



$$V := (100 \angle 30^\circ) \text{ V} \quad \omega := 50 \frac{\text{rad}}{\text{s}}$$

$$R := 50 \, \Omega$$

$$L := 1.5 \text{ H} \quad X_L := j \cdot \omega \cdot L = 75i \, \Omega$$

$$C := 200 \, \mu\text{F} \quad X_C := \frac{1}{j \cdot \omega \cdot C} = -100i \, \Omega$$

Calcolare l'impedenza totale:

$$Z := R + X_L + X_C = 100 + 75i - 100i = (50 - 25i) \, \Omega$$

$$|Z| = \sqrt{50^2 + 25^2} = 55.902 \, \Omega$$

$$\angle(Z) = \text{atan}\left(\frac{-25}{100}\right) = -26.565$$

$$Z = 55.902 \angle -26.565$$

Calcolare la corrente:

$$I := \frac{V}{Z} = \frac{100 \angle 30}{55.902 \angle -26.565} = \frac{100}{55.902} \angle (30 + 26.565) = 1.789 \angle 56.565$$

Calcolare φ e $\cos(\varphi)$:

$$\varphi := \angle(Z) = -26.565$$

$$\cos(\varphi) = 0.894$$

Calcolare le potenze: Attiva, Reattiva e Complessa

$$V_{EFF} := \frac{|V|}{\sqrt{2}} = 70.711 \text{ V} \quad I_{EFF} := \frac{|I|}{\sqrt{2}} = 1.265 \text{ A}$$

$$P := V_{EFF} \cdot I_{EFF} \cdot \cos(\varphi) = 80 \text{ WATT}$$

$$Q := V_{EFF} \cdot I_{EFF} \cdot \sin(\varphi) = -40 \text{ VAR}$$

$$S := P + j \cdot Q = 80 - j 40 \text{ VA}$$

$$X_L(a, b) := j \cdot a \cdot b$$

$$X_C(a, b) := \frac{1}{j \cdot a \cdot b}$$

$$R := 50 \, \Omega$$

$$L := 1.5 \, H$$

$$C := 200 \, \mu F$$

$$X_L(\omega, L) = 75i \, \Omega$$

$$X_C(\omega, C) = -100i \, \Omega$$

$$Z := R + X_L(\omega, L) + X_C(\omega, C) = (50 - 25i) \, \Omega$$

$$\text{polar}(Z) = [55.902 \, \Omega \quad -26.565]$$

$$I := \frac{V}{Z} = (0.986 + 1.493i) \, A$$

$$\text{polar}(I) = [1.789 \, A \quad 56.565]$$

$$\varphi := \angle(Z) = -26.565$$

$$\cos(\text{radian}(\varphi)) = 0.894$$

$$V_{EFF} := \frac{|V|}{\sqrt{2}} = 70.711 \, V$$

$$I_{EFF} := \frac{|I|}{\sqrt{2}} = 1.265 \, A$$

$$P := V_{EFF} \cdot I_{EFF} \cdot \cos(\text{radian}(\varphi)) = 80 \, W \quad [Watt]$$

$$Q := V_{EFF} \cdot I_{EFF} \cdot \sin(\text{radian}(\varphi)) = -40 \, W \quad [VAR]$$

$$S := P + j \cdot Q = (80 - 40i) \, W$$

$$\text{polar}(S) = [89.443 \, W \quad -26.565] \quad [VA]$$