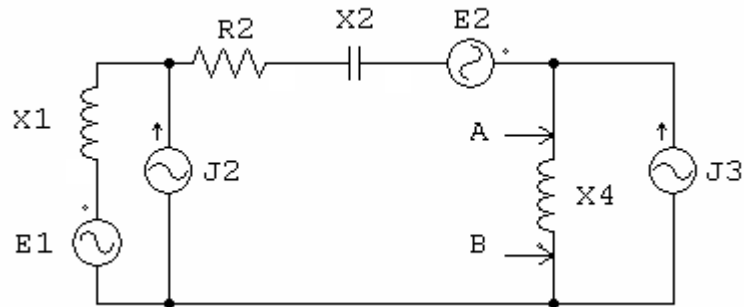


ESERCIZIO 1

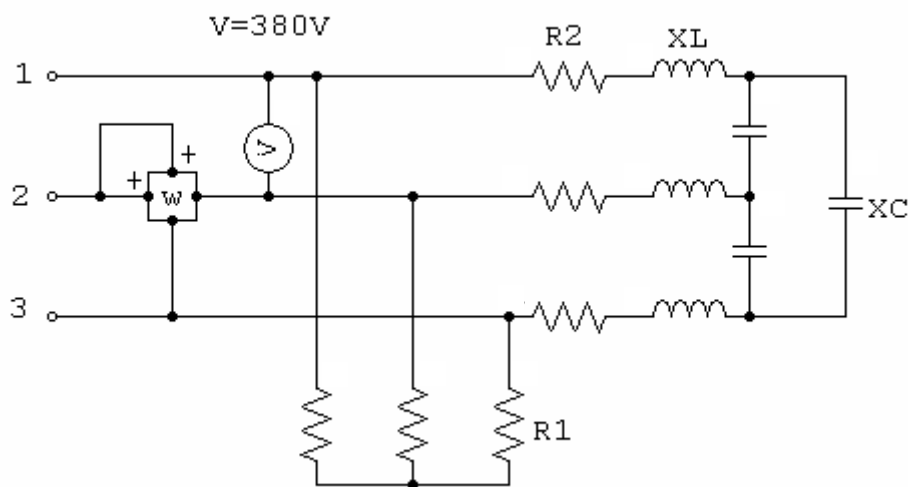
Per la rete illustrata in figura, determinare il circuito equivalente di Thevenin ai morsetti AB e la potenza apparente assorbita dall'induttore di reattanza X_4 .



Dati nel dominio dei fasori: $X_1=X_2=1\Omega$, $R_2=X_4=2\Omega$, $E_1=2$, $E_2=3j$, $J_3=2$, $J_2=3$

ESERCIZIO 2

Per il sistema trifase equilibrato illustrato in figura, che si suppone alimentato da una terna simmetrica diretta di tensioni concatenate, si valuti l'indicazione del wattmetro.



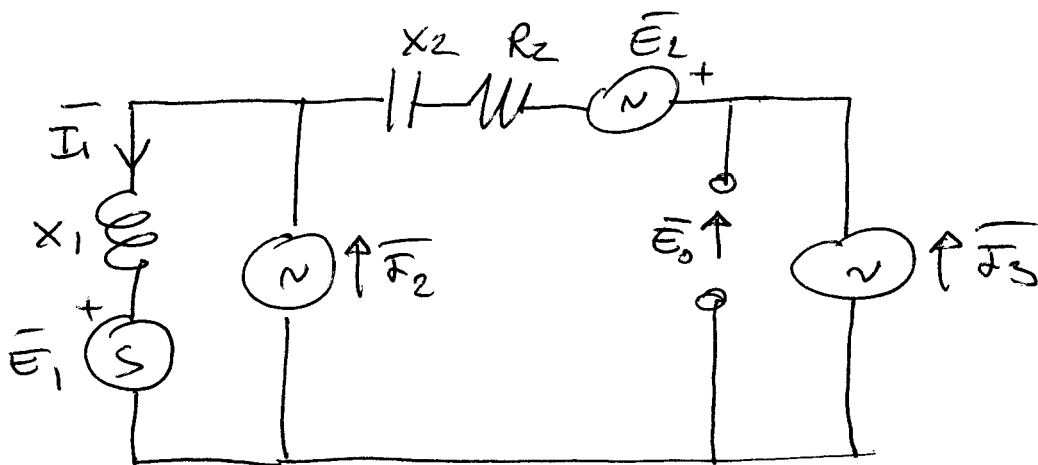
Dati

$R_1=2\Omega$, $R_2=1\Omega$, $X_C=3\Omega$, $X_L=2\Omega$

Allievo.....

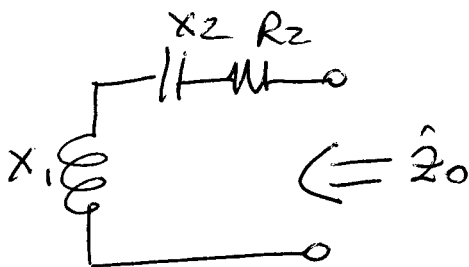
Matricola.....

