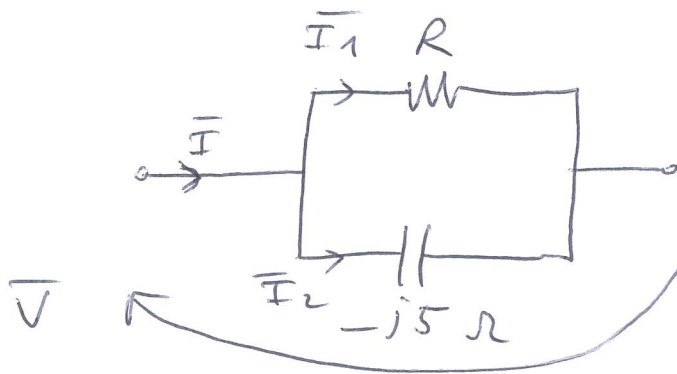


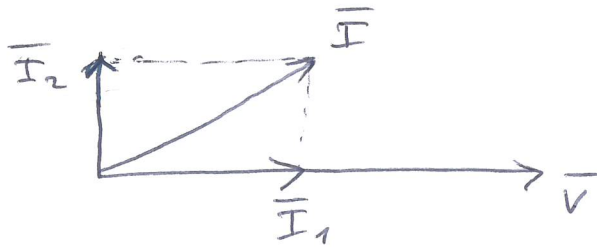
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2)



$$|\bar{I}| = 40 \text{ A}$$

$$|\bar{I}_1| = 32 \text{ A}$$



$$|\bar{I}_1|^2 + |\bar{I}_2|^2 = |\bar{I}|^2$$

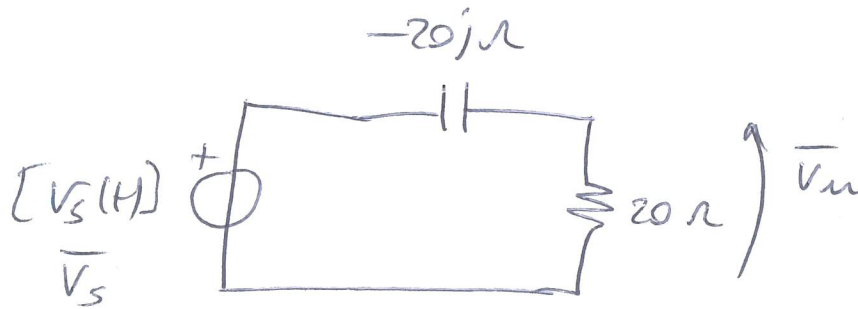
$$\Rightarrow |\bar{I}_2| = 24 \text{ A} ; \bar{I}_2 = 24j \text{ A}$$

$$\bar{V} = z_c \bar{I}_2 = (-j5)(24j) = 120 \text{ V}$$

$$R = \frac{\bar{V}}{\bar{I}_1} = \frac{120}{32} = 3.75 \Omega$$

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3)



$$V_S(t) = 10 \cos(\omega t - \frac{\pi}{4}) \text{ V}$$

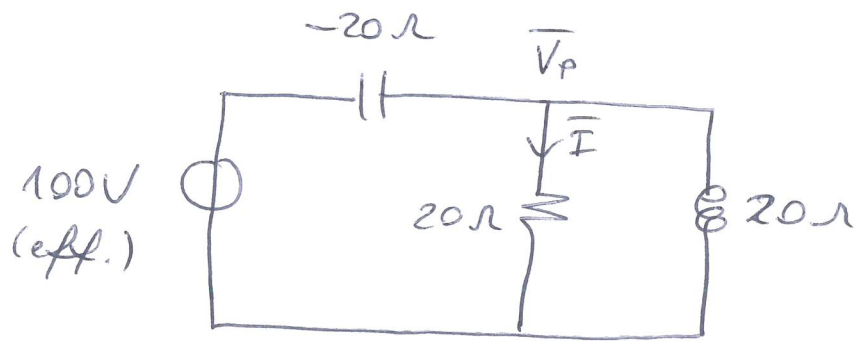
$$\overline{V}_S = 10 e^{-j\frac{\pi}{4}} \text{ V} \quad [\text{VAL. MAX.}]$$

