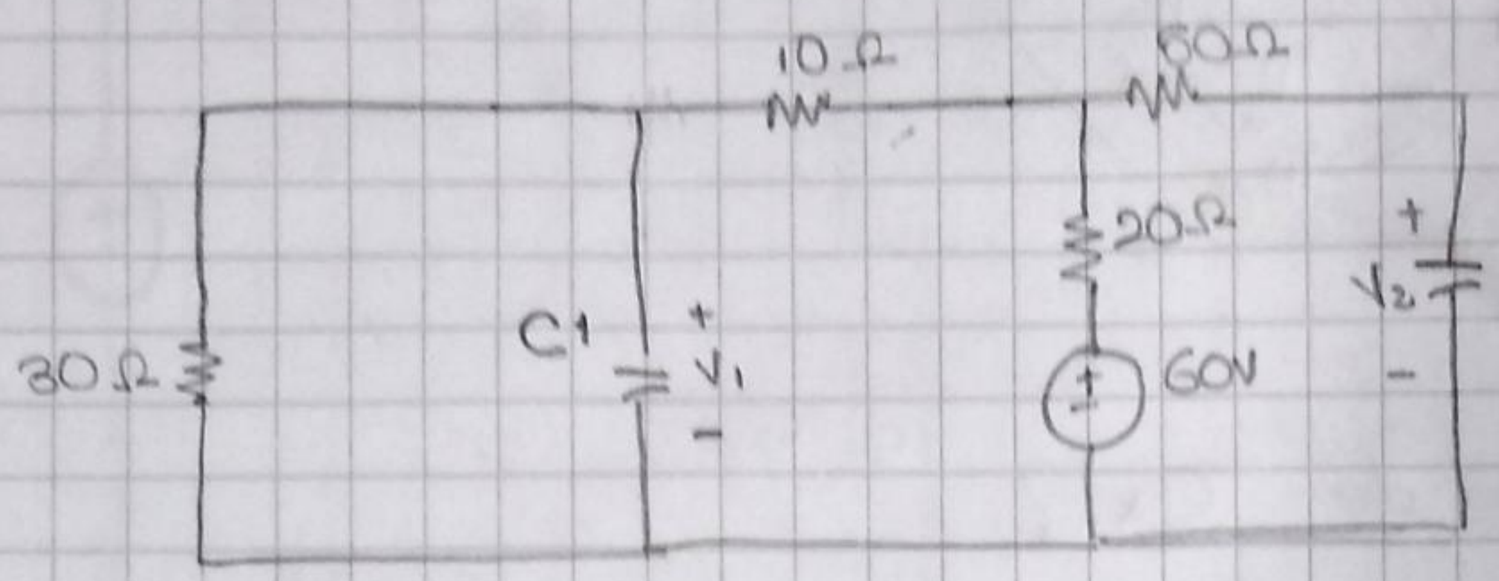
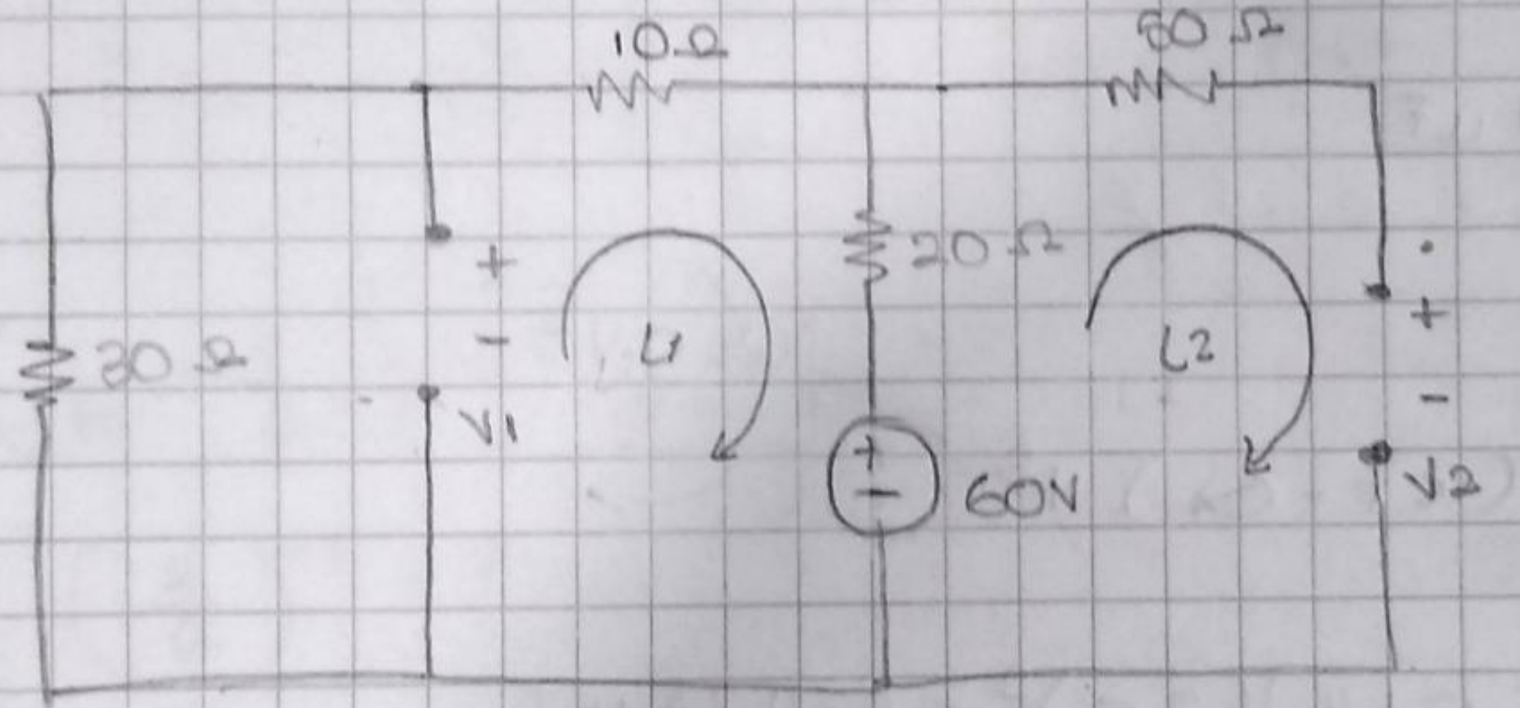
Gabriel Arturo Garcia Quintero - 1151654