ESERCIZIO #1

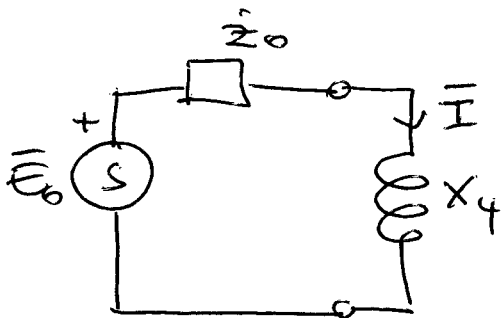


$$\bar{I}_1 = \bar{F}_2 + \bar{F}_3$$

$$\bar{E}_0 = \bar{E}_2 + (R_2 - jX_2) \bar{F}_3 + jX_1 \bar{I}_1 + \bar{E}_1 = 6 + 6j$$



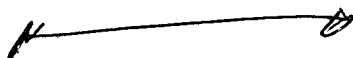
$$\hat{z}_0 = R_2 + j(X_1 - X_2) = 2 \Omega$$



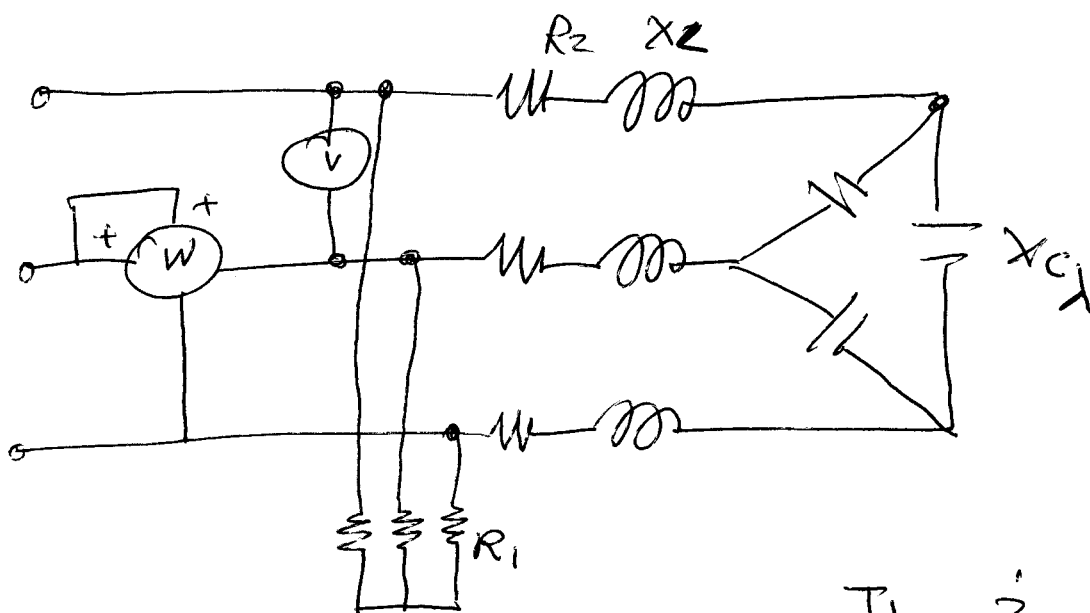
$$\bar{I} = \frac{\bar{E}_0}{\hat{z}_0 + jX_4} = 3A$$

$$Q_{X_4} = X_4 I^2 = 18 \text{ VAr}$$

$$A = Q_{X_4}$$

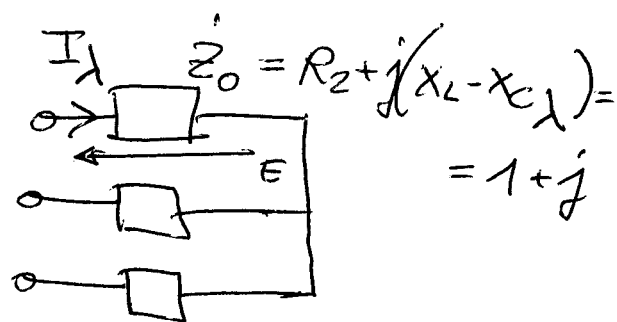
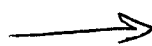


ESERCIZIO * 2



$$E = \frac{V}{\sqrt{3}} = 220V$$

$$X_{C1} = \frac{X_{C\Delta}}{3}$$



$$I_1 = \frac{220}{\sqrt{2}}$$

$$P_{R1} = 3 \cdot \frac{220^2}{R1}$$

$$Q_{R1} = 0$$

$$P_{\Delta} = 3R_2 I_1^2 = 3 \cdot \frac{220^2}{2} \text{ W}$$

$$Q_{\Delta} = 3(X_L - X_{C1}) I_1^2 = 3 \cdot \frac{220^2}{2} \text{ VAR}$$

$$P_{TOT} = P_{R1} + P_{\Delta} = 3 \cdot 220^2 \text{ W}$$

$$Q_{TOT} = Q_{R1} + Q_{\Delta} = 3 \cdot \frac{220^2}{2} \text{ VAR}$$

$$\varphi_{TOT} = \tan^{-1} 0.5 \approx 27^\circ$$

$$A_{TOT} = \sqrt{P_{TOT}^2 + Q_{TOT}^2} = \frac{3 \cdot 220^2}{2} \sqrt{5} \text{ VA}$$

$$I_{TOT} = \frac{A_{TOT}}{3 \cdot 220} = 110\sqrt{5} \text{ A}$$

$$W = \sqrt{2} V_{23} \cdot \bar{I}_2 = 380 \cdot 110\sqrt{5} \cos(30^\circ + 27^\circ) \approx 51500 \text{ W}$$