$$\begin{aligned} \overline{V}_m &= \frac{20}{20 - 20j} 10 e^{-j\frac{\pi}{4}} = \\ &= \frac{10 e^{-j\frac{\pi}{4}}}{1 - j} = \frac{10}{\sqrt{2}} \text{ V} \end{aligned}$$

$$\overline{V}_{m \text{ aff.}} = \frac{\overline{V}_m}{\sqrt{2}} = 5 \text{ V}$$

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4)

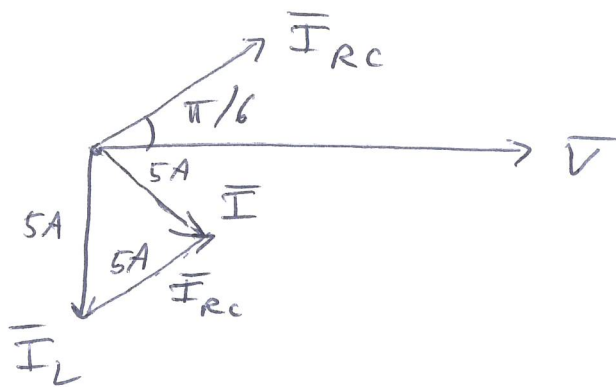
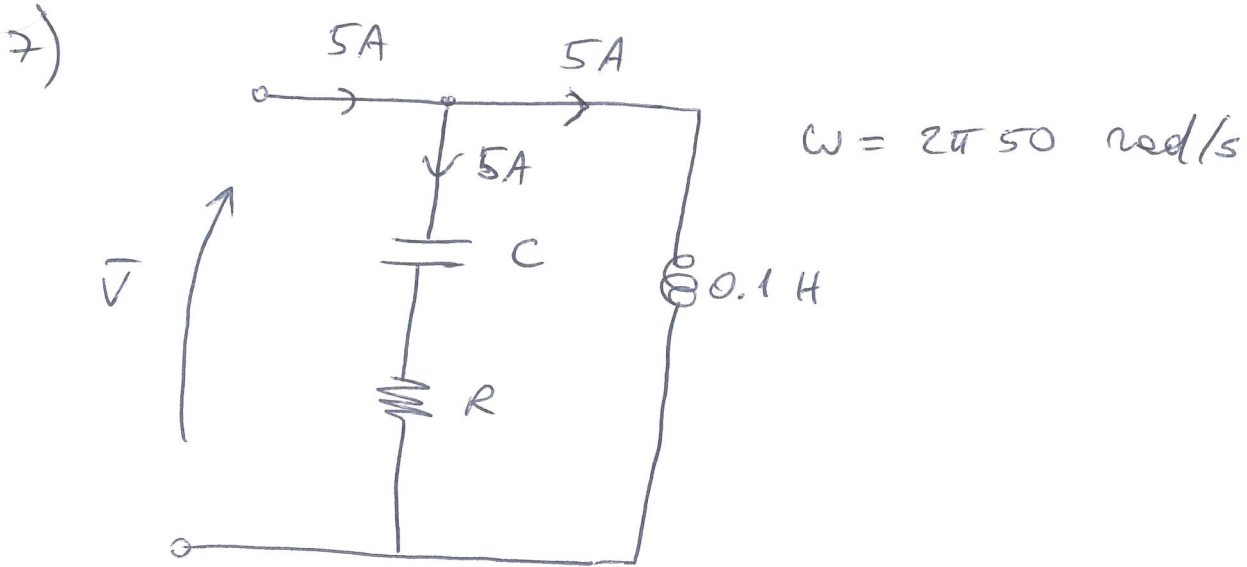


