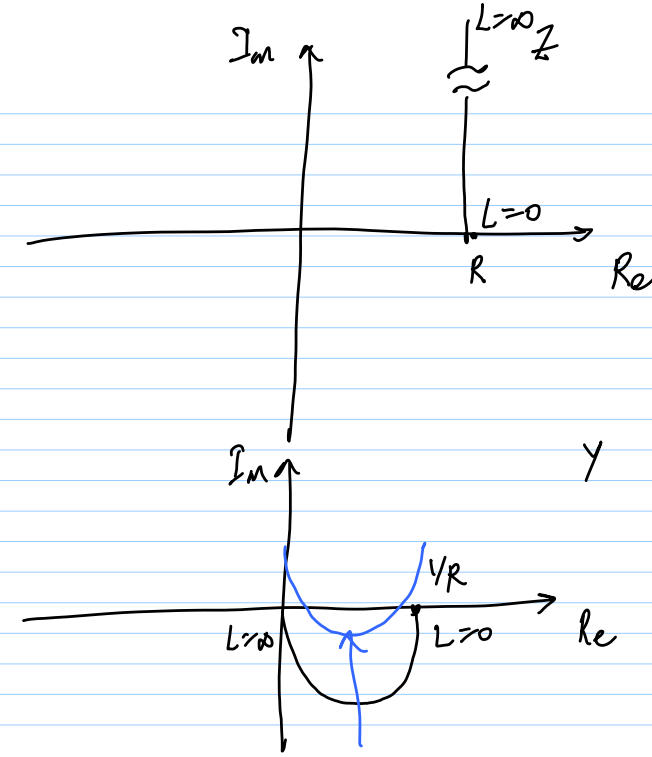
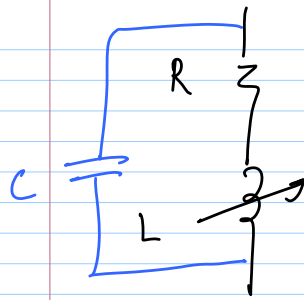
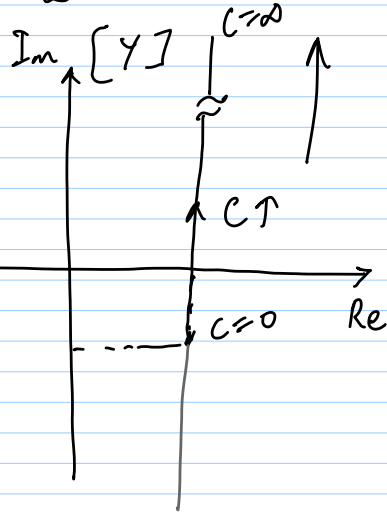
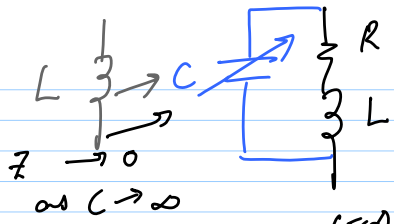
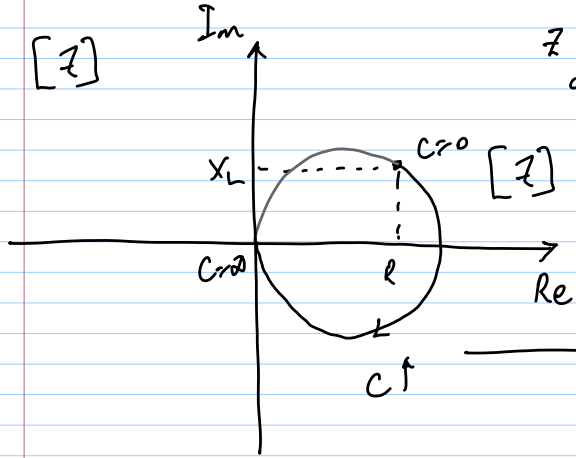


