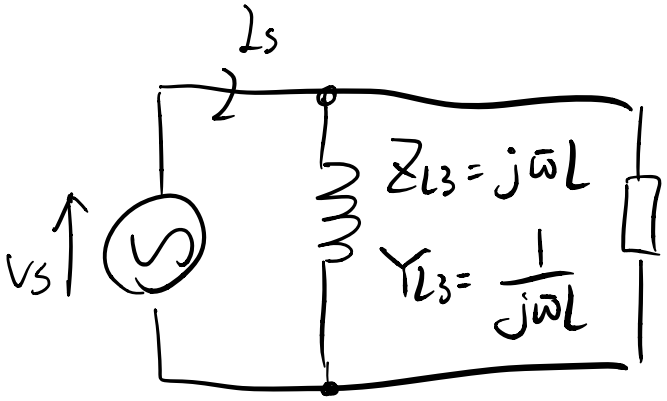


$$Z_{RC} = R_2 - j\left(\frac{1}{\omega C_1}\right)$$

$$Y_{RC} = \frac{1}{Z_{RC}}$$

$$Y_{total} = Y_{L3} + Y_{RC}$$

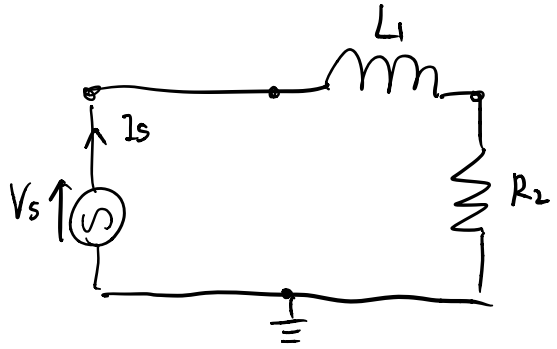
144.6863.

$$Z_{RC} = 63 - j\frac{1}{2\times 2\times 50\times 22\times 10^{-6}}$$

$$= 157.807252\, e^{j-1.160129068.}$$

$$\frac{1}{\omega L} = 144.6863$$

$$\frac{1}{\omega\, 144.6863} = L.$$



$$P_{AVG} = V_{rms} I_{rms} \cos(\theta)$$

$$V_{rms} = \frac{V_m}{\sqrt{2}} \qquad I_{rms} = \frac{2m}{\sqrt{2}}.$$

$$I_s = \frac{V_s}{R_2 + j\omega L}$$

$$= \frac{100\, e^{j0}}{62 + j 2\pi \times 50 \times 408 \times 10^{-3}}$$

$$= \frac{100\, e^{j0}}{62 + 128.17698\, j.}$$

$$= \frac{100\, e^{j0}}{142.3844734\, e^{j\, 1.120268519}}$$

$$= 0.702323769.$$

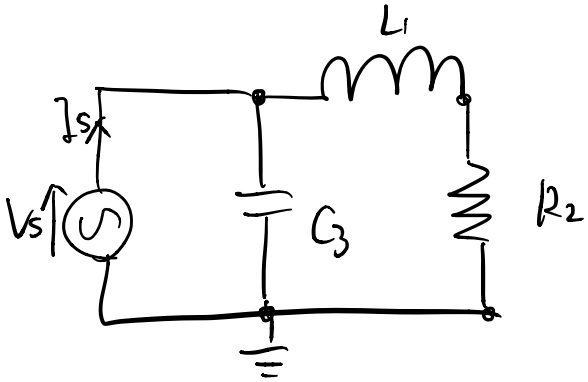
power-factor $= \cos(\theta)$

$= \cos(1.120268519).$

$= 0.435440365.$

$$P_{avg} = \frac{100 \times 0.702323769 \times 0.435440365}{2}$$

$= 15.291018 W.$



$$Z_{RL} = R_2 + j\omega L$$

$$Y_{RL} = 1 / Z_{RL}$$

$$Y_{C3} = j\omega C$$

$$Y_{total} = Y_{RL} + Y_{C3}$$

$$= \frac{1}{R_2 + j\omega L} + j\omega C.$$

$$C_3 = -1 / \omega \cdot \mathrm{Im}[Y_{RL}]$$

129.747

$$Z_{RL} = 58 + j\,100\pi \times 413 \times 10^{-3}$$

$= 142.123\, e^{j 1150422516}$

$V_S = (N_S / N_P) \cdot V_P$

$= (22/284) \times 298.$

$= (26/275) \times 259. = 24.48$

$Z_S = V_S / R_{1009}$

$= (25/292) \cdot 258$

$= 22.089$

$I_S = V_S / 11 = 2.0089$

$I_P = (N_S / N_P)\, I_S$

$= (25/292) \times I_S.$

$= 0.17192511 4$

$P_P = V_P \times I_P$

$= 258 \times I_P$