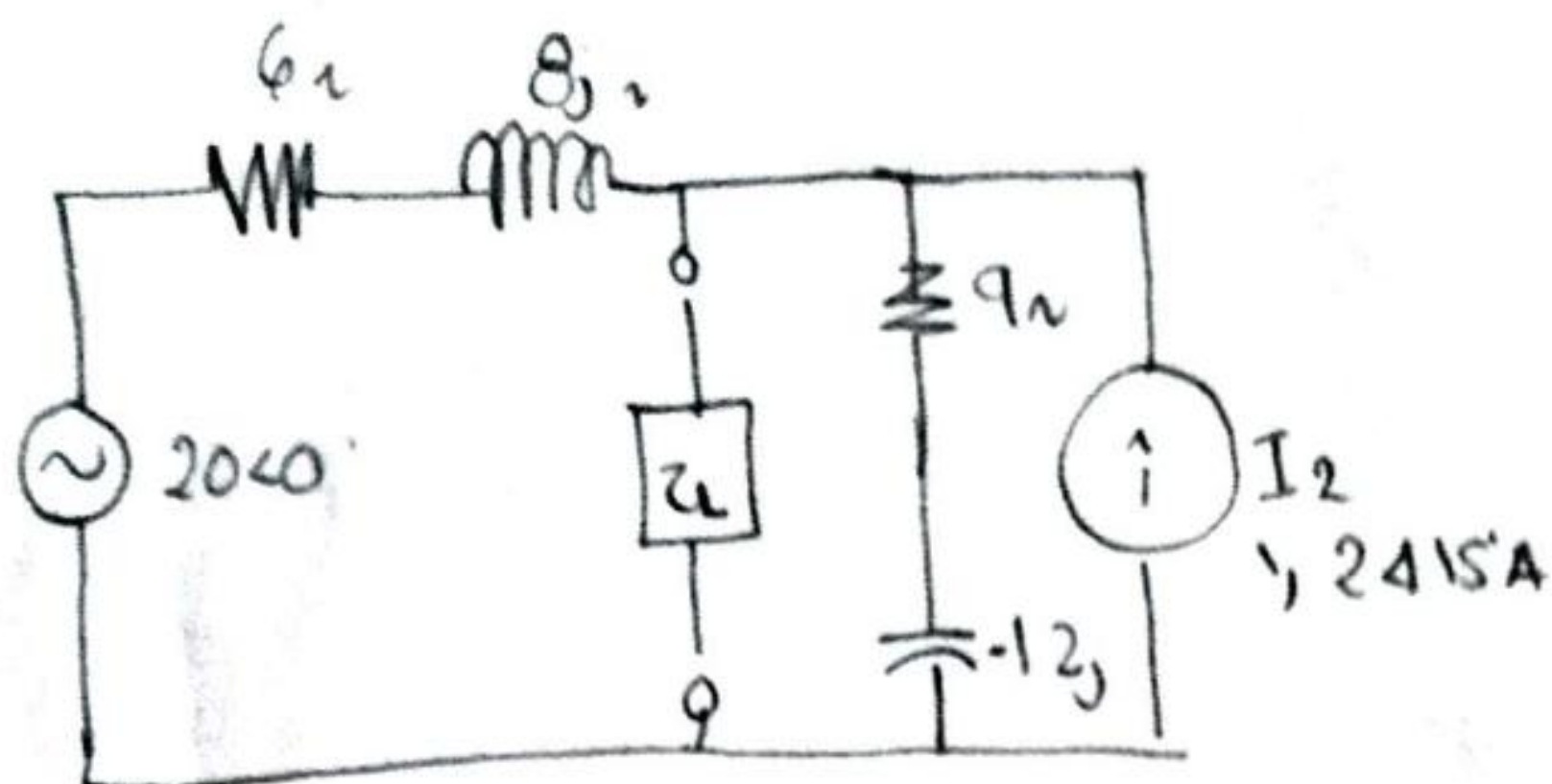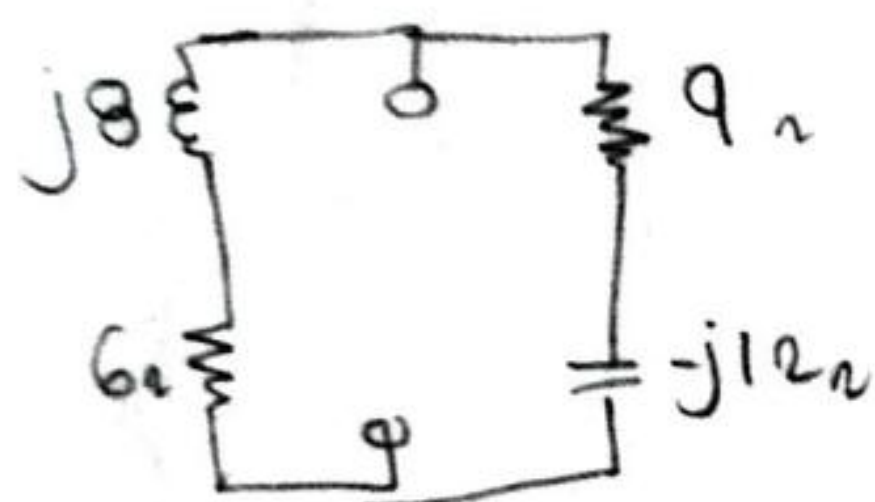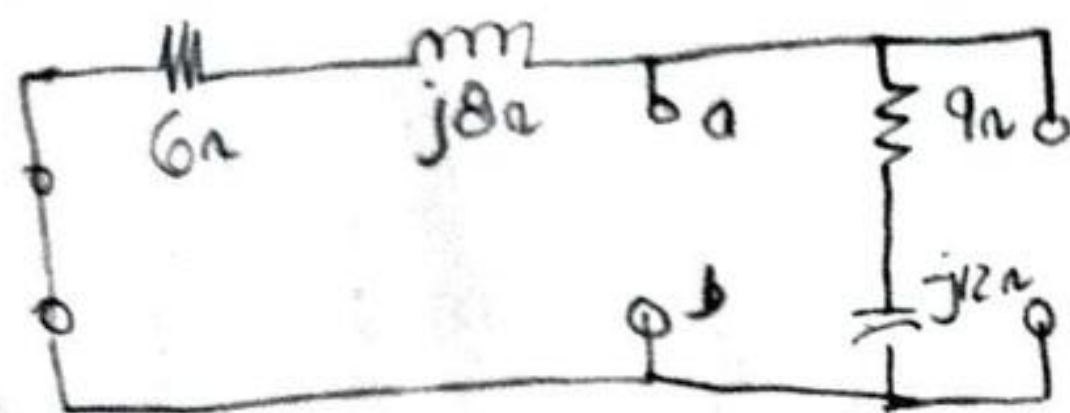Angie Marchena Mondell   Ced. 60465 0904.

