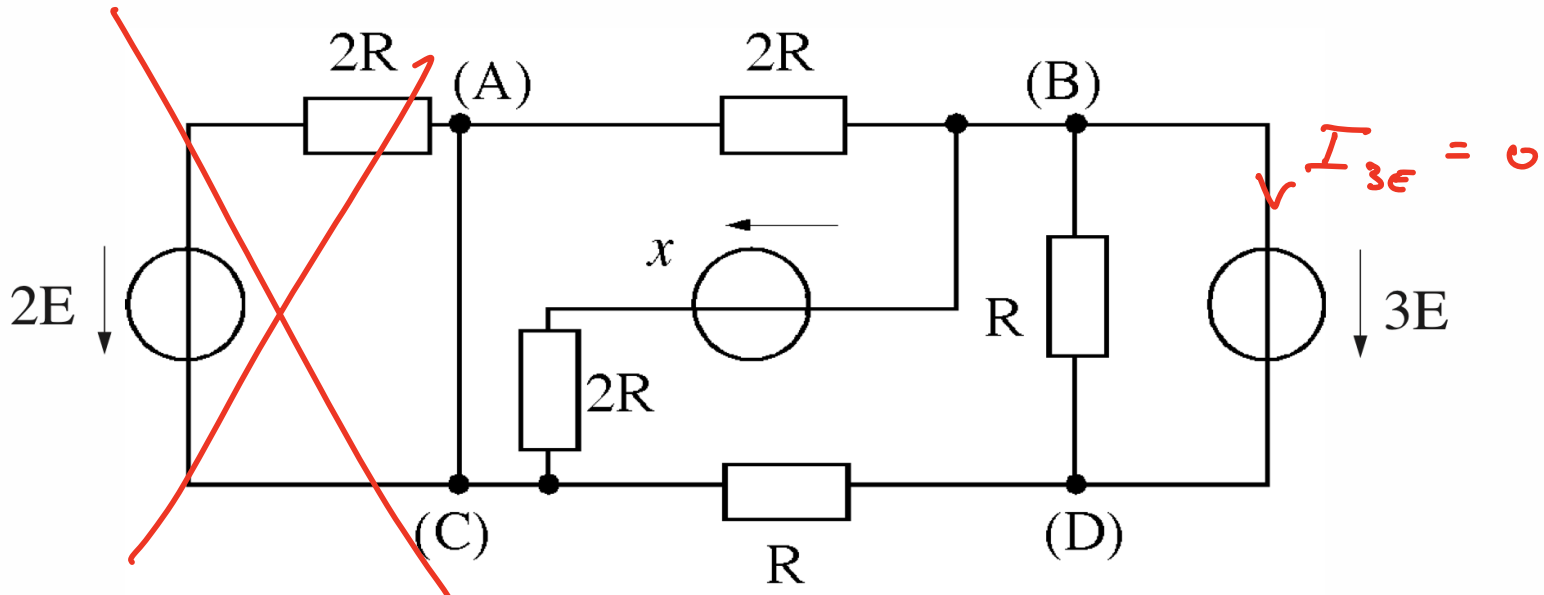
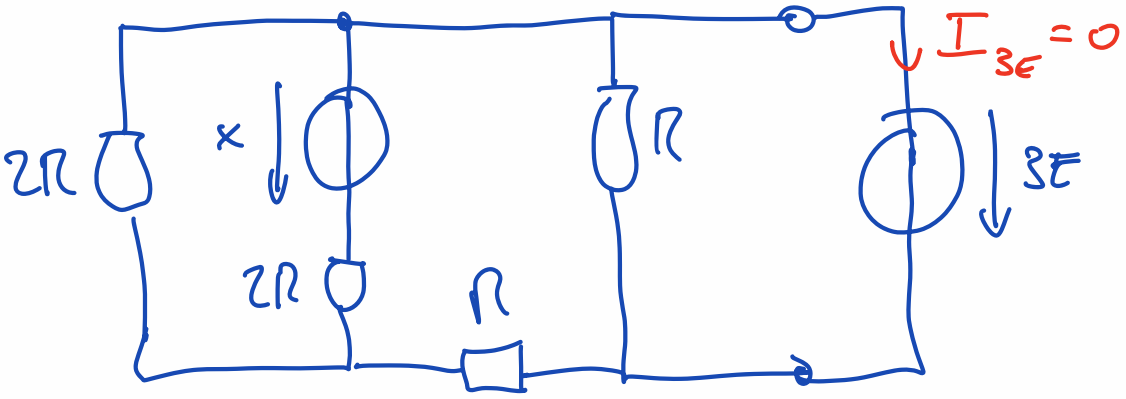
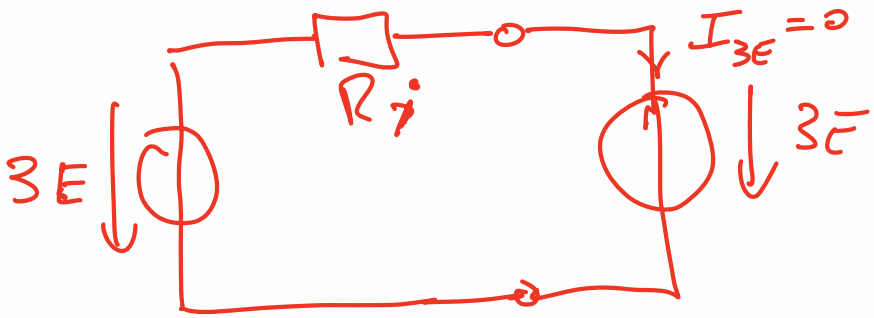
