

Universidad de las Fuerzas Armadas

E.S.P.E.

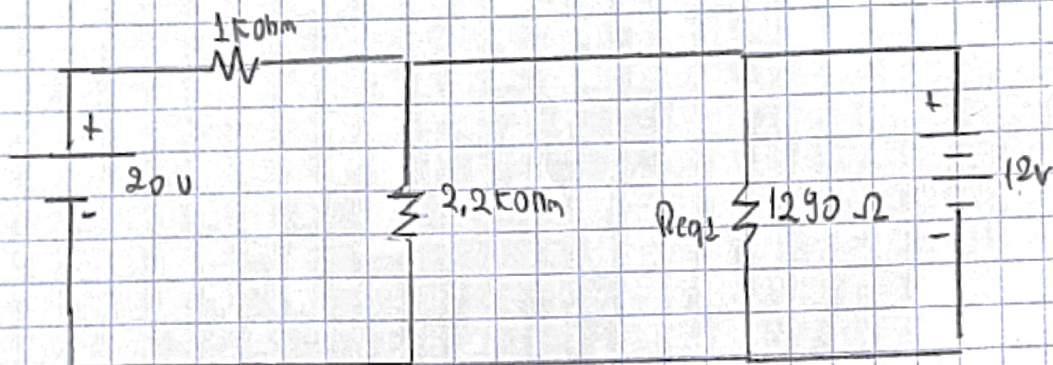
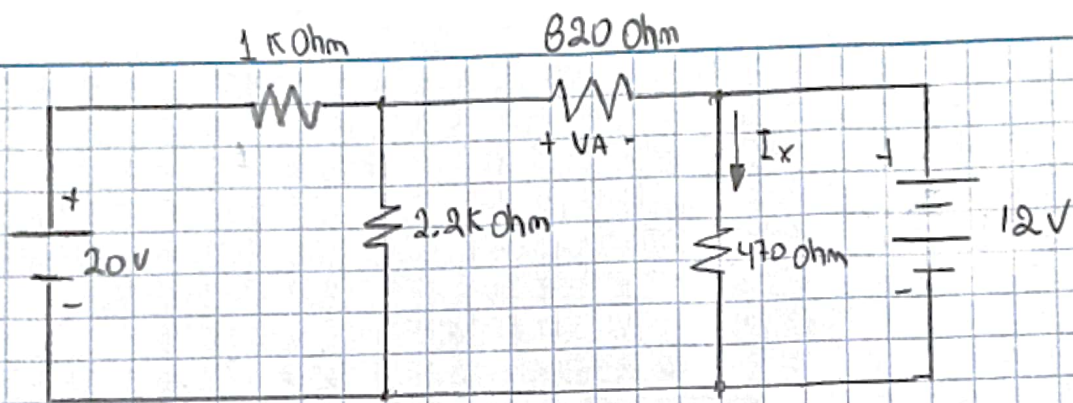


# CIRCUITOS ELECTRICOS

LABORATORIO 3

UTILIZACION DEL TEOREMA DE  
SUPERPOSICION

CÁLCULOS

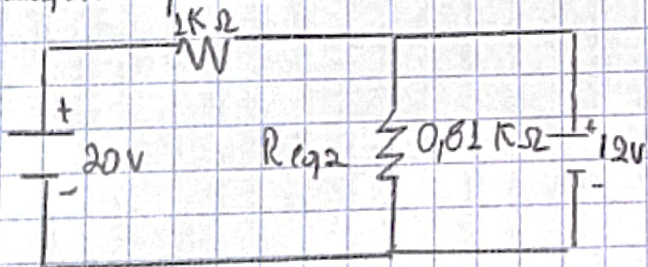


$$Req1 = 320\Omega + 470\Omega$$

$$Req1 = 790\Omega$$

$$Req2 \parallel 2.2k\Omega = 1.29k\Omega \parallel 2.2k\Omega = \frac{1.29k\Omega \cdot 2.2k\Omega}{1.29k\Omega + 2.2k\Omega}$$

