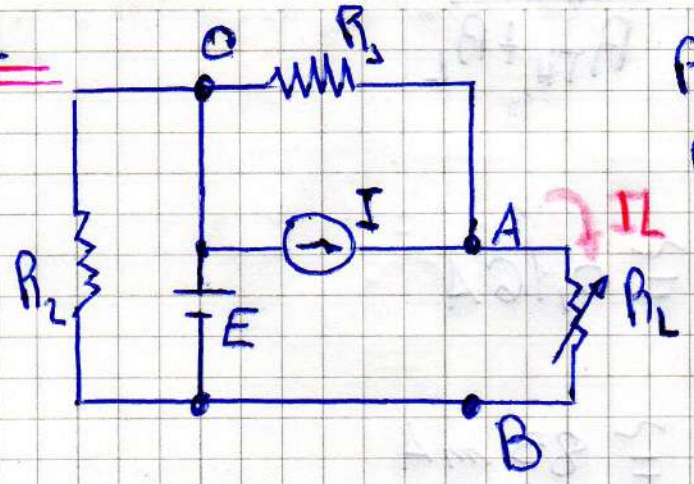
1.b.



$R_3 = 16\Omega$

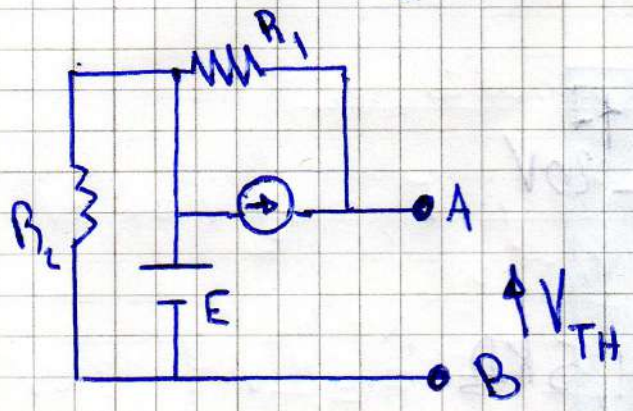
$R_2 = 24\Omega$

$R_L : 20\Omega \rightarrow 50\Omega$

$E = 2,4V$

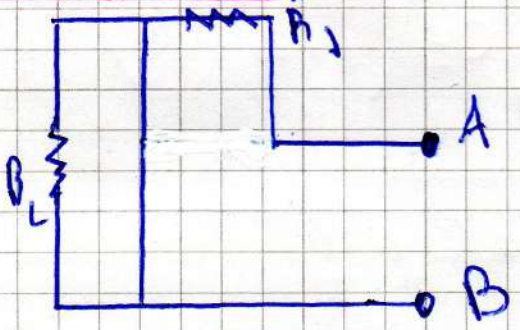
$I = 0,2A$

Para Hallar I_L Usar teorema de Thevenin.



