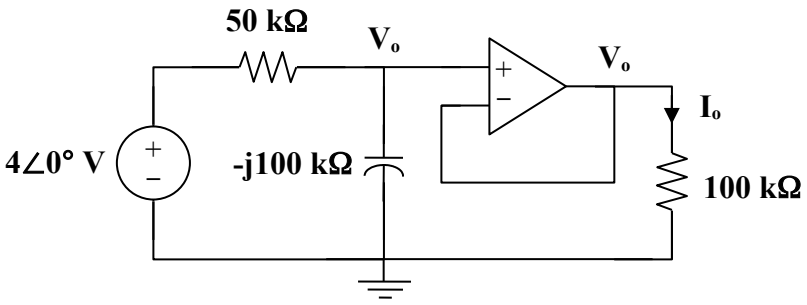
Chapter 10, Solution 72.

$$4\cos(10^4 t) \longrightarrow 4\angle 0°, \quad \omega = 10^4$$

$$1\text{ nF} \longrightarrow \frac{1}{j\omega C} = \frac{1}{j(10^4)(10^{-9})} = -j100\text{ k}\Omega$$

Consider the circuit as shown below.



At the noninverting node,

$$\frac{4 - \mathbf{V}_o}{50} = \frac{\mathbf{V}_o}{-j100} \longrightarrow \mathbf{V}_o = \frac{4}{1 + j0.5}$$

$$\mathbf{I}_o = \frac{\mathbf{V}_o}{100\text{k}} = \frac{4}{(100)(1 + j0.5)}\text{mA} = 35.78\angle -26.56°\ \mu\text{A}$$

Therefore,

$$i_o(t) = \mathbf{35.78\cos(10^4 t - 26.56°)\ \mu A}$$