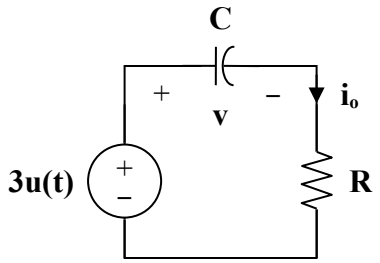
Chapter 7, Solution 72.

The op amp acts as an emitter follower so that the Thevenin equivalent circuit is shown below.



Hence,

$$v(t) = v(\infty) + \left[v(0) - v(\infty) \right] e^{-t/\tau}$$

$$v(0) = -2\ \text{V}, \quad v(\infty) = 3\ \text{V}, \quad \tau = RC = (10 \times 10^{3})(10 \times 10^{-6}) = 0.1$$

$$v(t) = 3 + (-2 - 3)e^{-10t} = 3 - 5e^{-10t}$$

$$i_o = C\frac{dv}{dt} = (10 \times 10^{-6})(-5)(-10)e^{-10t}$$

$$\mathbf{i_o = 0.5e^{-10t}\ mA, \quad t > 0}$$