(4)



bajo las condiciones dadas el circuito quedara. (eliminamos los capacitores) Como circuito



Para hallar los valor de i1 y i2 aplicamos V = I · R

$$I_1 = \frac{60}{(30 + 10 + 20)} = 1A$$

$$I_2 = 0$$

Por lo tanto

- $V_1 = 30\, I_1$

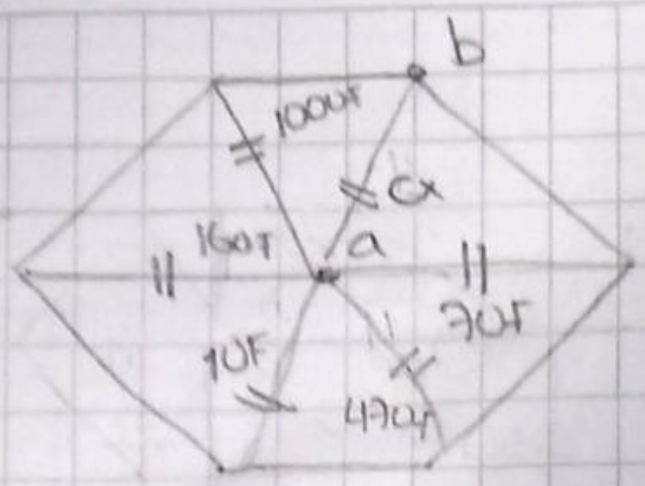
$V_1 = 30 \cdot 1 \Rightarrow 30V$

- $V_2 = 60 - 20(1$

$V_2 = 60 - 20(1)$

$V_2 = 40V$

(2)



¿Cual es el valor de Cx?

C_T → capacitancia total

$C_T = 7 + 47 + 100 + 16 + 1 + Cx$

$C_T - Cx = 171\ uF$

entonces...

