

Chapter 7, Solution 6.

The switch in Fig. 7.85 has been closed for a long time, and it opens at $t = 0$. Find $v(t)$ for $t \geq 0$.

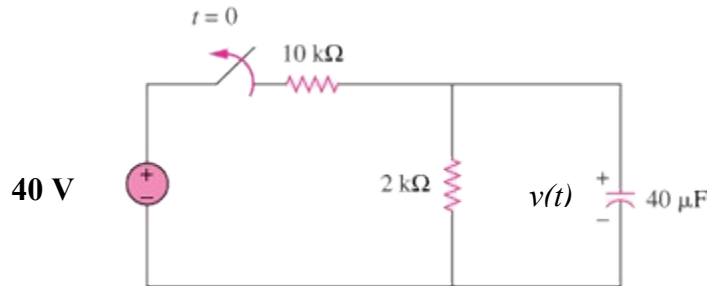


Figure 7.85
For Prob. 7.6.

Solution

$$v_o = v(0) = \frac{2}{10 + 2}(40) = 6.667\text{ V}$$

$$v(t) = v_o e^{-t/\tau}, \quad \tau = RC = 40 \times 10^{-6} \times 2 \times 10^3 = \frac{2}{25}$$

$$v(t) = \underline{6.667e^{-12.5t}\text{ V}}$$