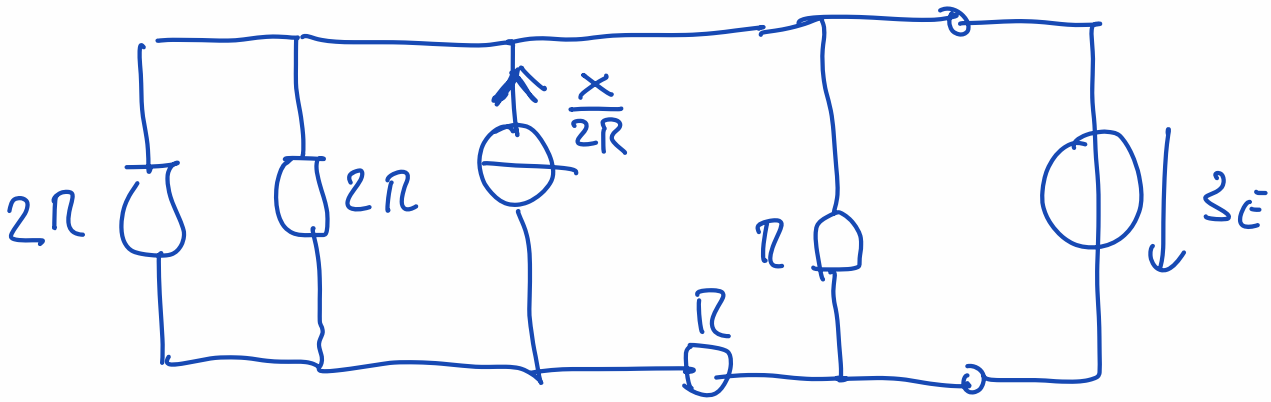
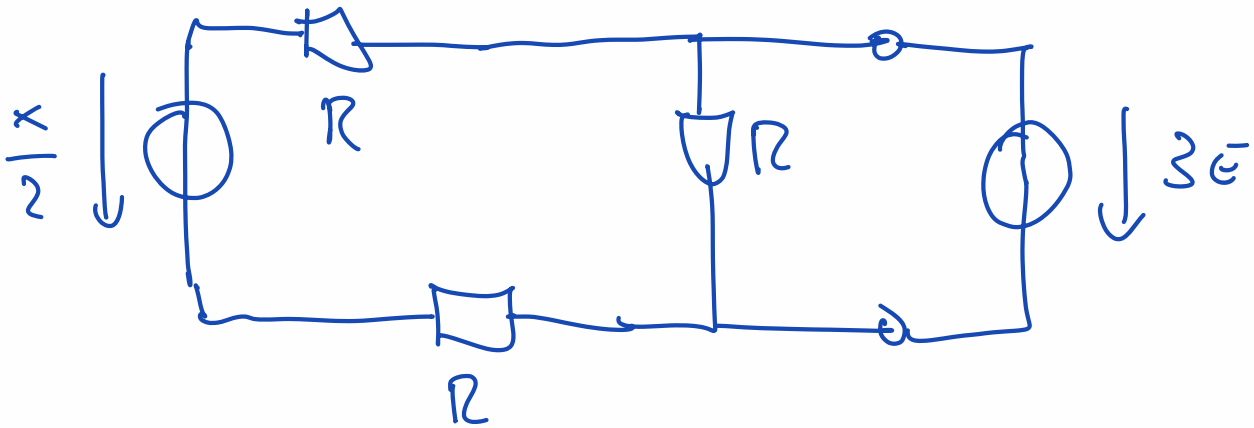