$\varepsilon_{C_T - Cx} = \frac{1}{2}(C_T - C_x)V^2$ ← $\boxed{W = \frac{CV^2}{2}}$

$= \frac{1}{2}(171\mu)(2.5)^2 = 534{,}37\ \mu J$

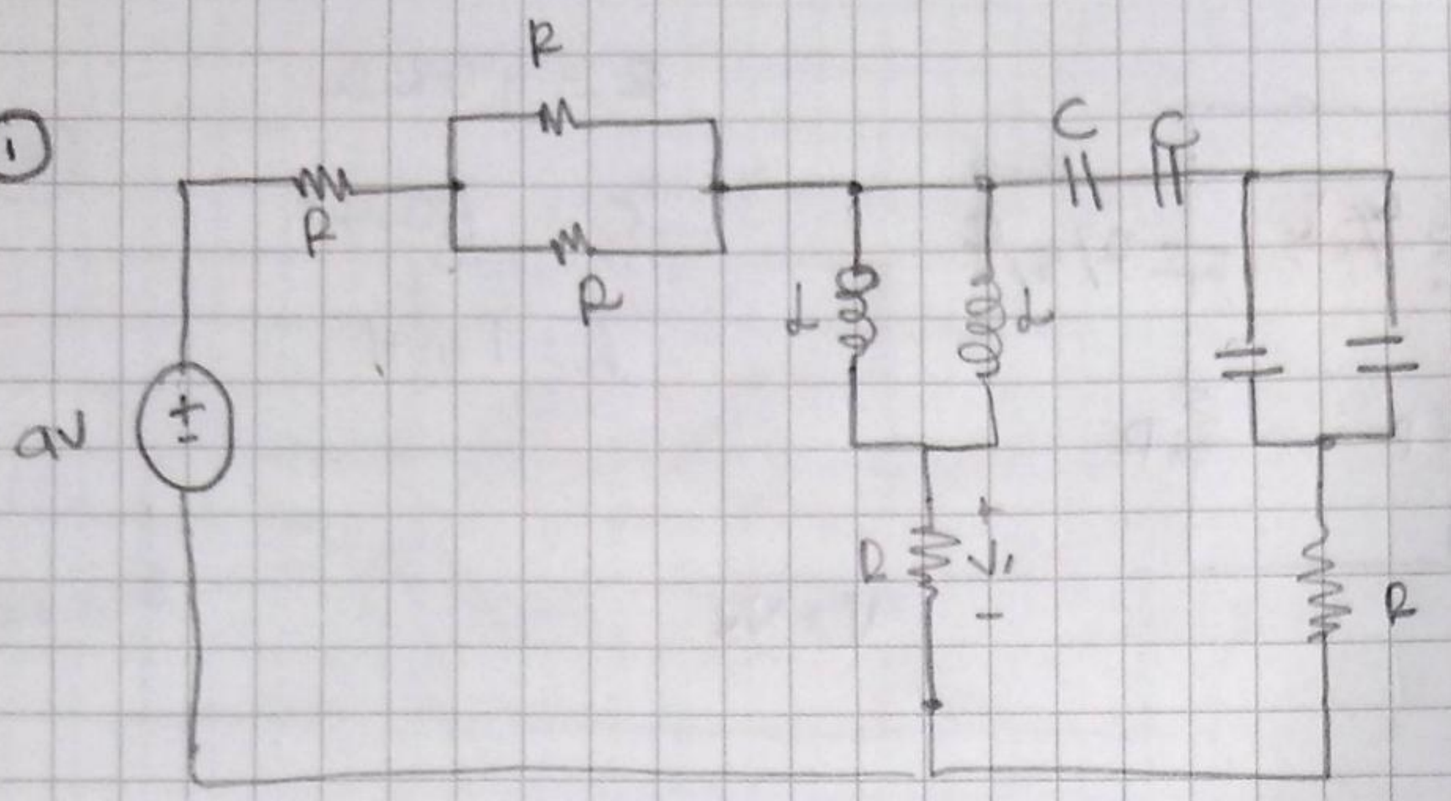
$\varepsilon_C = \varepsilon_{C_T} - \varepsilon_{C_T - Cx} = (534.9 - 534{,}37)\ \mu J = 425\ nJ$

Despejando la ecuacion, tenemos que

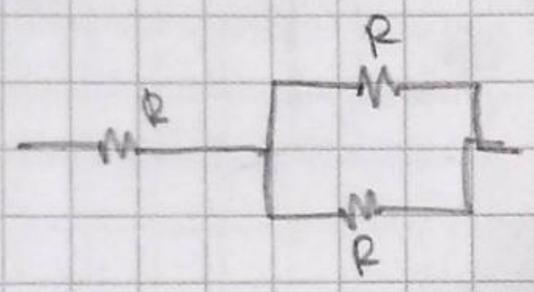
$\varepsilon_C = 425n \rightarrow \frac{1}{2} C_x V^2 \Rightarrow C_x = \frac{\varepsilon_C (2)}{V^2}$