$$V_{TH} = V_A - V_B$$

Halle la R_{TH}



$$R_{TH} = R_3 \qquad R_{TH} = 16\Omega$$

Halle la V_{TH}

Recorro desde A hasta C $\rightarrow V_C = V_A - V_{R_1} = V_A - I R_3$

Recorro desde B hasta C $\rightarrow V_C = V_B + E$

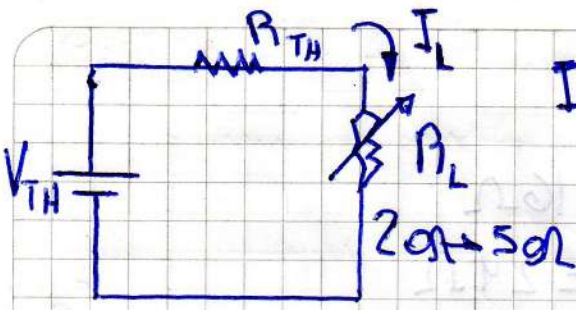
Sacando: $0 = V_A - V_B - I R_3 - E$

$$V_A - V_B = I R_3 + E$$

$$V_{TH} = I R_1 + E$$

$$V_{TH} = 5,6V$$

$V_{TH} = 0.2A \cdot 16\Omega + 2,4$

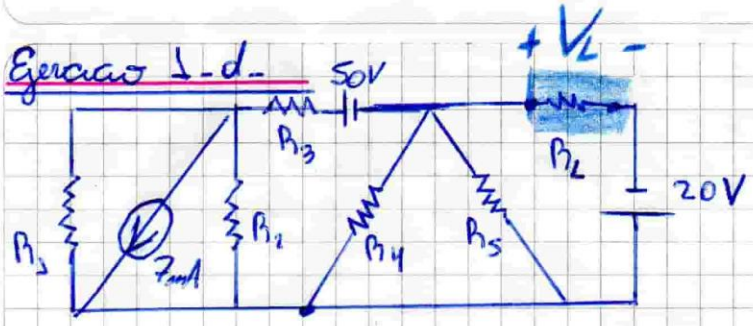


$$I_L = \frac{V_{TH}}{R_{TH} + R_L}$$

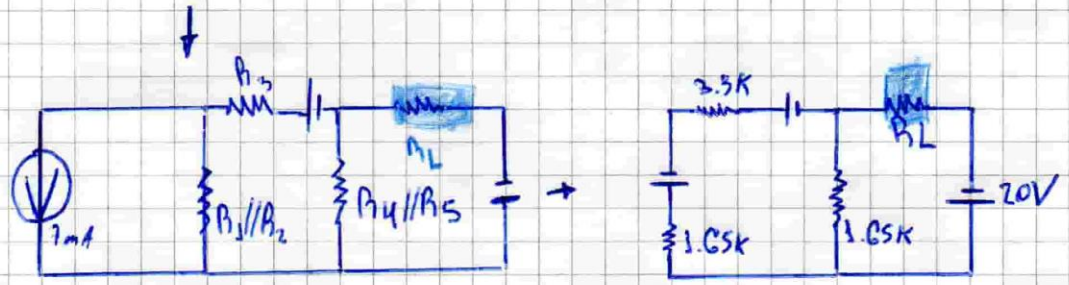
$$I_{20\Omega} = \frac{5{,}6V}{16\Omega + 20\Omega} \cong 0{,}16A$$

$$I_{50\Omega} = \frac{5{,}6V}{16\Omega + 50\Omega} \cong 85\,mA$$

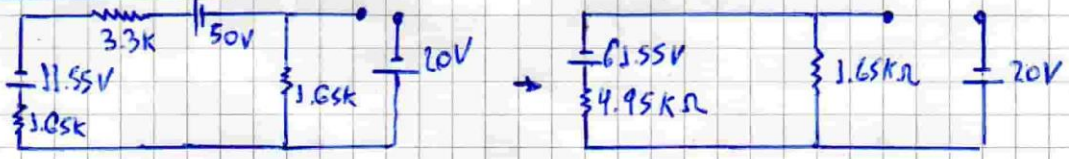
Ejercicio 1-d-



Todos las resistencias son de 3.3KΩ



Mi Red lineal actua:



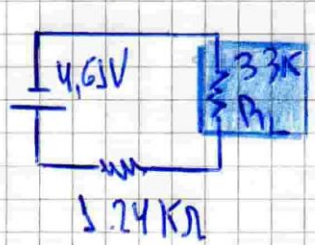
Busco RTH: apago fuentes

$$R_{TH} = 4.95K\Omega // 1.65K\Omega = 1.24K\Omega$$

Busco V_{TH}

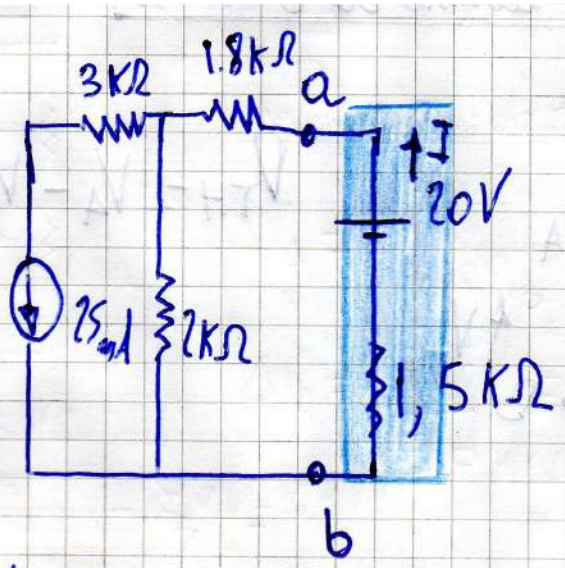
$$V_{TH} = -20V + 61.55V \cdot \frac{1.65K\Omega}{4.95K\Omega + 1.65K\Omega} = -4,61V$$

Circuito equivalente:



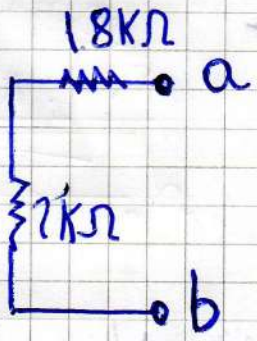
$$V_L = -4.61V \cdot \frac{3.3K\Omega}{3.3K\Omega + 1.24K\Omega} = -3.35V$$

Ejercicio 1.e.