2R
(A)
2R
(B)
2E
x
R
3E
2R
(C)
R
(D)

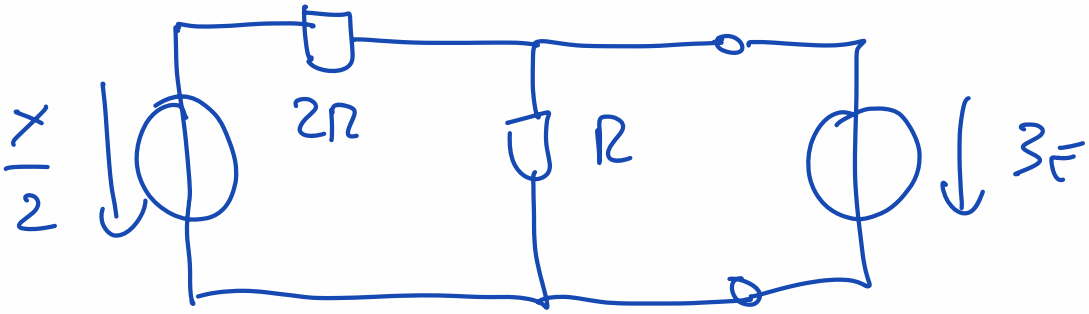

$I_{3\mathcal{E}}=0$
2R
x
R
3E
2R
R

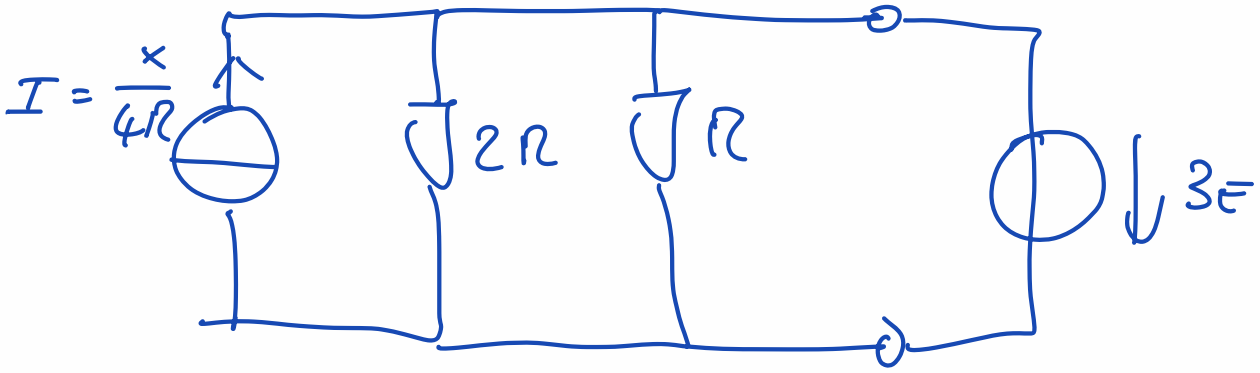
III

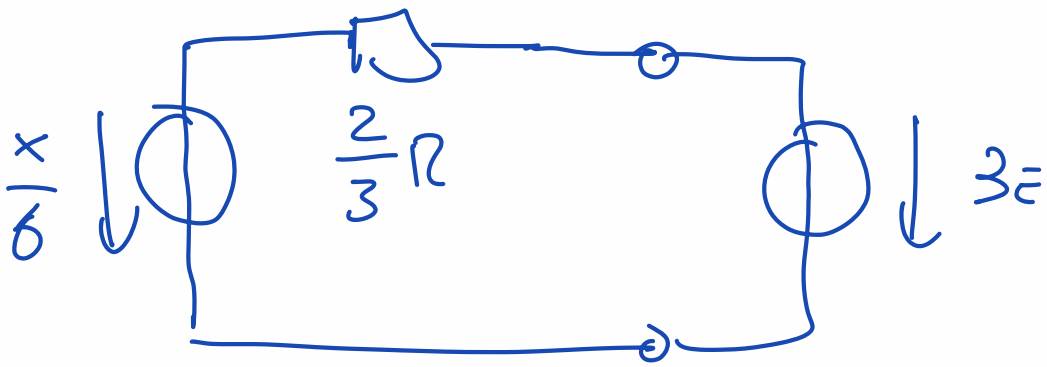

$I_{3\mathcal{E}}=0$
Rj
3E
3E


$\frac{x}{2R}$
2R
2R
R
R
3E

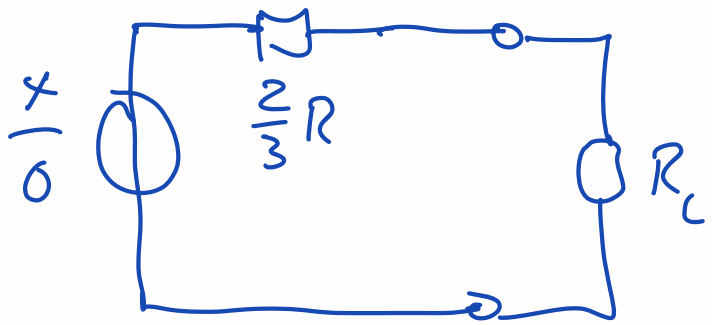

$\frac{x}{2}$
R
R
3E
R


$\frac{x}{2}$
2R
R
3E



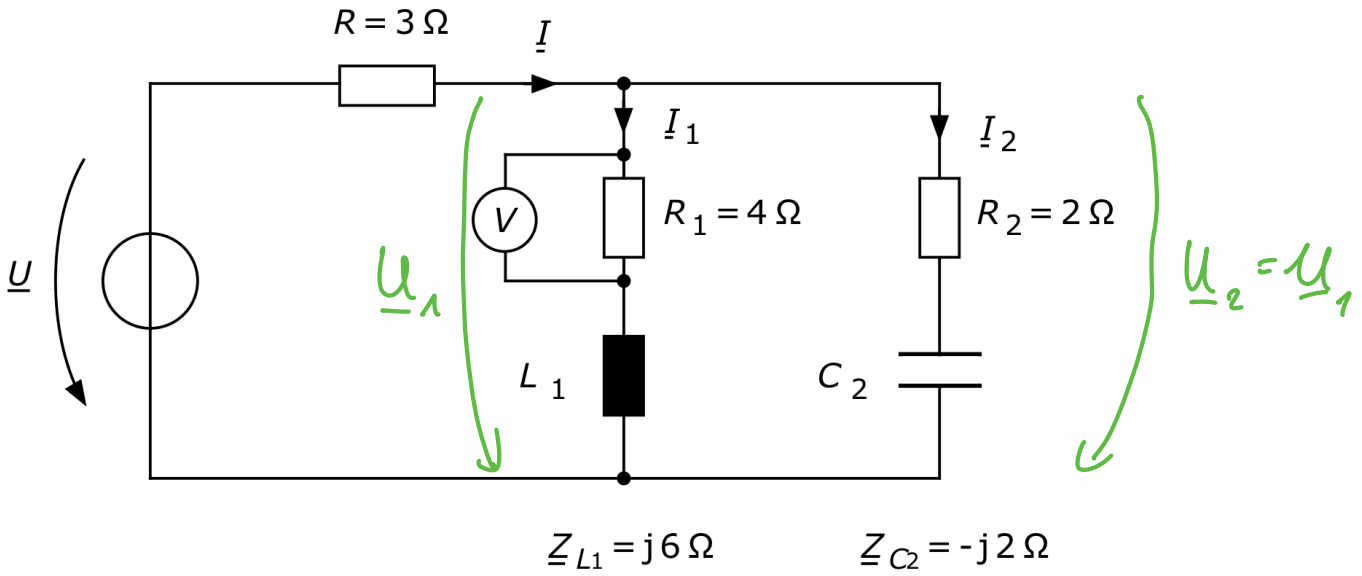


$$\frac{x}{6} = 3\mathcal{E} \quad \rightarrow \quad x = 18\,\mathcal{E}$$



adaptation de puissance :

$$R_L = \frac{2}{3}R$$



a) $\underline{I} = \underline{I}_1 + \underline{I}_2$

