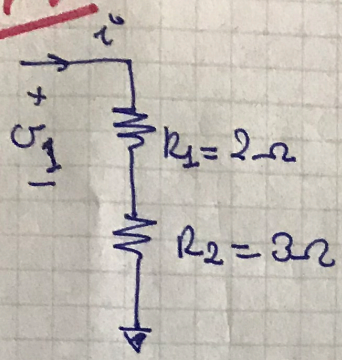


EXP. 1



$$i = 4 \cdot \cos(\omega t + \frac{\pi}{6})$$

$$V_1(t) = R_1 \cdot i$$

$$= 2 \cdot 4 \cdot \cos(\omega t + \frac{\pi}{6})$$

$$= \underline{8 \cdot \cos(\omega t + \frac{\pi}{6})}$$

Using Phasor

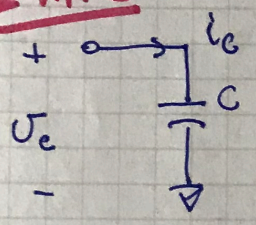
$$i = 4 \cdot \cos(\omega t + \frac{\pi}{6}) \rightarrow I = 4 e^{j\frac{\pi}{6}}$$

$$V_1 = R_1 I$$

$$= 2 \cdot 4 e^{j\frac{\pi}{6}} = 8 e^{j\frac{\pi}{6}}$$

$$V_1 \rightarrow V_1(t) = \underline{8 \cdot \cos(\omega t + \frac{\pi}{6})}$$

EXP. 2



$$V_c(t) = 3 \cdot \sin(\omega t + \frac{\pi}{9})$$

$$i_c = C \cdot \frac{dV_c}{dt} = C \cdot \frac{d}{dt} \left\{ 3 \cdot \sin(\omega t + \frac{\pi}{9}) \right\}$$

$$= \underline{3C\omega \cos(\omega t + \frac{\pi}{9})}$$

Using Phasor

$$V_c(t) = 3 \cdot \sin(\omega t + \frac{\pi}{9}) \rightarrow V_c = 3 \cdot e^{j\frac{\pi}{9}}$$

$$I_c = C \cdot j\omega V_c$$

$$= C \cdot j\omega \cdot 3 \cdot e^{j\frac{\pi}{9}}$$

PS:  $j = e^{j\frac{\pi}{2}} = \cos\frac{\pi}{2} + j\sin\frac{\pi}{2}$

$$= 3 \cdot C \cdot \omega \cdot j \cdot e^{j\frac{\pi}{9}}$$

$$= 3 \cdot C \cdot \omega \cdot e^{j\frac{\pi}{2}} \cdot e^{j\frac{\pi}{9}}$$

$$= 3C\omega \cdot \sin(\omega t + \frac{\pi}{9} + \frac{\pi}{2})$$

$\sin \omega t = \cos(\omega t - \frac{\pi}{2})$

$$= 3 \cdot C \cdot \omega \cdot \cos(\omega t + \frac{\pi}{9} + \frac{\pi}{2} - \frac{\pi}{2})$$

$$= \underline{3 \cdot C \cdot \omega \cos(\omega t + \frac{\pi}{9})}$$