Chapter 7, Solution 9.

The switch in Fig. 7.89 opens at t=0. Find v_o for t > 0.

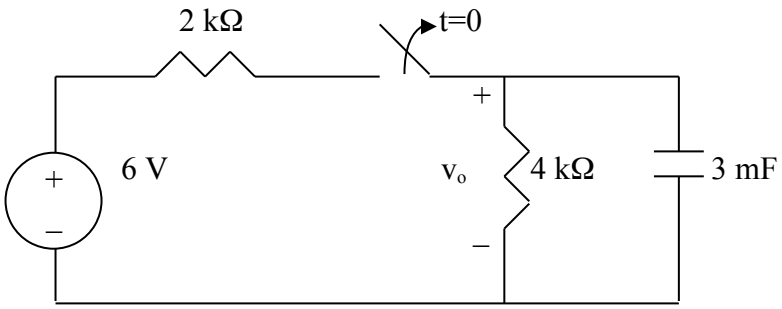

Figure 7.89
For Prob. 7.9.

Solution

For t < 0, the switch is closed so that

$$v_o(0) = \frac{4}{2+4}(6) = 4 \text{ V}$$

For t >0, we have a source-free RC circuit.

$$\tau = RC = 3x10^{-3} x4x10^{3} = 12s$$

$$v_o(t) = v_o(0)e^{-t/\tau} = \mathbf{4e^{-t/12}\ V}.$$