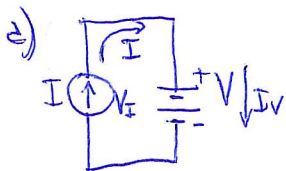


Entrega 2 de FELT de Jaime Ramos Rojas.

Ejer 1) V, I, P

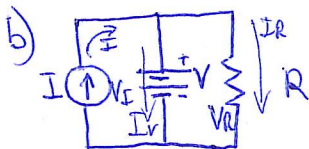


$$V_I = V (V)$$

$$I = I_V (A)$$

$$P_I = VI (W) \text{ (suministrada)}$$

$$P_V = VI (W) \text{ (absorbida)}$$



$$V_R = V (V)$$

$$I_R = \frac{V_R}{R} = \frac{V}{R} (A) \rightarrow I = I_V + \frac{V}{R}$$

$$P_R = I^2 R = \frac{V^2}{R^2} R = \frac{V^2}{R} (W) \text{ (absorbida)}$$

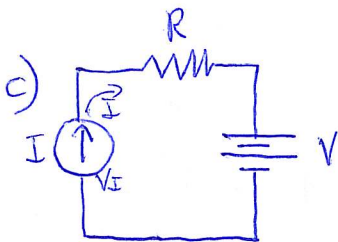
$$V_I = V (V)$$

$$I_V = I - \frac{V}{R} (A)$$

$$P_I = V \cdot I (W) \text{ (suministrada)}$$

$$P_V = V \cdot I_V = V \left(I - \frac{V}{R} \right) (W)$$

Según el valor de I_V :
 si $I_V > 0 \rightarrow$ absorbida
 si $I_V < 0 \rightarrow$ suministrada



$$I_V = I (A)$$

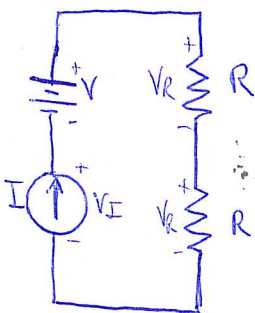
$$P_V = V \cdot I (W) \text{ (absorbida)}$$

$$P_R = I^2 R (W) \text{ (absorbida)}$$

$$V_I = V + IR (V)$$

$$P_I = V_I R = (V + IR) R (W) \text{ (suministrada)}$$

Ejer 2) $V=10V$ ¿ V_I ?



a) $I = 10 \text{ mA} = 0.01 \text{ A}$, $R = 1 \text{ k}\Omega = 1000 \Omega$

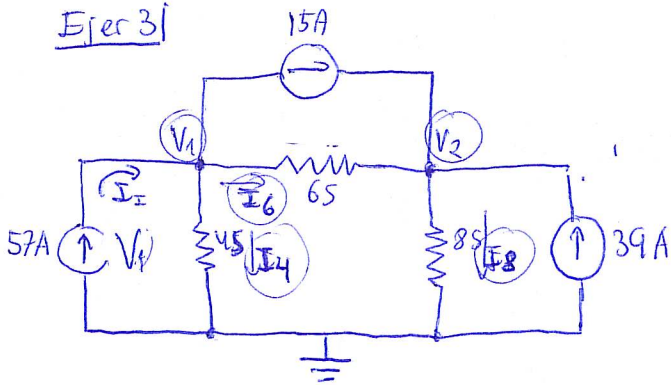
Por mallas: $-V_I - V + IR + IR = 0 \Rightarrow V_I = 2IR - V = 2 \cdot 0.01 \cdot 1000 - 10 = 10V$

b) $I = 1 \text{ mA} = 0.001 \text{ A}$, $R = 1 \text{ k}\Omega = 1000 \Omega$

Por mallas: $-V_I - V + IR + IR = 0 \Rightarrow V_I = 2IR - V = 2 \cdot 0.001 \cdot 1000 - 10 = -8V$

Son los mismos resultados que operando con $k\Omega$ y mA

Ejer 3|



$(s = \frac{1}{R})$

Método por nodos: (fuentes = Isolantes) opero

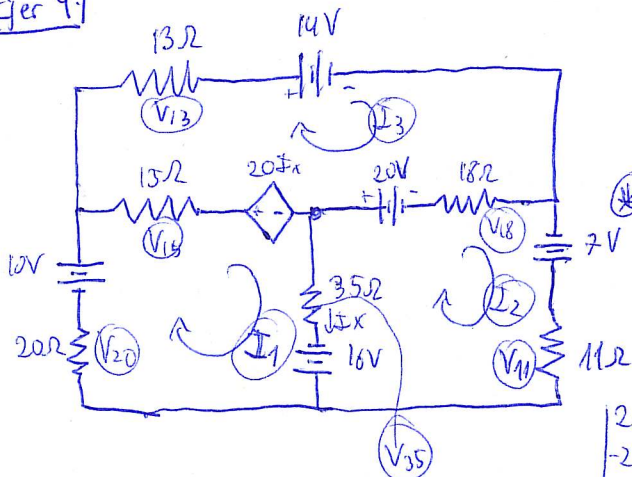
$$\begin{aligned} N1: 57 &= 15 + V_1 \cdot 4 + (V_1 - V_2) \cdot 6 \rightarrow 42 = 10V_1 - 6V_2 \\ N2: 15 + 39 + (V_1 - V_2) \cdot 6 &= V_2 \cdot 8 \rightarrow 54 = 14V_2 - 6V_1 \end{aligned} \begin{cases} V_1 = 8.77V \\ V_2 = 7.61V \end{cases}$$

$I_4 = V_1 \cdot 4 = 37.05A$

$I_6 = (V_1 - V_2) \cdot 6 = 6.96A$

$I_8 = V_2 \cdot 8 = 60.88A$

Ejer 4.1



$M1: I_1 \cdot 20 - 10 + (I_4 - I_3) \cdot 5 + (I_1 - I_2) \cdot 20 + (I_1 - I_2) \cdot 35 - 16 = 0$

$M2: -7 + 11I_2 + 16 + (I_2 - I_1) \cdot 35 + 20 + (I_2 - I_3) \cdot 18 = 0$

$M3: 14 + (I_3 - I_2) \cdot 18 - 20 - 20(I_1 - I_2) + (I_3 - I_1) \cdot 5 + 13I_3 = 0$

$$\begin{cases} 90I_1 - 55I_2 - 15I_3 = 26 \\ -35I_1 + 64I_2 - 18I_3 = -29 \\ -35I_1 + 2I_2 + 46I_3 = 6 \end{cases}$$

$$I_2 = \frac{\begin{vmatrix} 90 & 26 & -15 \\ -35 & -29 & -18 \\ -35 & 6 & 46 \end{vmatrix}}{\det}$$

$$I_1 = \frac{\begin{vmatrix} 26 & -55 & -15 \\ -29 & 64 & -18 \\ 6 & 2 & 46 \end{vmatrix}}{\begin{vmatrix} 90 & -55 & -15 \\ -35 & 64 & -18 \\ -35 & 2 & 46 \end{vmatrix}} = \det.$$

$$I_3 = \frac{\begin{vmatrix} 90 & -55 & 26 \\ -35 & 64 & -29 \\ -35 & 2 & 6 \end{vmatrix}}{\det}$$

$V_{20} = I_1 \cdot 20 (V)$

$V_{18} = (I_3 - I_2) \cdot 18 (V)$

$V_{15} = (I_1 - I_3) \cdot 15 (V)$

$V_{11} = I_2 \cdot 11 (V)$

$V_{13} = I_3 \cdot 13 (V)$

$V_{35} = (I_2 - I_1) \cdot 35 (V)$