$$\bar{V}_p = \frac{\frac{100}{-20j}}{\frac{1}{-20j} + \frac{1}{20} + \frac{1}{20j}} = \frac{100}{-j} = 100j \text{ V}$$

$$\bar{I} = 5j \text{ A}$$

$$i(t) = 5\sqrt{2} \cos\left(\omega t + \frac{\pi}{2}\right) \text{ A}$$

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$$\bar{V} = j\omega L \cdot \bar{I}_L = j\pi 10(-j5) = \pi 50 \text{ V}$$

$$\bar{I}_{Rc} = \frac{\bar{V}}{R + jX_c} \quad R + jX_c = \frac{\pi 50}{5 e^{j\pi/6}} = \pi 10 e^{-j\pi/6} \Omega$$

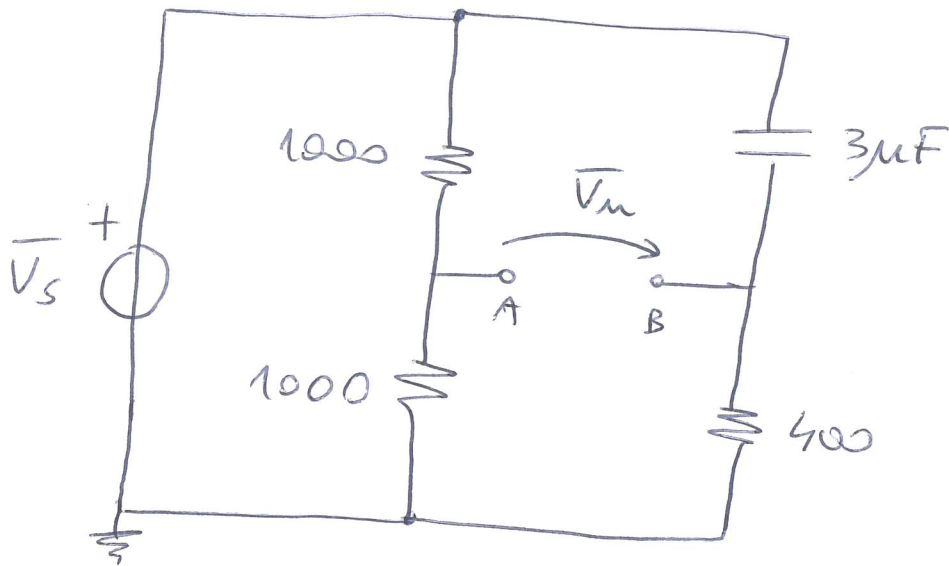
$$R = \pi 10 \cdot \cos \frac{\pi}{6} = \pi 5\sqrt{3} \Omega \quad (27.2 \Omega)$$

$$X_c = -\pi 10 \sin \frac{\pi}{6} = -\pi 5 = -\frac{1}{\omega C}$$

$$C = \frac{1}{\omega \pi 5} = \frac{1}{\pi^2 500} \text{ F} \quad (203 \mu\text{F})$$

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15)



$$\bar{V}_m = \bar{V}_B - \bar{V}_A = \left[\frac{400}{400 + j\omega C} - \frac{1000}{1000 + 1000} \right] \bar{V}_s =$$

