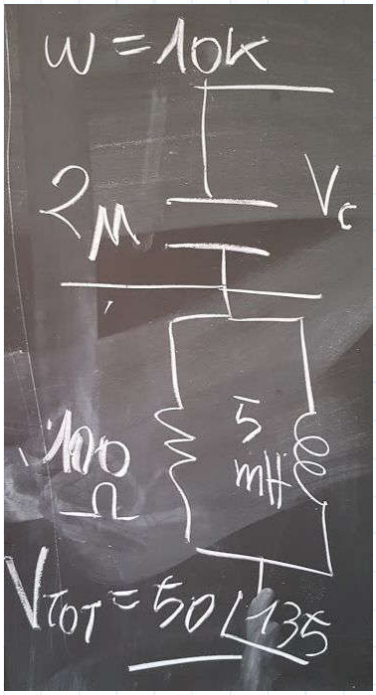

$R := 100\ \Omega \qquad L := 5\ mH \qquad C := 2\ \mu F$

$\omega := 10000\ \frac{rad}{s} \qquad V_{tot} := (50 \angle 135\ °)\ V$

$X_L := j \cdot \omega \cdot L = 50i\ \Omega \qquad X_C := \frac{1}{j \cdot \omega \cdot C} = -50i\ \Omega$

Calcolare Z_{RL}

$$Z_{RL} := \frac{R \cdot X_L}{R + X_L} = \frac{100 \cdot j50}{100 + j50} = \frac{j5000}{\sqrt[2]{100^2 + 50^2}\ \angle arctg\left(\frac{50}{100}\right)}$$

$$= \frac{j5000}{111.8 \angle 26.6} = \frac{5000 \angle 90}{111.8 \angle 26.6} = \frac{5000}{111.8} \angle (90 - 26.6)$$

polare

$$= 44.7 \angle 63.4$$

complessa

$$= 44.7 \cos(63.4\ °) + j \cdot 44.7 \sin(63.4\ °) = 20 + j40$$

Calcolare V_{RL} e V_C

$$V_{RL} := \frac{Z_{RL}}{Z_{RL} + X_C} V_{tot} = \frac{44.7 \angle 63.4}{20 + j40 - j50} \cdot V_{tot} = \frac{44.7 \angle 63.4}{20 - j10} \cdot V_{tot} = \frac{44.7 \angle 63.4 \cdot V_{tot}}{\sqrt[2]{20^2 + 10^2}\ \angle arctg\left(\frac{-10}{20}\right)}$$

$$= \frac{44.7 \angle 63.4}{22.4 \angle -26.6} \cdot 50 \angle 135 = \frac{44.7}{22.4} \cdot 50 \angle (63.4 + 135 + 26.6) = 100 \angle 225$$

polare

complessa

$$= 100 \cos(225\ °) + j \cdot 100 \sin(225\ °) = -70.7 - j70.7$$

$$V_C := \frac{X_C}{Z_{RL} + X_C} V_{tot} = \frac{50 \angle -90}{22.4 \angle -26.6} \cdot 50 \angle 135 = \frac{50}{22.4} \cdot 50 \angle (-90 + 135 + 26.6)$$

polare

$$= 111.6 \angle 71.6$$

complessa

$$= 111.6\ cos(71.6\ °) + j \cdot 111.6\ sin(71.6\ °) = 35.2 + j106$$

Verificare che $V_{tot} = V_{RL} + V_C$

$$V_{RL} + V_C = (-70.7 - j \cdot 70.7) + (35.2 + j \cdot 106) = -35.5 + 35.3i$$

$$V_{tot} = 50 \cos(135\ °) + j \cdot 50 \sin(135\ °) = -35.355 + 35.355i$$