Paso = Calcula ZTh apagamos las fuentes y quitamos Z_L
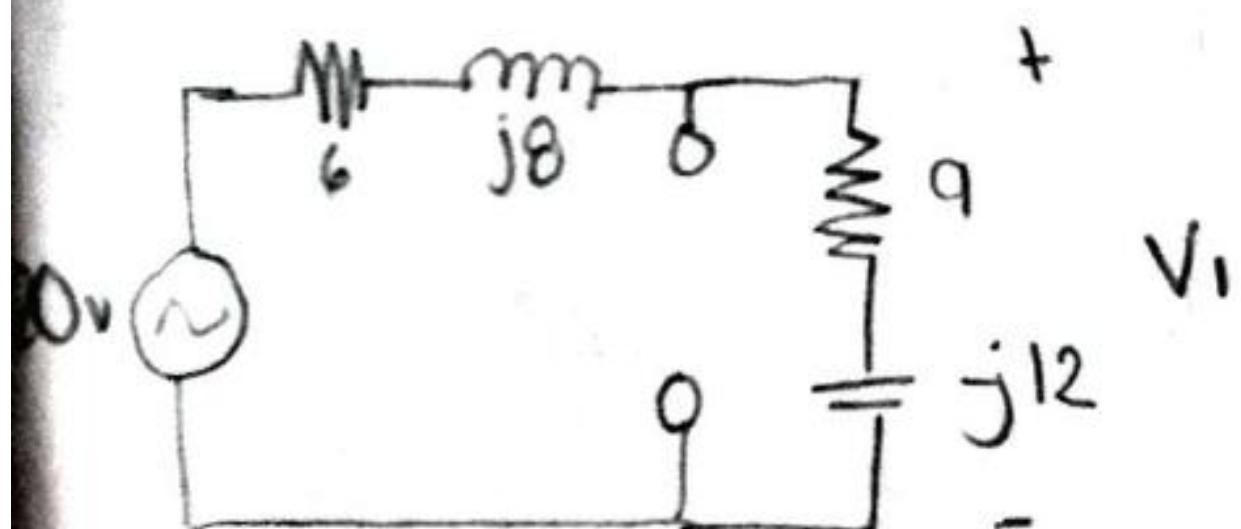