$C_x = \frac{425n \cdot 2}{(2.5)^2} = 136\ nF$ ✗

①



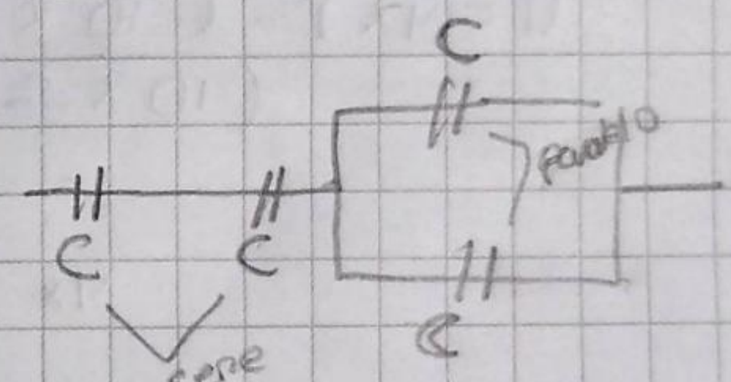
A) Reducir el circuito

- Para → 

$$Req = \left(\frac{1}{R} + \frac{1}{R}\right)^{-1} + R$$

$$= \left(\frac{2}{R}\right)^{-1} + R$$

$$= \frac{R}{2} + R = 3/2\,R \simeq 1.5R \;\not\Omega$$

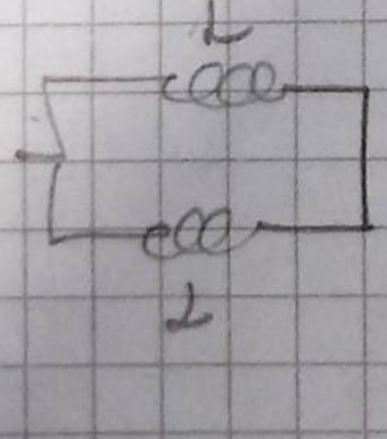
- Para 

$$C + C = 2C$$

$$Ceq = \left(\frac{1}{C} + \frac{1}{C} + \frac{1}{2C}\right)^{-1}$$

$$= \left(\frac{2}{C} + \frac{1}{2C}\right)^{-1} = \left(\frac{5}{2C}\right)^{-1}$$

$$Ceq = \frac{2C}{5}\;\not F$$

- Para 

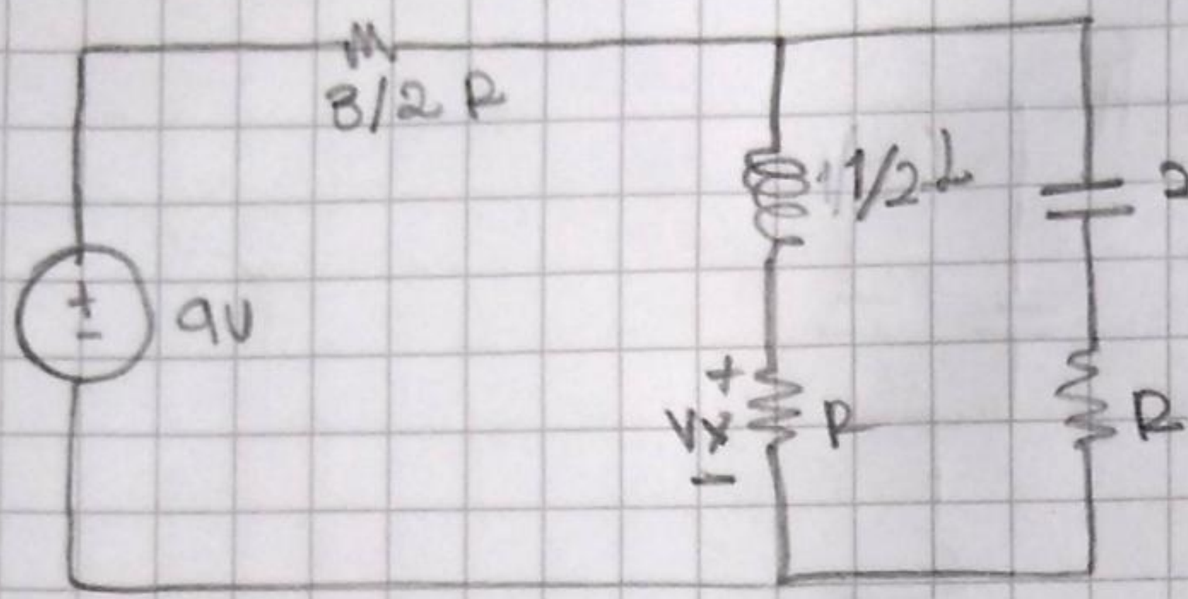
$$\rightarrow \left(\frac{1}{L} + \frac{1}{L}\right)^{-1}$$

$$(2/L)^{-1} = \frac{1}{2}L\;\not H$$

Redibujamos...

