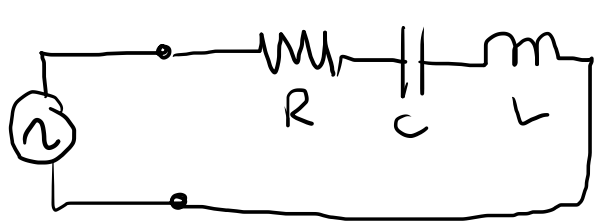
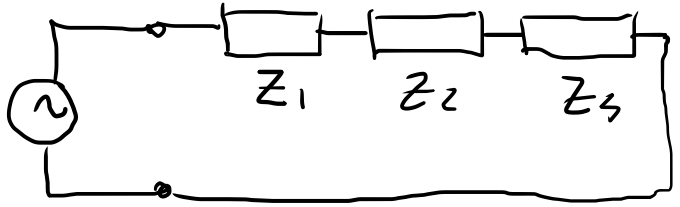
R, L, C ~

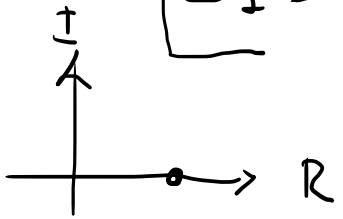




Laplace

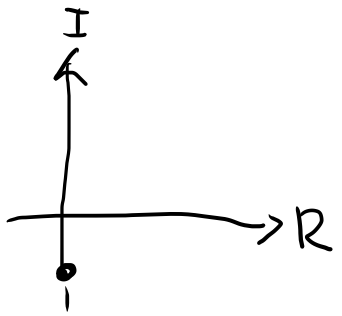
$R \rightarrow Z_1$ $\quad a+jb$

$$\boxed{Z_1 = R + j\phi = R}$$

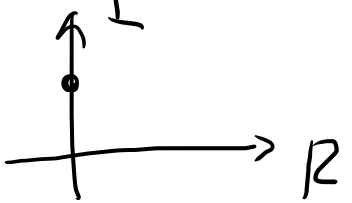


$C \rightarrow Z_2 \qquad X_C = -\frac{1}{j\omega C}$ $\quad \omega = 2\pi f$

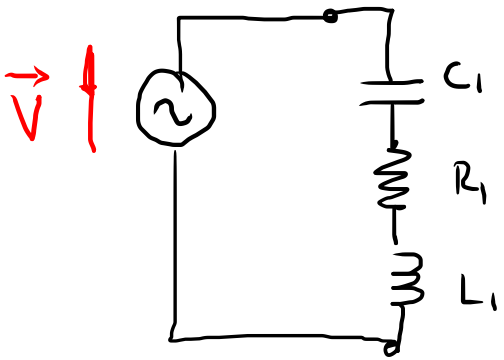
$$\boxed{Z_2 = 0 - j\frac{1}{\omega C}}$$



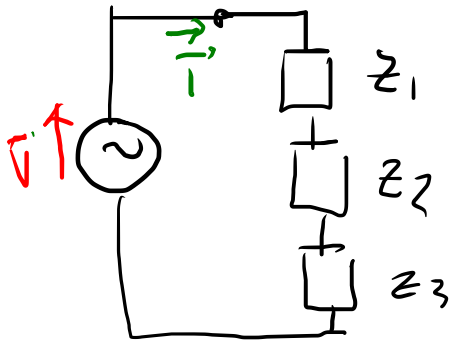
$L \rightarrow Z_3 \qquad X_L = j\omega L \qquad \boxed{Z_3 = 0 + j\omega L}$



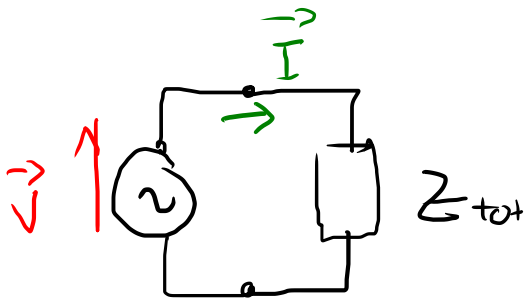
$$v(t) = V_0 \sin(2\pi f t + \varphi) \rightsquigarrow \vec{V} = V_0 \angle \varphi$$



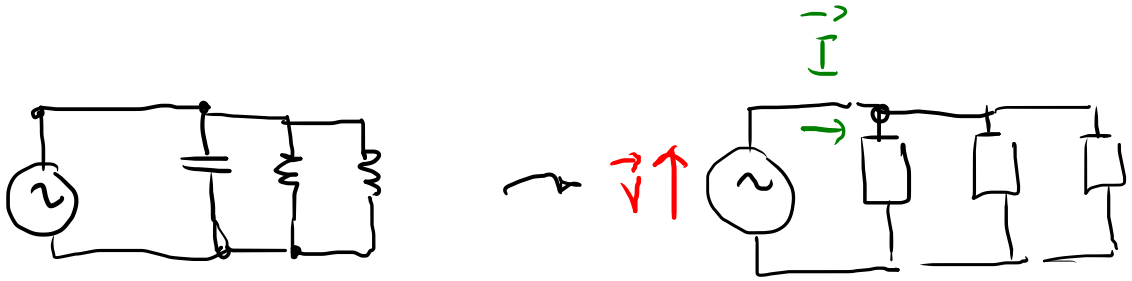
$\rightsquigarrow$



$\rightsquigarrow$ $Z_{tot} = Z_1 + Z_2 + Z_3$



$$\vec{I} = \frac{\vec{V}}{Z_{tot}} = \rightsquigarrow I_0 \angle \varphi_0$$



$$\frac{1}{Z_{tot}} = \frac{1}{Z_1} + \frac{1}{Z_2} + \cdots$$

$$\vec{I} = \frac{\vec{V}}{Z_{tot}} \cdots$$

$$I_0 \,,\, \varphi_0$$