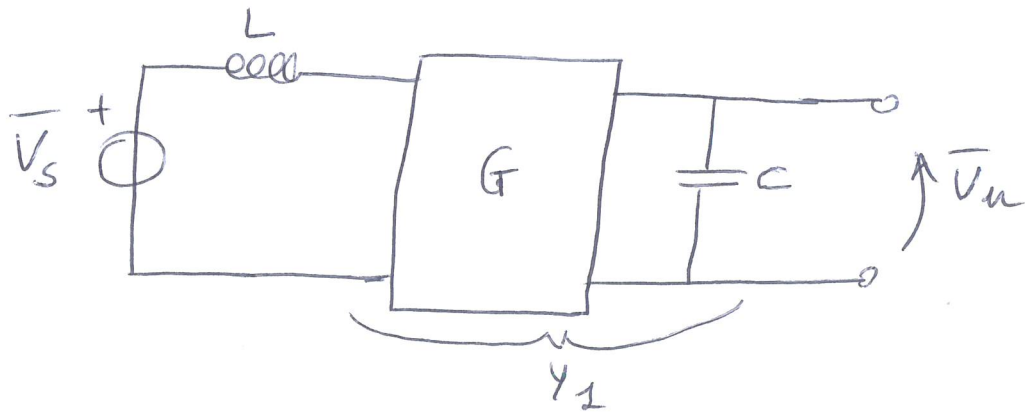
$$= \left[\frac{400j\omega C}{1 + j400\omega C} - \frac{1}{2} \right] \bar{V}_s =$$

$$= -\frac{1}{2} \left[\frac{1 - j400\omega C}{1 + j400\omega C} \right] \bar{V}_s \quad \text{PASSA-TUTTO}$$

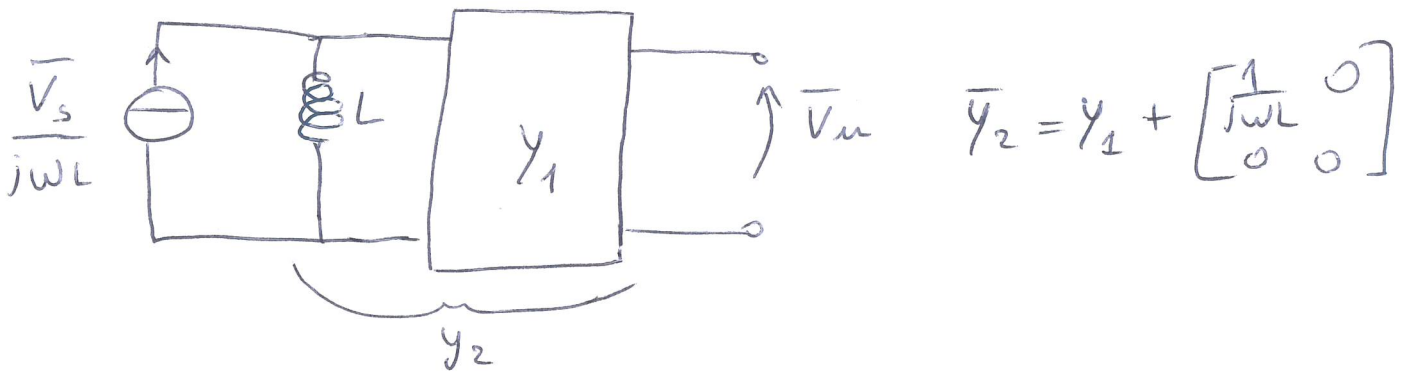
$$400C = 4 \times 10^2 \times 3 \times 10^{-6} = 1.2 \times 10^{-3}$$

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16)



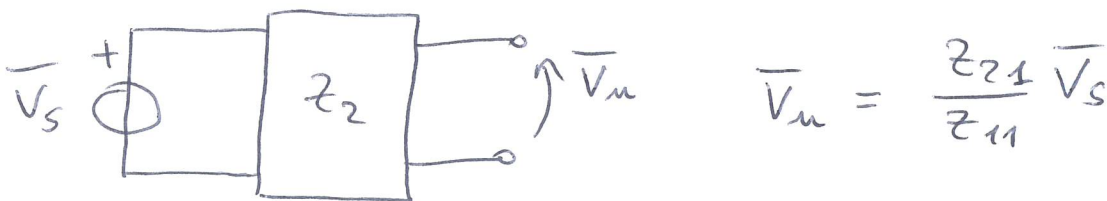
$$Y_1 = G + \begin{bmatrix} 0 & 0 \\ 0 & j\omega C \end{bmatrix}$$



$$\begin{cases} \bar{V}_u = z_{21} \bar{I}_1 = z_{21} \frac{\bar{V}_s}{j\omega L} \\ z_{21} = \frac{-y_{21}}{\Delta Y_2} \end{cases}$$