$$Req2 = 0.81k\Omega$$



$$Req2 + 1k\Omega = Req3$$

$$Req3 = 1.81k\Omega$$

$$V_{Req3} = 20V - 12V = 8V$$

$$I_{Req3} = \frac{V}{R}$$

$$I_{Req3} = \frac{8V}{1.81k\Omega}$$

$$I_{Req3} = 4.42mA$$

$$I_{Req3} = 4.42mA$$

$$I_{Req2} = 4.42mA$$

$$V_{Req2} = I \cdot R = 4.42mA \cdot 0.81k\Omega$$

$$V_{Req2} = 3.57V = V_{Req1}$$

$$I_{Req1} = \frac{V}{R} = \frac{3.57V}{1.29k\Omega} = 2.76mA$$

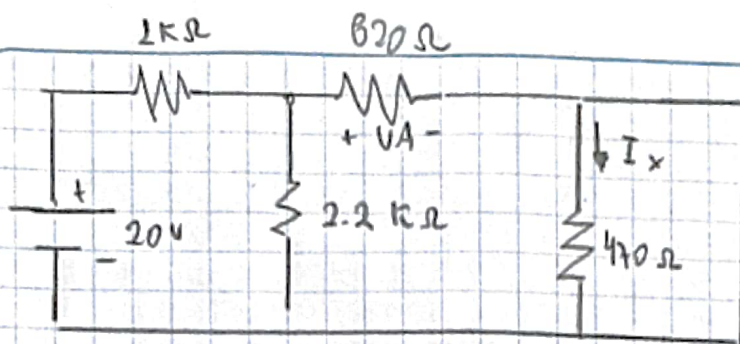
$$I_x = 2.76mA$$

$$I_A = 2.76mA$$

$$V_A = 2.76 \cdot 0.82$$

$$V_A = 2.27V$$





← Sin la Fuente de 12V

$$R_{eq1} = 470\Omega + 620\Omega$$

$$R_{eq1} = 1,29\text{ k}\Omega$$

$$R_{eq2} = 2,2\text{ k}\Omega \parallel 1,29\text{ k}\Omega$$

$$R_{eq2} = \frac{(2,2 \cdot 1,29)}{2,2 + 1,29} \text{ k}\Omega$$

$$R_{eq2} = 0,81\text{ k}\Omega$$

$$I_{Req2} = 11,05\text{ mA}$$

$$V_{Req2} = R \cdot I = 0,81\text{ k}\Omega \cdot 11,05\text{ mA}$$

$$V_{Req2} = 8,95\text{ V} = V_{Req1}$$

$$I_x = 6,94\text{ mA}$$

$$R_{eq3} = 0,02\text{ k}\Omega + 1\text{ k}\Omega$$

$$R_{eq3} = 1,02\text{ k}\Omega$$

$$V_{Req3} = 20\text{ V}$$

$$I_{Req3} = \frac{20\text{ V}}{1,02\text{ k}\Omega} = 19,61\text{ mA}$$

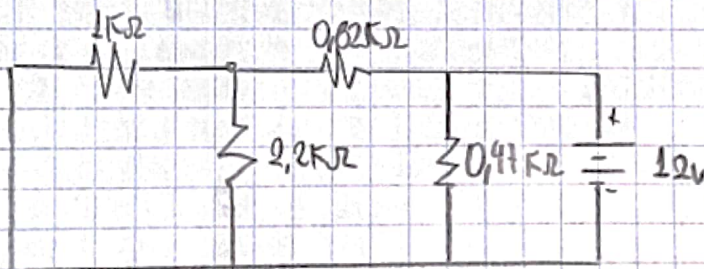
$$I_{Req1} = \frac{V}{R} = \frac{8,95\text{ V}}{1,29\text{ k}\Omega}$$

$$I_{Req1} = 6,94\text{ mA}$$

$$I_{RA} = 6,94\text{ mA}$$

$$V_{RA} = R \cdot I = 0,02\text{ k}\Omega \cdot 6,94\text{ mA}$$

$$V_{RA} = 0,14\text{ V}$$



← Sin la Fuente de 20V

$$R_{eq1} = 1,29\text{ k}\Omega$$

$$R_{eq2} = 0,81\text{ k}\Omega$$

$$R_{eq3} = 1,02\text{ k}\Omega$$

$$I_{Req1} = \frac{V}{R} = \frac{5,37\text{ V}}{1,29\text{ k}\Omega}$$

$$I_{Req1} = 4,16\text{ mA}$$

$$I_A = 4,16\text{ mA}$$

$$V_{Req3} = 12\text{ V}$$

$$I_{Req3} = \frac{12\text{ V}}{1,02\text{ k}\Omega} = 11,76\text{ mA} = I_{Req2}$$

$$V_{Req2} = I \cdot R = 0,81\text{ k}\Omega \cdot 11,76\text{ mA}$$

$$V_{Req2} = 9,53\text{ V} = V_{Req1}$$

$$I_x = 4,16\text{ mA}$$

$$V_A = I \cdot R$$

$$V_A = 4,16\text{ mA} \cdot 0,02\text{ k}\Omega$$

$$V_A = 0,08\text{ V}$$

$$I_{Tx} = 6,94\text{ mA} - 4,16\text{ mA}$$

$$V_{TA} = 5,69\text{ V} - 0,08\text{ V}$$

$$I_{Tx} = 2,78\text{ mA}$$

$$V_{TA} = 5,61\text{ V}$$