

Chapter 7, Solution 63.

$$\text{For } t < 0, \quad u(-t) = 1, \quad i(0) = \frac{10}{5} = 2$$

$$\begin{aligned} \text{For } t > 0, \quad u(-t) &= 0, \quad i(\infty) = 0 \\ R_{\text{th}} &= 5 \parallel 20 = 4 \, \Omega, \quad \tau = \frac{L}{R_{\text{th}}} = \frac{0.5}{4} = \frac{1}{8} \\ i(t) &= i(\infty) + [i(0) - i(\infty)] e^{-t/\tau} \end{aligned}$$

$$i(t) = \mathbf{2e^{-8t}u(t) \, A}$$

$$v(t) = L \frac{di}{dt} = \left(\frac{1}{2}\right)(-8)(2)e^{-8t}$$

$$v(t) = \mathbf{-8e^{-8t}u(t) \, V}$$

$$\mathbf{2e^{-8t}u(t) \, A, -8e^{-8t}u(t) \, V}$$