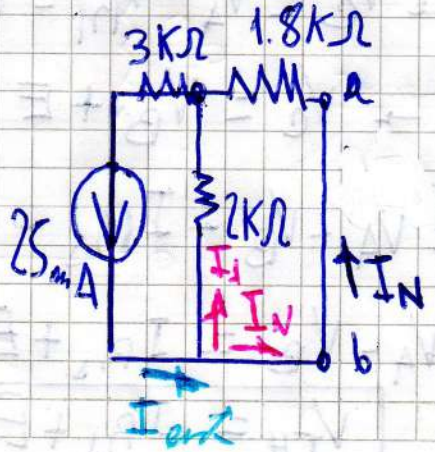
Voy a usar el T de Norton.

Hallo la R_N



$R_N = 3.8K\Omega$

Hallo la I_N

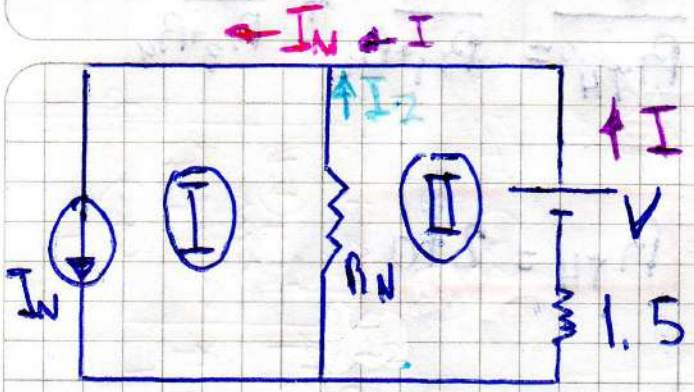


Uso DIVISOR DE CORRIENTE

$$I_N = I_{ent} \cdot \frac{2\,K\Omega}{1.8\,K\Omega + 2K\Omega}$$

$$I_N = 25mA \cdot \frac{10}{19} = 13,16\,mA$$

$$I_N = 13,16\,mA$$



Planteo Leyes de Kirchhoff

1) $I_N = I + I_2$

$I_2 = I_N - I$

2) Ⅱ ↻ $-1{,}5K\Omega\, I + V + I_2 R_N = 0$

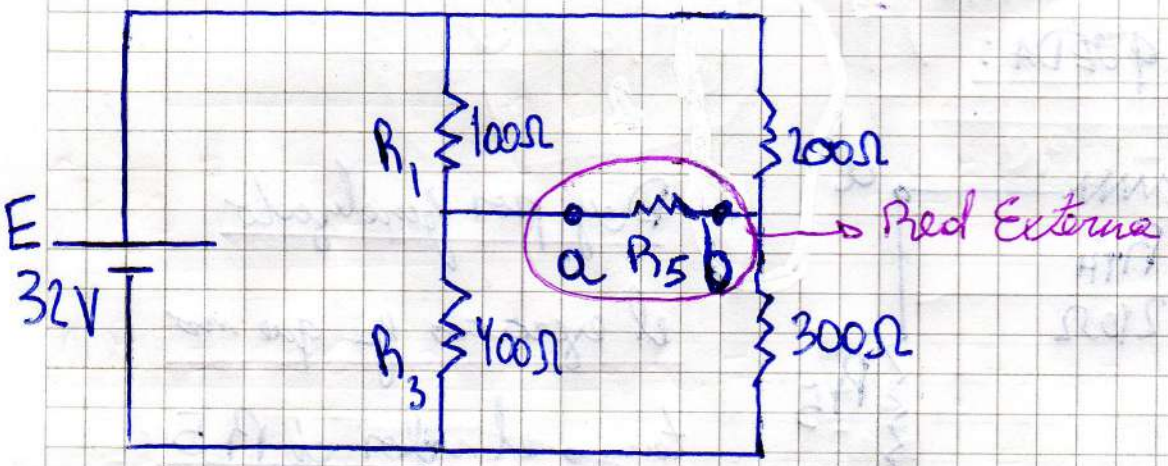
$-1{,}5\,k\Omega \cdot (I) + V + (I_N - I) R_N = 0$