DD MM AA

a/



$R = 10K\Omega$

$C = 60\mu f$

$L = 1mH$

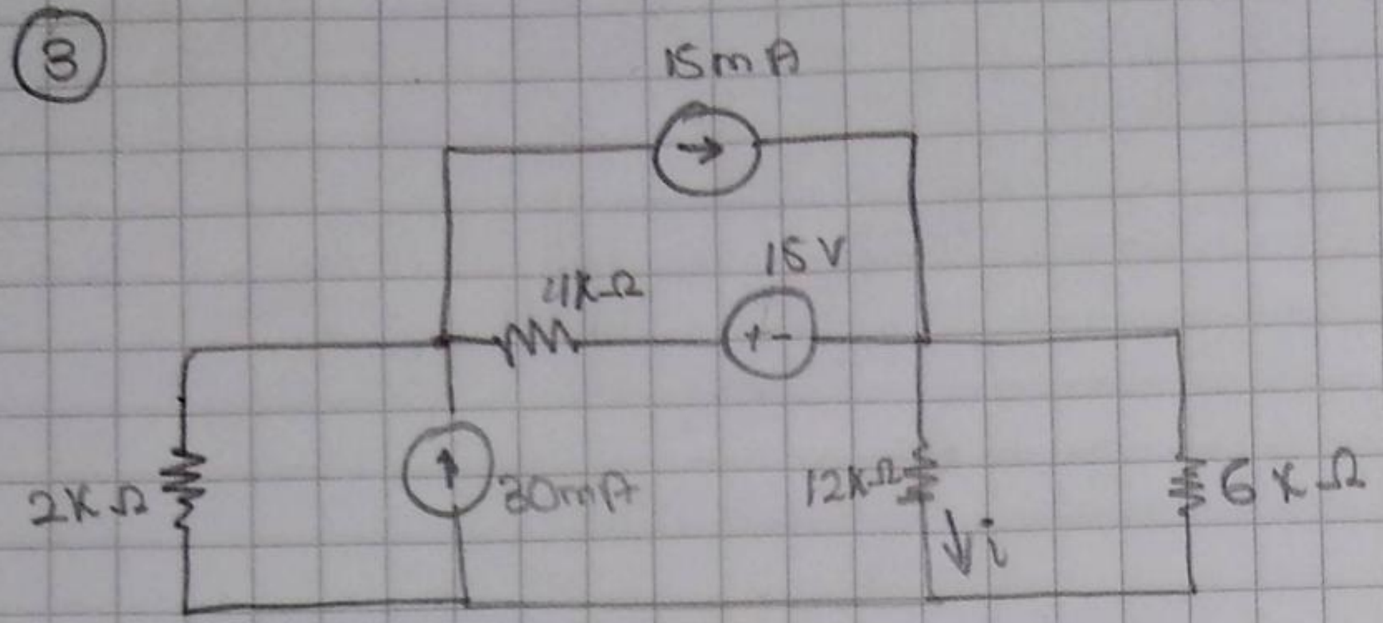
$V = Vx$

b) Aplicamos la ecuación de divisor de voltaje

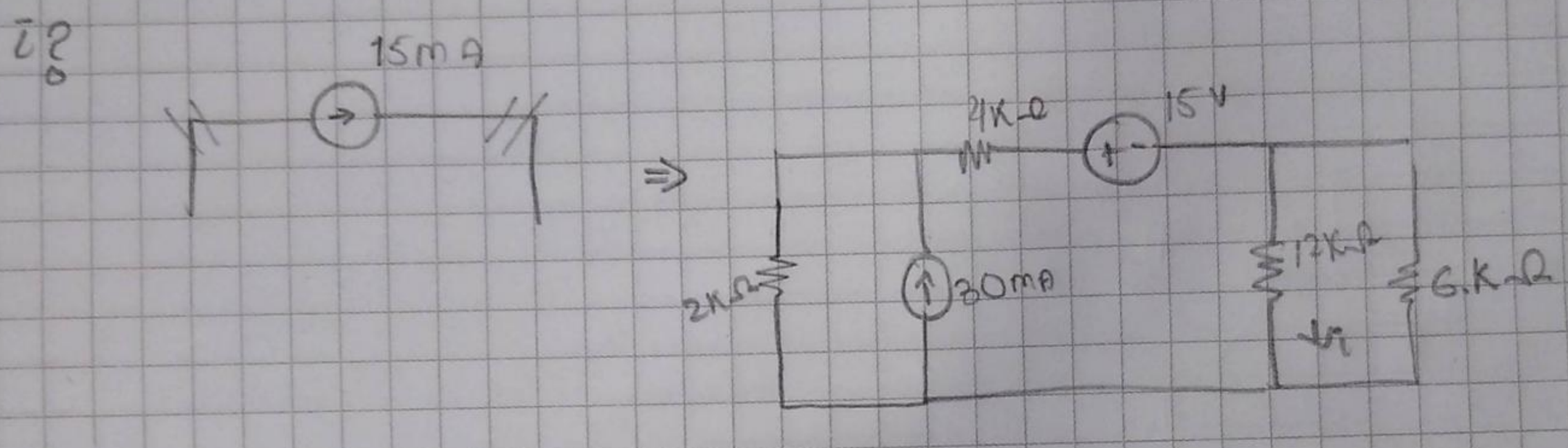
$$(1\,aVx) \cdot \frac{(10K\Omega)}{(10K\Omega)+(15K\Omega)} = 0$$

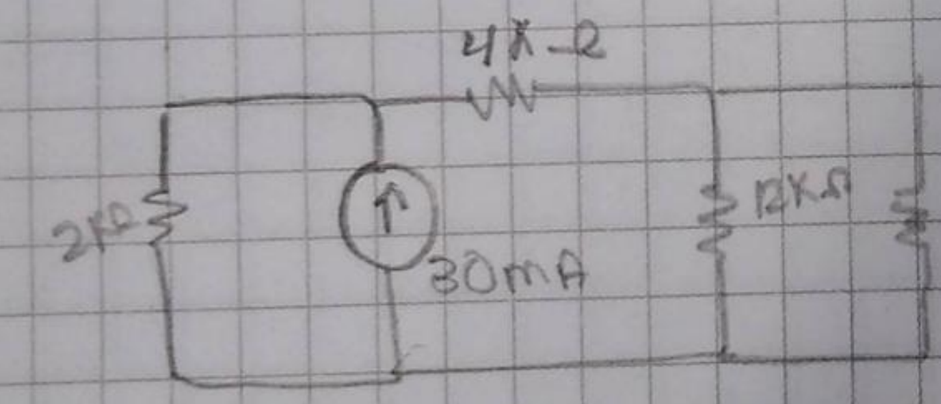
