



$$Z = R + jX$$

$$|Z| = \sqrt{R^2 + X^2}$$

$$\phi_Z = \tan^{-1} \frac{X}{R}$$

$$v(t) = V_0 \cos(\omega t + \alpha)$$

$$\begin{aligned} i(t) &= \frac{V_0}{|Z|} \cos(\omega t + \alpha - \phi_Z) \\ &= I_0 \cos(\omega t + \alpha - \phi_Z) \end{aligned}$$