$-1{,}5K\Omega\, I + 20V + (13{,}16mA - I)\, 3{,}8K\Omega = 0$

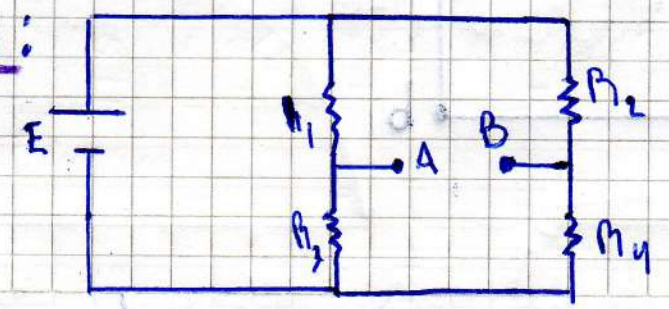
$+20V + 50V - 5{,}3K\Omega\, I = 0$

$$\boxed{I = 13{,}20\,mA}$$

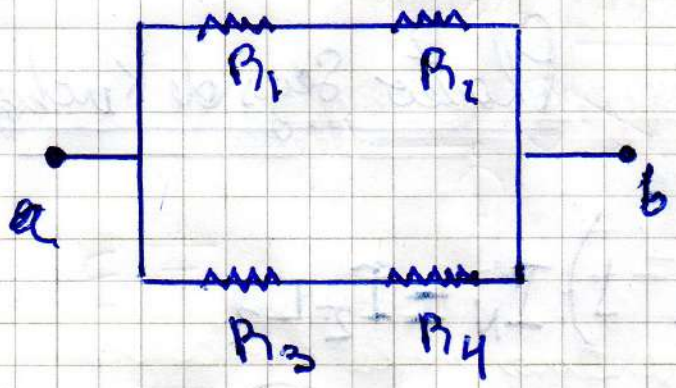
Ejercicio 1 - 6.



Red lineal activa:



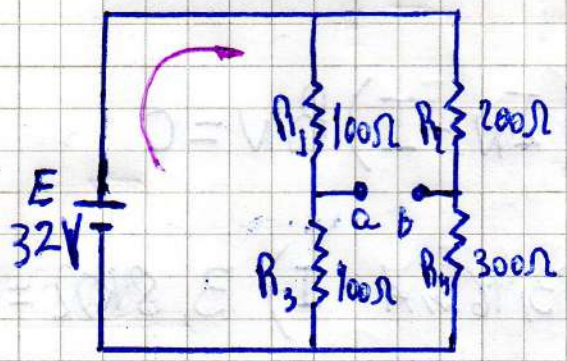
Busco la R_{TH}



$$\frac{1}{R_{TH}} = \frac{1}{R_1+R_2} + \frac{1}{R_3+R_4}$$

$$\boxed{R_{TH} = 2\,\Omega}$$

Busco la V_{TH}



Hago un divisor de tensión

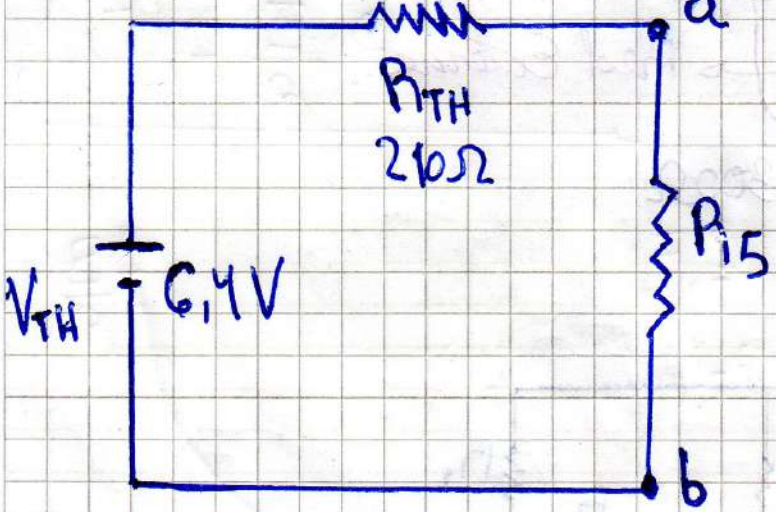
$$\Delta V_1 = \frac{R_1}{R_1+R_3} E = \frac{32}{5} V = 6,4V$$