$$Vx = 3.6V$$

(8)



Para aplicar la solucion debemos sacar bes ecuacion, debemos dejar en punto medio cada fuente.

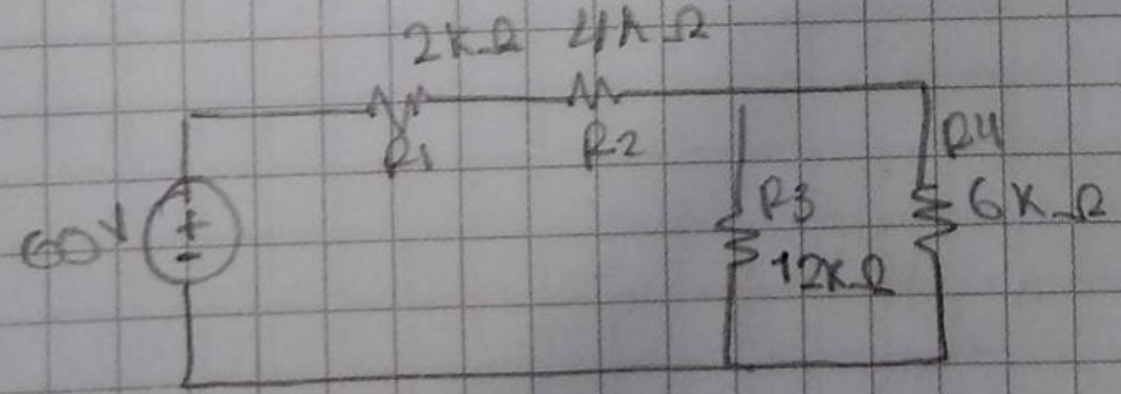




→ aplicamos transformacion de fuentes

$V = I \cdot R \rightarrow 30mA \cdot 2K\Omega$

$V = 60V$



→ serie R1 y R2

$R = R_1 + R_2$

$R = 2 + 4 = 6K\Omega$