\ R_4 = 20\,\Omega$





$$U_{AB} - I_2 R_2 - I_1 R_1 = 0 \rightarrow U_{AB} = I_2 R_2 + I_1 R_1 = 47{,}75\,V$$

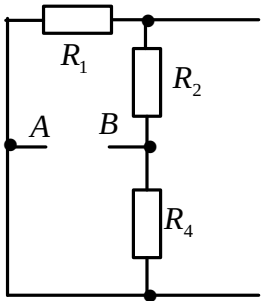


$$I_A\left(R_1 + R_2 + R_4\right) - J\left(R_2 + R_4\right) = E_1 \rightarrow$$

$$I_A = \frac{E_1 + J\left(R_2 + R_4\right)}{R_1 + R_2 + R_4} = 8{,}62\ A$$

$$I_1 = I_A\,;\ I_2 = I_A - J = 2{,}62\ A$$

$$R_{AB} = \frac{R_4\left(R_1 + R_2\right)}{R_4 + \left(R_1 + R_2\right)} = 7{,}69\,\Omega$$



$E_1 = 100\,V\ ;\ J = 6\ A;\ R_1 = 2{,}5\,\Omega$

$R_2 = 10\,\Omega\ ;\ R_3 = 40\,\Omega\ ;\ R_4 = 20\,\Omega$

$$I_3 = \frac{U_{AB}}{R_{AB} + R_3} = 1\ A$$