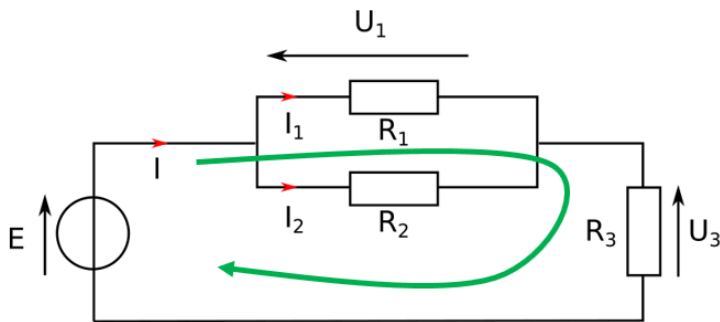


Séquence 4

Les lois des nœuds et des mailles

Exercices

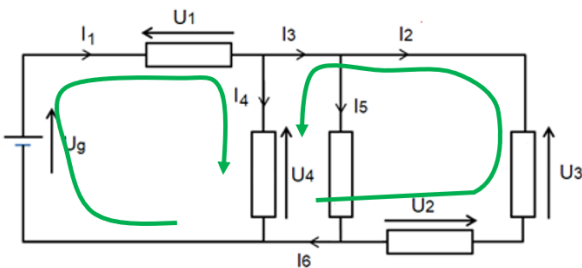
Exercice 1



1) d'après la loi des nœuds : $I = I_1 + I_2 \rightarrow I_2 = I - I_1 = 0,45 - 0,41 = \mathbf{0,04\ A}$

2) D'après la loi des mailles : $E - U_1 - U_3 = 0 \rightarrow E = U_1 + U_3 = 4 + 15 = \mathbf{19\ V}$

Exercice 2



Valeur de I_3 :

$$I_1 = I_3 + I_4 \rightarrow I_3 = I_1 - I_4 = 400 - 150 = \mathbf{250\ mA}$$

Valeur de I_2 :

$$I_3 = I_5 + I_2 \rightarrow I_2 = I_3 - I_5 = 250 - 100 = \mathbf{150\ mA}$$

Valeur de I_6 :

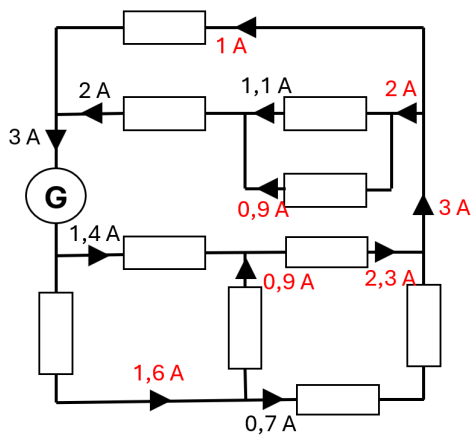
$$I_6 = I_5 + I_2 = 100 + 150 = \mathbf{250\ mA}$$

Valeurs de U_4 et de U_3

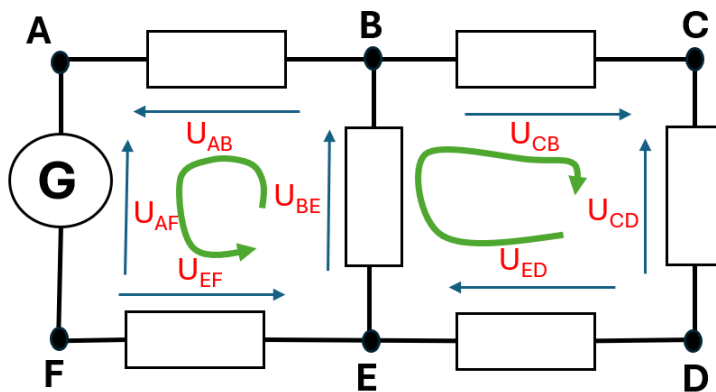
$$U_g - U_1 - U_4 = 0 \rightsquigarrow \mathbf{U_4 = U_g - U_1 = 22 - 10 = 12\ V}$$

$$U_2 + U_3 - U_4 = 0 \rightsquigarrow \mathbf{U_3 = U_4 - U_2 = 12 - 4,5 = 7,5\ V}$$

Exercice 3



Exercice 4



$$U_{BE} + U_{AB} - U_{AF} + U_{EF} = 0 \quad \& \quad \mathbf{U_{EF} = -U_{BE} - U_{AB} + U_{AF} = -6 - (-5) + 10 = 9\text{ V}}$$

$$U_{ED} + U_{BE} + U_{CB} - U_{CD} = 0 \quad \& \quad \mathbf{U_{ED} = -U_{BE} - U_{CB} + U_{CD} = -6 - (-3) + 1 = -2\text{ V}}$$