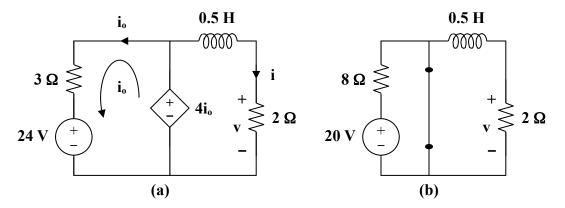## Chapter 7, Solution 55.

For t < 0, consider the circuit shown in Fig. (a).

(a)   **(b)**

$3i_o + 24 - 4i_o = 0 \longrightarrow i_o = 24$

$v(t) = 4i_o = \textbf{96 V}$ $i = \dfrac{v}{2} = 48$ A

For t > 0, consider the circuit in Fig. (b).

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

$i(0) = 48, \qquad i(\infty) = 0$

$R_{th} = 2\,\Omega, \qquad \tau = \dfrac{L}{R_{th}} = \dfrac{0.5}{2} = \dfrac{1}{4}$

$i(t) = (48)\, e^{-4t}$

$v(t) = 2\, i(t) = \textbf{96}\, e^{-4t}\ \textbf{\textit{u(t)V}}$