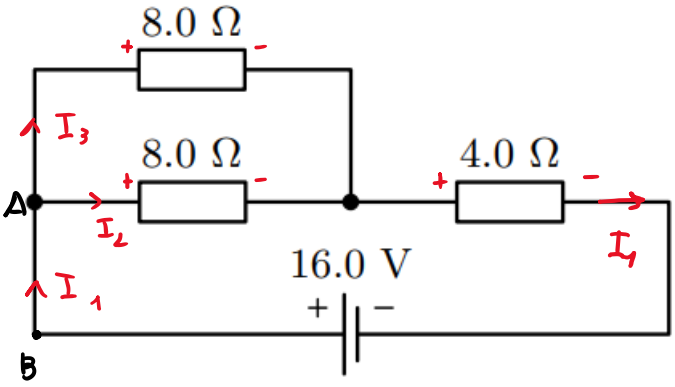
10.36



(a). Sans Kirchhoff, la résistance équivalente du circuit est :

$\frac{1}{R_p} = \frac{1}{8} + \frac{1}{8} = \frac{1}{4} \Rightarrow R_p = 4{,}0\,\Omega$

$\Rightarrow R_s = 4{,}0\,\Omega + 4{,}0\,\Omega = 8{,}0\,\Omega$

Donc $I_{batterie} = I(R = 4{,}0\,\Omega) = \frac{U}{R_s} = \underline{\underline{2{,}0\ A}}$

(b). Avec Kirchhoff : on cherche I_1 !

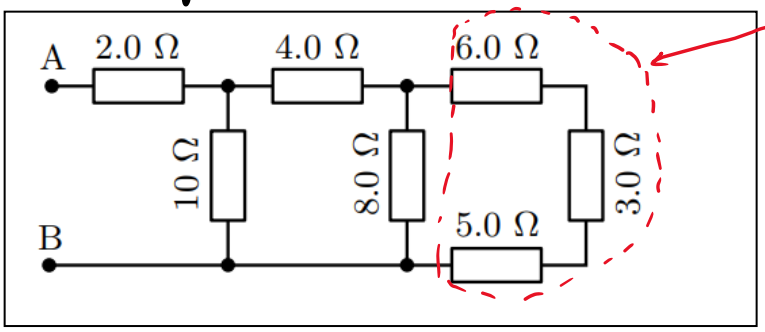
- Loi des noeuds : en A : $I_1 = I_2 + I_3$
- Maille du bas, de B ↺ : $-8I_2 - 4I_1 + 16 = 0$ (2)
- Maille du haut, de A ↺ : $-8I_3 + 8I_2 = 0$ (3) $\Rightarrow I_2 = I_3$ (3)

(3) et (1) : $I_1 = 2I_2 \Rightarrow I_2 = \frac{1}{2} I_1 \Rightarrow$ dans (2) : $-8 \cdot \frac{1}{2} I_1 - 4I_1 = -16$

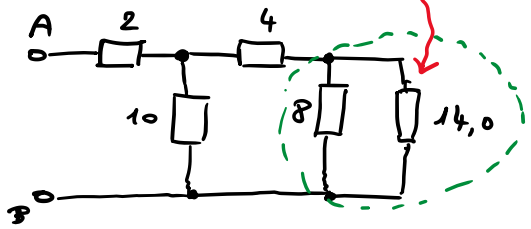
$-8I_1 = -16 \Rightarrow \underline{\underline{I_1 = 2{,}0\ A}}$

10.37

Départ :

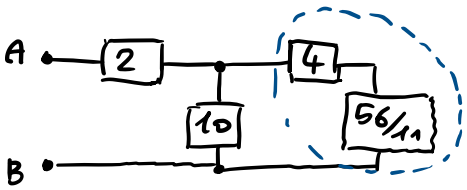


$R_s = \Sigma R = 14{,}0\,\Omega$

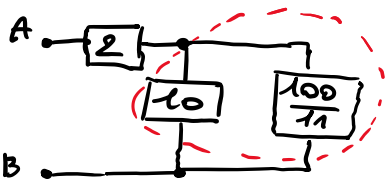


$\frac{1}{R_p} = \frac{1}{8} + \frac{1}{14} = \frac{7+4}{56} = \frac{11}{56}$

$\Rightarrow R_p = \frac{56}{11}\,\Omega$



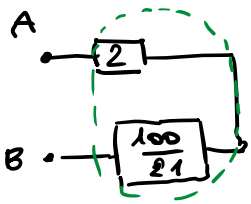
$R_s = 4 + \frac{56}{11} = \frac{100}{11}\,\Omega$



$\frac{1}{R_p} = \frac{1}{10} + \frac{11}{100} = \frac{21}{100}$

$\Rightarrow R_p = \frac{100}{21}\,\Omega$

Fin !



$R_s = 2 + \frac{100}{21} = \frac{142}{21}\,\Omega \simeq \underline{\underline{6{,}8\,\Omega}}$