$$Z = (6+j8)\,\|\,(9-j12)$$

$$Z = \frac{(6+j8)\cdot(9-j12)}{(6+j8)+(9-j12)}$$

$$Z = \frac{2256}{241} + \frac{600}{241}j$$

$$Z = 9{,}336 + 2{,}489\,j$$
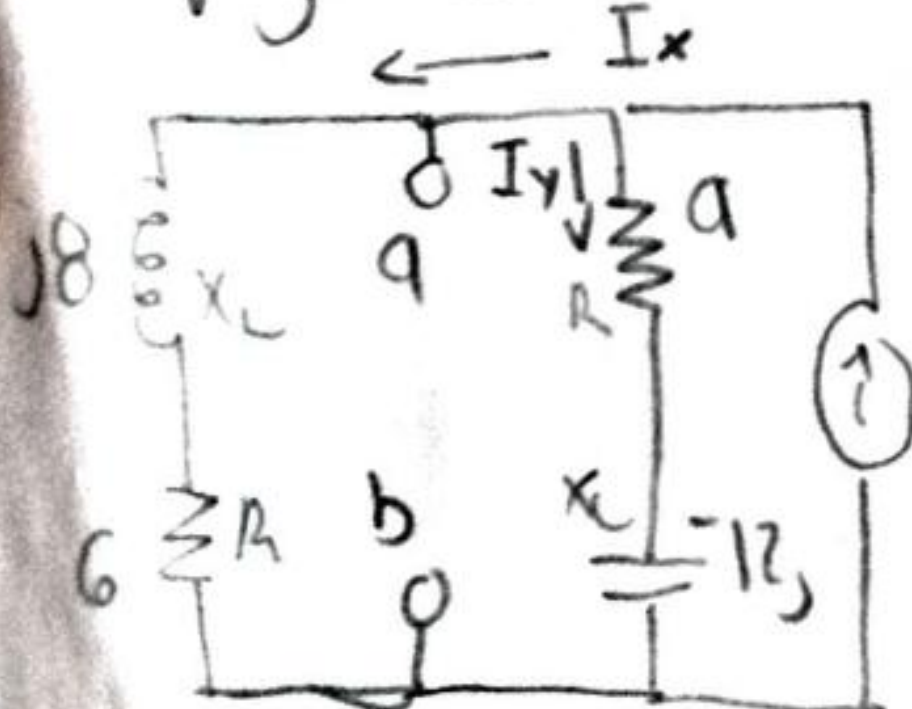
$$Z = 9{,}66 \angle 14{,}95 \iff ZTh$$

