

- 6.14** The voltage across a  $10\text{-}\mu\text{F}$  capacitor is given by the waveform in Fig. P6.14. Plot the waveform for the capacitor current.

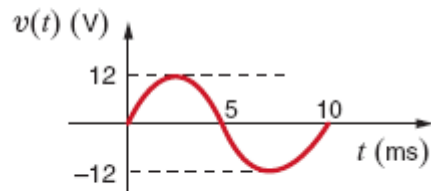


Figure P6.14

**SOLUTION:**

$$i = C \frac{dv}{dt}$$

$$v(t) = 12 \sin \omega t, \quad T = 10 \text{ ms}$$

$$\omega = \frac{2\pi}{T} = \frac{2\pi}{10 \text{ ms}}$$

$$\omega = 200\pi \text{ rad/s}$$

$$i(t) = (10 \mu) (12) (\omega) \cos \omega t$$

$$i(t) = 75.4 \cos \omega t \text{ mA}$$