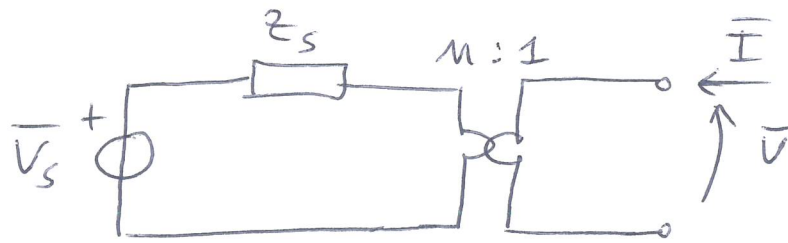
oppure:

$$z_1 = Y_1^{-1} \quad z_2 = z_1 + \begin{bmatrix} j\omega L & 0 \\ 0 & 0 \end{bmatrix}$$

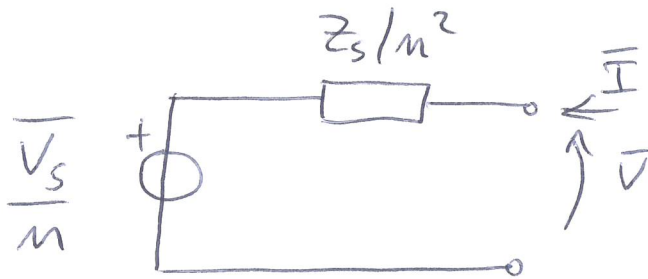


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17)

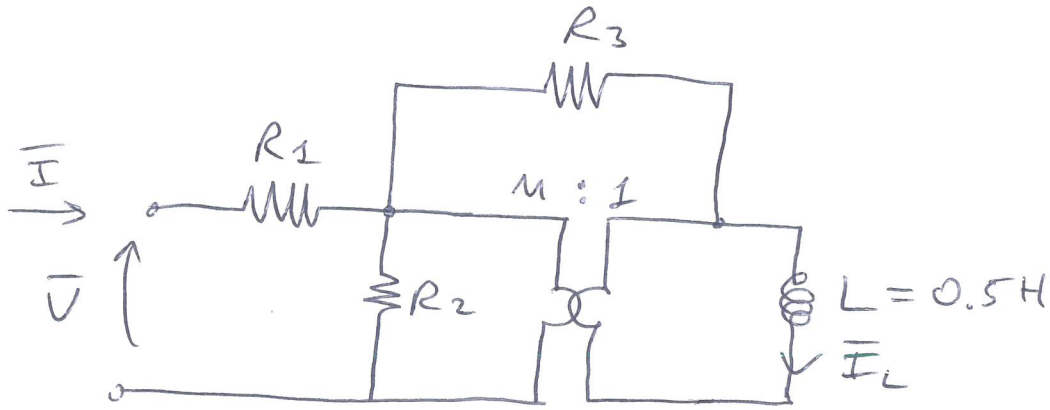


Zlevení :



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20)



$$\bar{V}_1 = 100 \text{ V}$$

$$\bar{I}_1 = 5 - j5 \text{ A}$$

$$f = 50 \text{ Hz}$$

$$P_c = \bar{V} \bar{I}^* = 100 (5 + j5) = 500 + j500 \text{ VA}$$

$$Q_L = 500 = \omega L |\bar{I}_L|^2 = 2\pi \cdot 50 \cdot 0.5 |\bar{I}_L|^2$$

$$|\bar{I}_L|^2 = \frac{500}{2\pi \cdot 50 \cdot 0.5} = \frac{10}{\pi} \text{ A}^2 \quad |\bar{I}_L| = 1.78 \text{ A}$$