*** Calcula ETh (superposición)**

$$V_1 = 20 \cdot \frac{(9-j12)}{(6+j8)+(1-j12)}$$

$$V_1 = 19{,}32 \angle -38{,}20 \ U$$

*** Apagamos V**

$$V_2 = I_y \cdot (9-j12)$$

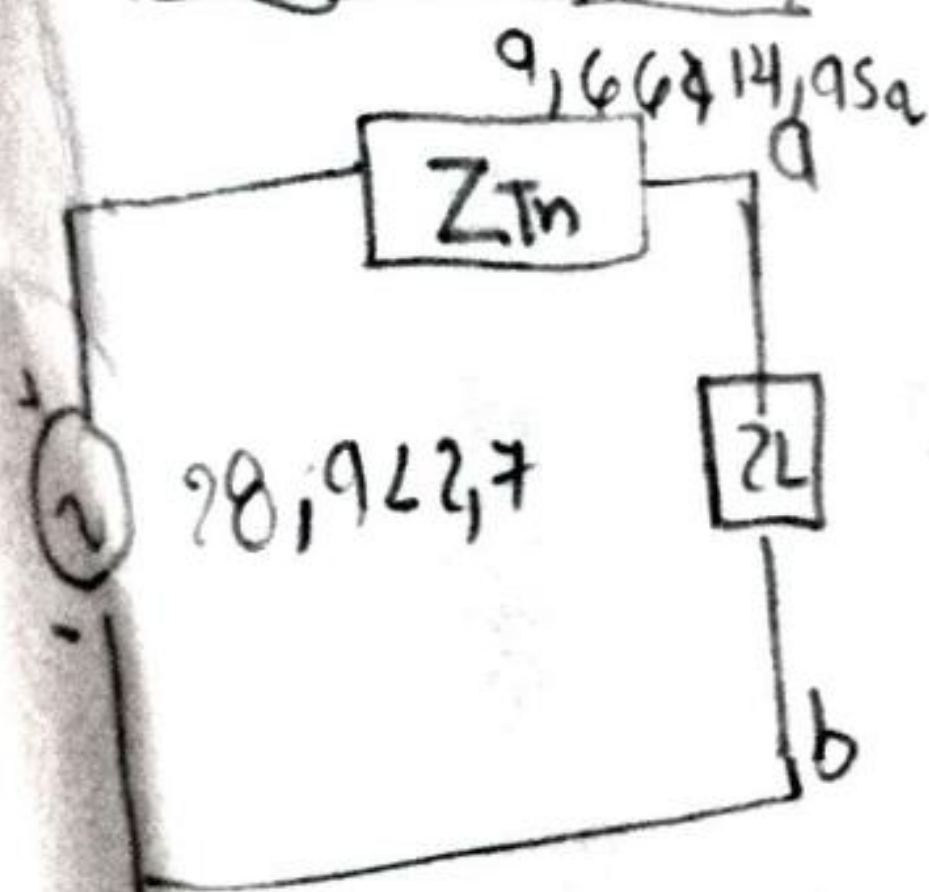$$I_y = 1{,}24\,15 \cdot \frac{Z}{9-12j}$$