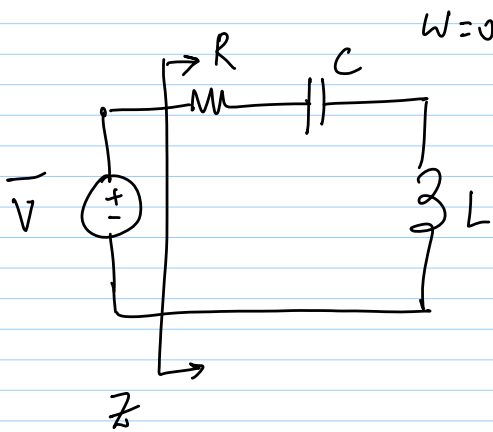
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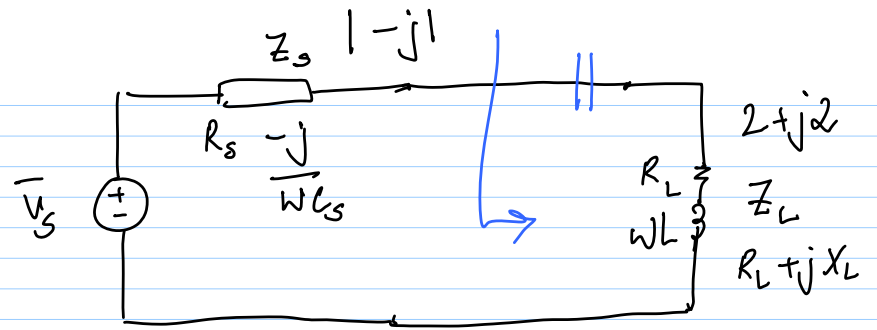
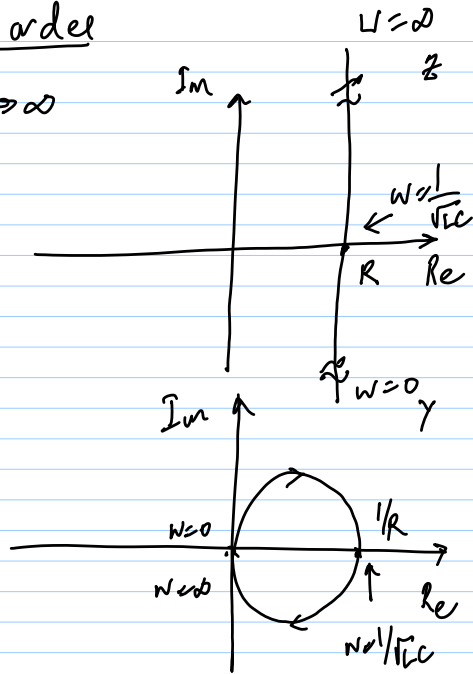
$[Z]$



