

Chapter 7, Solution 60.

Let i be the inductor current.

For $t < 0$, $u(t) = 0 \longrightarrow i(0) = 0$

For $t > 0$, $R_{eq} = 5 \parallel 20 = 4 \, \Omega$, $\tau = \frac{L}{R_{eq}} = \frac{8}{4} = 2$

$$i(\infty) = 4$$

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

$$i(t) = 4(1 - e^{-t/2})$$

$$v(t) = L \frac{di}{dt} = (8)(-4)\left(-\frac{1}{2}\right)e^{-t/2}$$

$$v(t) = 16e^{-0.5t} \text{ V}$$