$$I_y = 0{,}774 \angle 3{,}66$$

$$V_2 = (0{,}774 \angle 3{,}06)\,(9-j12)$$

$$V_2 = 11{,}60 \angle 29{,}93$$

$$ETh = V_1 + V_2$$

$$ETh = 28{,}9 \angle 2{,}72$$
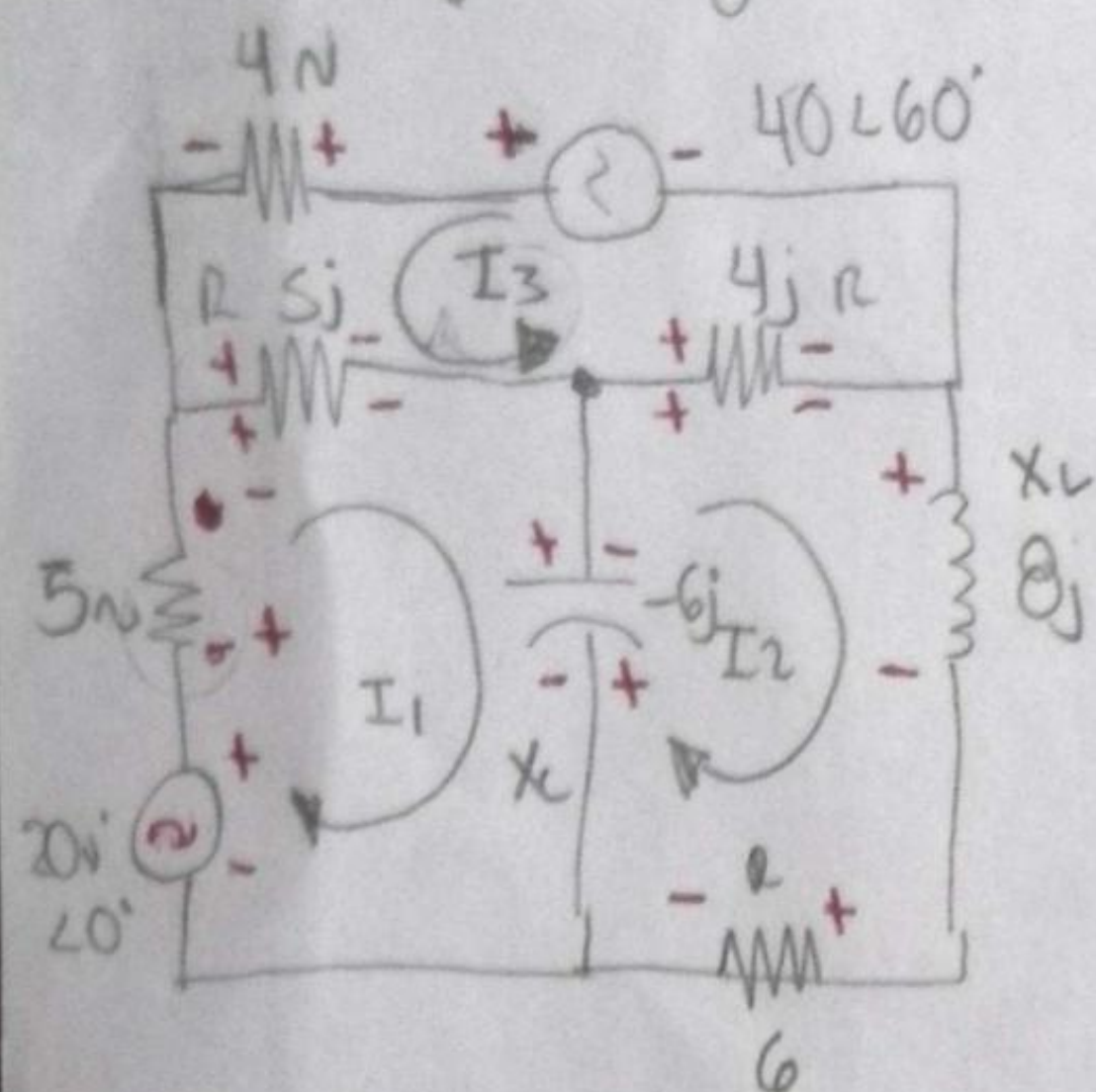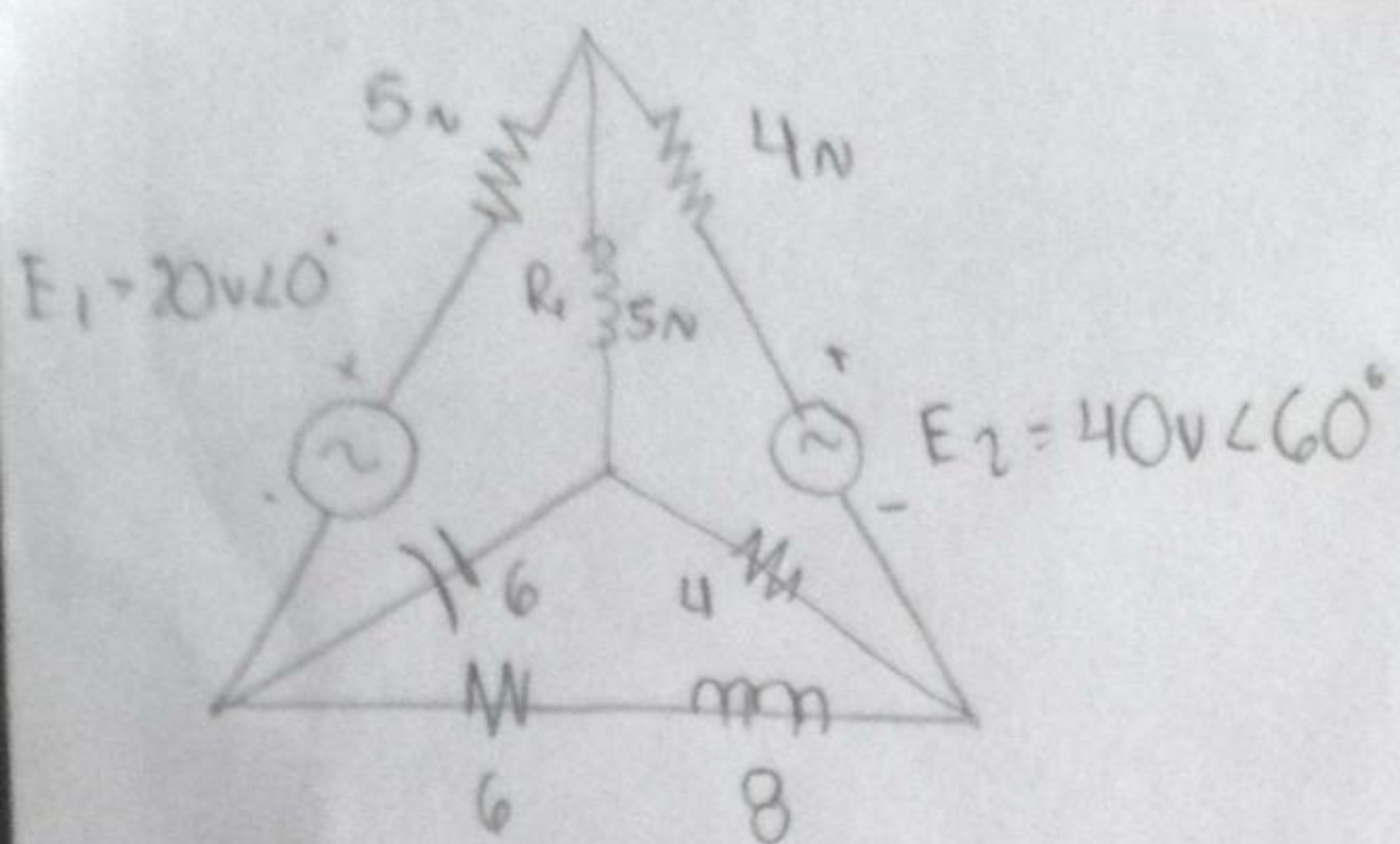
Malla 1

$E_1 - V_{R_1} - V_{L_3} - V_{C_2} = 0$

$V_{R_1} + V_L + V_C = E_1$

$5I_1 + 5j(I_1 + I_3) - 6j(I_1 - I_2) = 20v\angle 0°$

$(5-j)I_1 + 6jI_2 + 5jI_3 = 20v0°$ ✱

Malla 2

$E_1 - V_{C_1} - V_{R_3} - V_{L_2} - V_{R_2} = 0$

$V_{C_1} + V_{a_3} + V_{L_2} + V_{R_2} = E$

$-6j(I_2 - I_1) + 4(I_2 + I_3) + 8jI_2 + 6I_3 = 0$

$-6jI_2 + 6I_1 + 4I_2 + 4I_3 + 8jI_2 + 6I_3 = 0$

$6jI_1 + (10 + 2j)I_2 + 4I_3 = 0$ ✱

Malla 3

$E_2 - V_{R_3} - V_{C_1} - V_{R_2}$

$V_{R_3} + V_{C_1} + V_{R_3} = E_2$

$4I_3 - 5j(I_3 + I_1) + 4(I_3 + I_2) = 40\angle 60°$

$5jI_1 + 4I_2 + (8+5)I_3 = 40\angle 60$