$$\Delta V_2 = \frac{R_2}{R_2+R_4} E = \frac{64}{5} V = 12,8V$$

$$V_{TH} = V_a - V_b = 12,8V - 6,4V = 6,4V$$

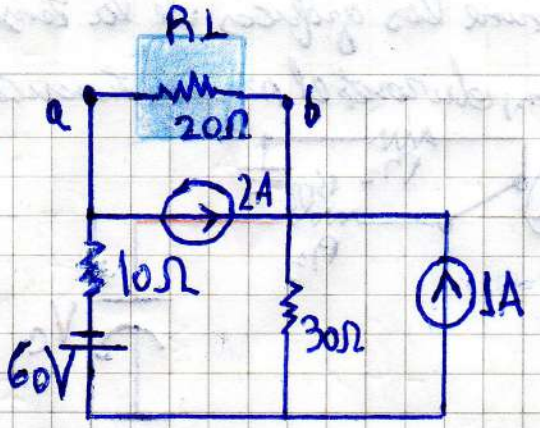
$$\boxed{V_{TH} = 6,4V}$$

MI CIRCUITO QUEDA:

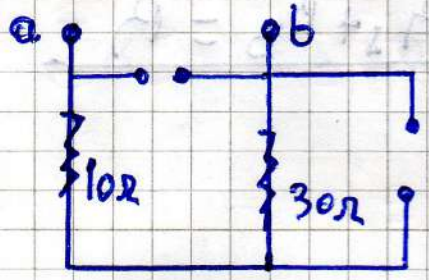


Doy por finalizado el ejercicio ya que no tengo el valor de R5.

Ejercicio 1-j



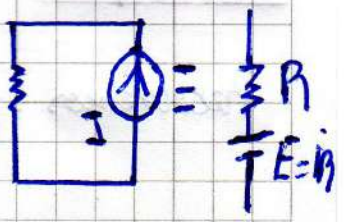
Busco R_{TH} → Pasivo fuentes.

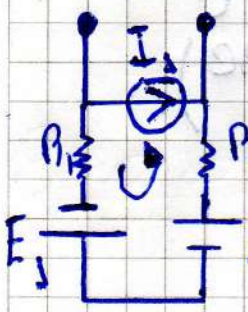


$$R_{TH} = 10\Omega + 30\Omega = 40\Omega$$

Busco V_{TH}

Estoy en el 0 del potencial en A y uso el equivalente de Norton →





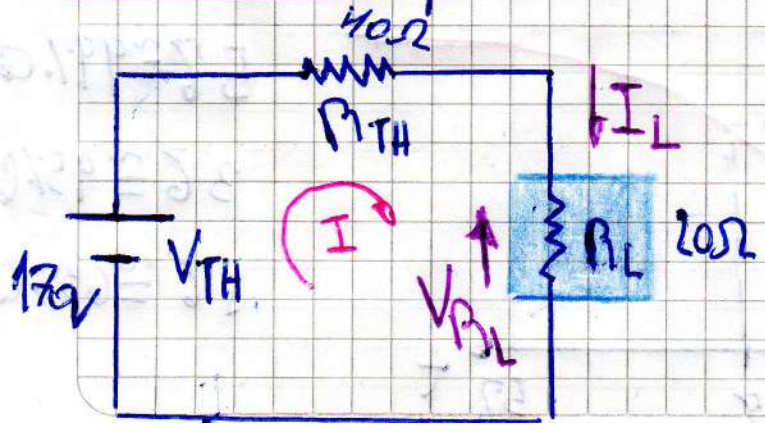
Ley de mallas de Kirchoff

$$V_{AB} = V_{R1} + V_{R2} + E_1 + E_2$$

- $V_{R_1} = I_3 R_1 = 2A \cdot 10\Omega = 20V$
- $V_{R_2} = 2A\,30\Omega = 60V$

$$V_{TH} = V_{AB} = 20V + 60V + 60V + 30V \Rightarrow \boxed{V_{TH} = 170V}$$

MI CIRCUITO QUEDA:



USO LEY DE Ohm para sacar I_{RL}

$$170V = I \cdot (40\Omega + 20\Omega)$$

$$\boxed{I_L = 2,83\hat{3}A}$$

$$\boxed{V_{R_L} = 20\Omega \cdot 2,83\hat{3}A = 56,6\hat{6}V}$$