Series RLC - 2nd order

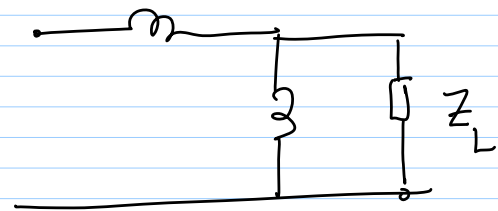
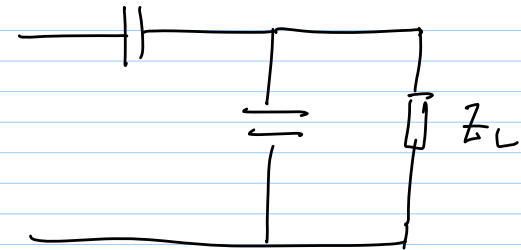
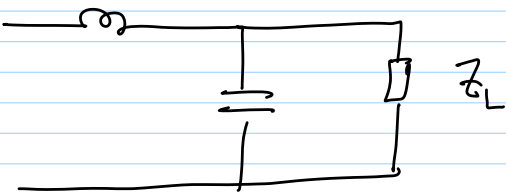
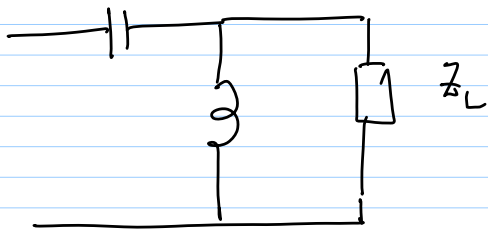
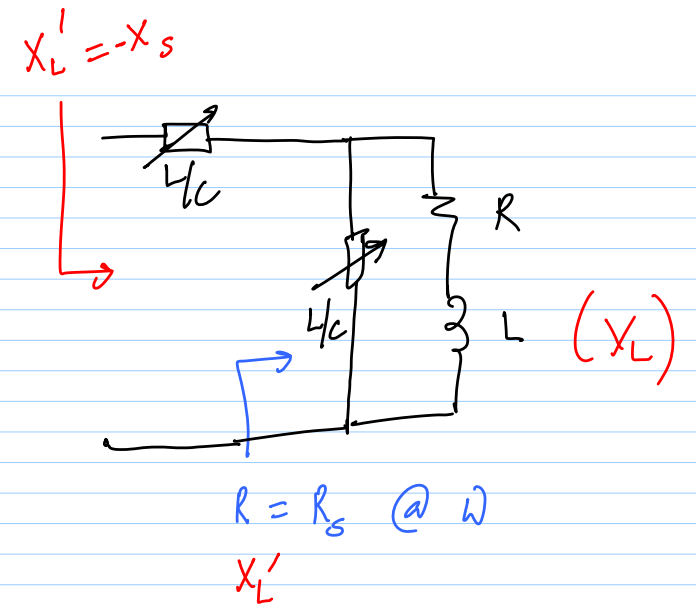
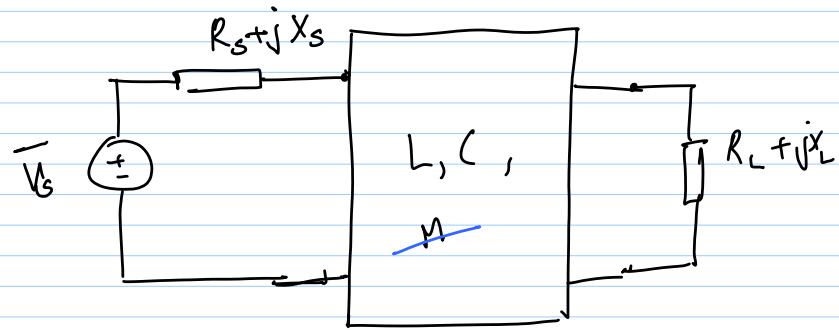
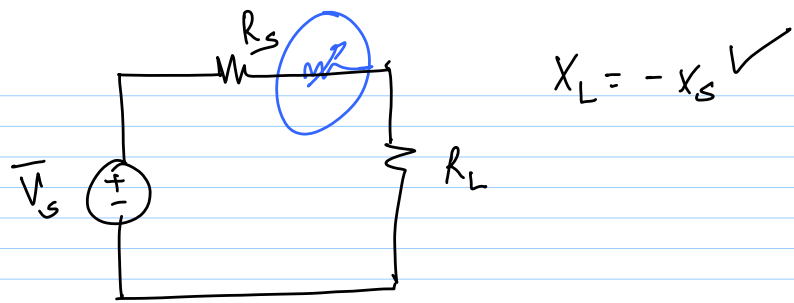


$\omega=0 \rightarrow \infty$

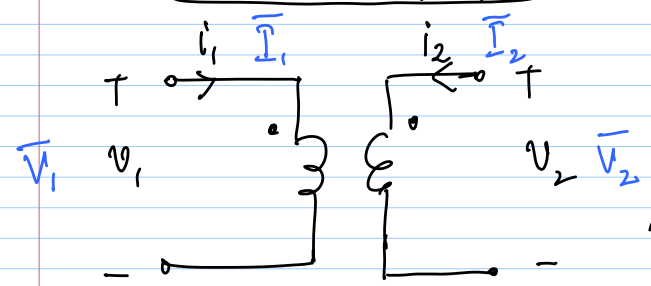


Conjugate matching
(max power delivered)

$$\begin{aligned} Z_L &= Z_S^* \\ R_L &= R_S \\ X_L &= -X_S \end{aligned}$$



Mutual Inductor



$$v_1 = L_1 \frac{di_1}{dt} + M \frac{di_2}{dt}$$

$$v_2 = M \frac{di_1}{dt} + L_2 \frac{di_2}{dt}$$

$$v_1 = \bar{V}_1 \exp(j\omega t)$$

$$\vdots$$

$$\begin{bmatrix} \bar{v}_1 \\ \bar{v}_2 \end{bmatrix} = \begin{bmatrix} j\omega L_1 & j\omega M \\ j\omega M & j\omega L_2 \end{bmatrix} \begin{bmatrix} \bar{I}_1 \\ \bar{I}_2 \end{bmatrix}$$

$$\bar{v}_L = j\omega L \bar{I}_L$$