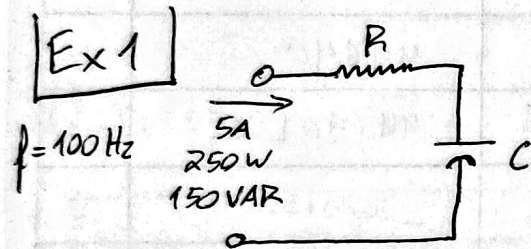


Avaliação 1

Ex 1



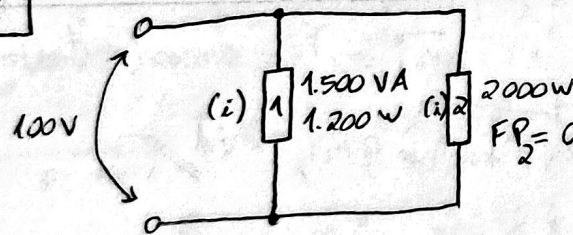
$$P = 250 \text{ W}; Q = 150 \text{ VAR}; P_{\text{ap}} = \sqrt{P^2 + Q^2} = 291,548 \text{ VA}$$

$$P = I_{\text{ef}}^2 \cdot R \Rightarrow R = \frac{P}{I_{\text{ef}}^2} = 10 \Omega$$

$$Q = I_{\text{ef}}^2 \cdot X_C \Rightarrow X_C = \frac{Q}{I_{\text{ef}}^2} = 6 \Omega$$

$$X_C = \frac{1}{\omega C} = \frac{1}{2\pi f C} \Rightarrow C = \frac{1}{2\pi f X_C} = 265,258 \mu\text{F}$$

Ex 2



$$\textcircled{1} P_{\text{ap}_1} = 1500 \text{ VA}; P_1 = 1.200 \text{ W}; Q_1 = 900 \text{ VAR}$$

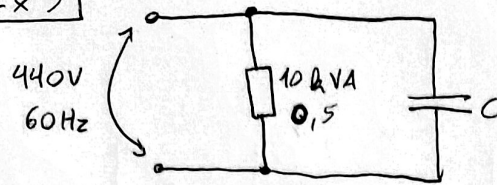
$$\textcircled{2} P_{\text{ap}_2} = 3333 \text{ VA}; P_2 = 2000 \text{ W}; Q_2 = 2667 \text{ VAR}$$

$$a) P = P_1 + P_2 = 3200 \text{ W}; Q = Q_1 + Q_2 = 3567 \text{ VAR}$$

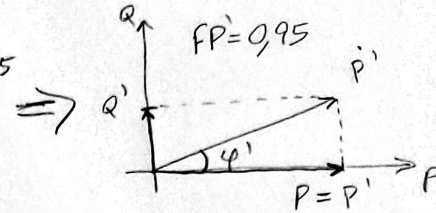
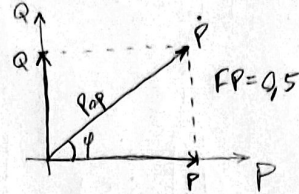
$$b) P_{\text{ap}} = \sqrt{P^2 + Q^2} = 4792 \text{ VA}; P_{\text{ap}} = I_{\text{ef}} \cdot V_{\text{ef}} \Rightarrow I_{\text{ef}} = \frac{P_{\text{ap}}}{V_{\text{ef}}} = 47,92 \text{ A}$$

$$c) \text{FP} = \cos \varphi = \frac{P}{P_{\text{ap}}} = 0,668 \text{ (i)}$$

Ex 3



$$P_{ap} = 10 \text{ kVA}; P = 5 \text{ kVA}; Q = 8,660 \text{ VAR}$$



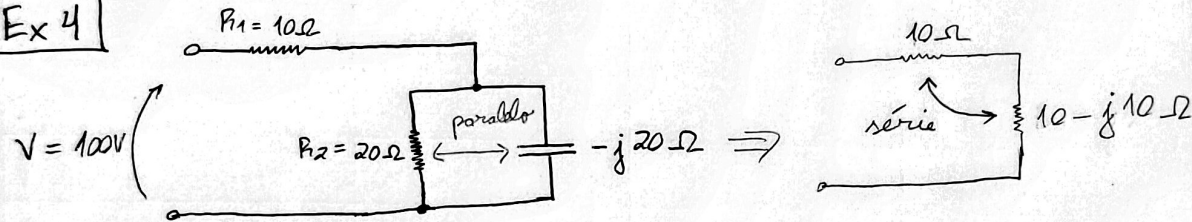
$$FP = \cos \phi = \frac{P}{P_{ap}} \Rightarrow P_{ap}' = \frac{P}{FP} = \frac{5}{0.95} = 5,263 \text{ kVA}$$

$$Q' = \sqrt{P_{ap}'^2 - P^2} = 1,643 \text{ VAR}_i$$

$$\Delta Q = Q' - Q = -7,017 \text{ VAR}_c$$

$$X_c = \frac{V_{ef}^2}{\Delta Q} = \frac{-1}{2\pi f C} \Rightarrow C = \frac{-\Delta Q}{2\pi f V_{ef}^2} = 96,142 \mu F$$

Ex 4



$$a) P = \frac{V_{ef}^2}{R} = 500 \text{ W}$$

$$b) Q = \frac{V_{ef}^2}{X_c} = -1000 \text{ VAR}_c$$

$$Z = 20 - j10 \Omega$$

$$R = 20 \Omega \quad X_c = -10 \Omega$$

$$c) \dot{P} = 500 - j1000 \text{ VA} = 1118 \angle -63^\circ \text{ VA}$$

$$\theta = -63^\circ$$