$\underline{I}_1 = \dfrac{\underline{U}_{R_1}}{R_1}$; $\underline{I}_2 = \dfrac{\underline{U}_1}{\underline{Z}_2} = \dfrac{\underline{I}_1 \cdot \underline{Z}_1}{\underline{Z}_2}$

$\underline{I}_2 = \dfrac{\underline{U}_{R_1} \cdot \underline{Z}_1}{R_1 \cdot \underline{Z}_2}$

b) $\underline{I} = \dfrac{\underline{U}_{R_1}}{R_1} + \dfrac{\underline{U}_{R_1} \cdot \underline{Z}_1}{R_1 \cdot \underline{Z}_2}$

$= \dfrac{\underline{U}_{R_1}}{R} \left(1 + \dfrac{\underline{Z}_1}{\underline{Z}_2} \right) = \dfrac{\underline{U}_{R_1}}{R_1} \left(\dfrac{\underline{Z}_2 + \underline{Z}_1}{\underline{Z}_2} \right)$

A.N. :

$\underline{Z}_1 = R_1 + j\omega L_1 = 4 + j6.$

$\underline{Z}_2 = R_2 - j \dfrac{1}{\omega C_2} = 2 - j2$

$$\underline{I} = \frac{50}{4}\left(\frac{6+4j}{2-2j}\right) = \frac{50}{4}\left(\frac{4+j20}{8}\right)$$

$$= \frac{50}{8} + j\frac{125}{4}$$

$$= 31.87 \cdot e^{j\,78.7^\circ}$$

$$\underline{I}_1 = \frac{50}{4}$$

$$\underline{I}_2 = \frac{\underline{U}_1}{Z_2} = \frac{\frac{50}{4}(4+6j)}{2-2j} = 31.85\,e^{j\,101.3^\circ}$$

$$P_{tot} = R \cdot I^2 + R_1 \cdot I_1^2 + R_2 \cdot I_2^2$$

$$= 5.7\ kW$$

$$Q_{tot} = X_C I_2^2 + X_L \cdot I_1^2$$

$$= -2 I_2^2 + 6 \cdot I_1^2 = -1,091\ kvar$$