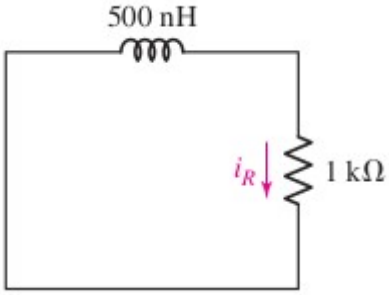
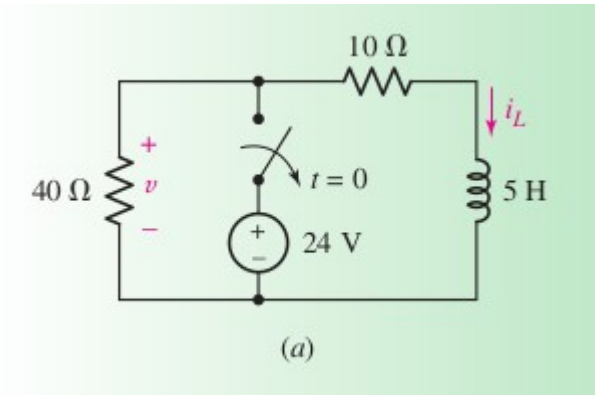
NeSS
Tut-6
RL and RC circuits

RL source free model:

Q1. Determine the current i_R through the resistor of Fig. 8.3 at t = 1 ns if $i_R(0) = 6$ A.



Q2. For the circuit of Fig. 8.5a, find the voltage labeled v at t = 200 ms.



RC source free model:

Q3. Noting carefully how the circuit changes once the switch in the circuit of Fig. 8.18 is thrown, determine v(t) at t = 0 and at t = 160 μs.

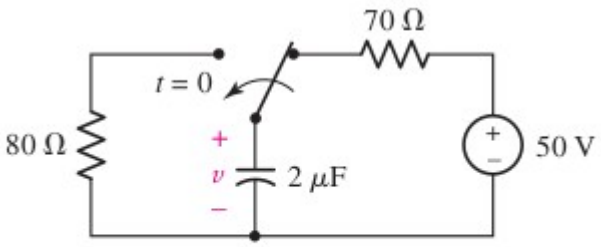


FIGURE 8.18

Q4. Find v(0) and i1(0) for the circuit shown in Fig. 8.22a if v(0) = V0 .

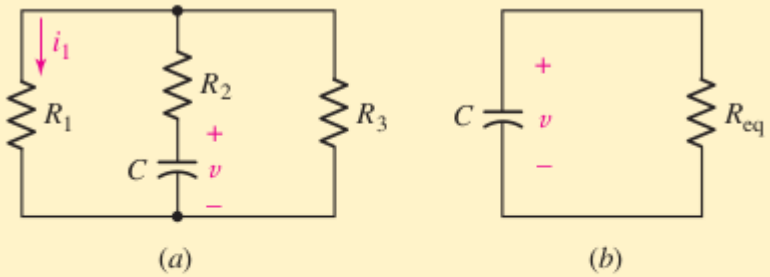
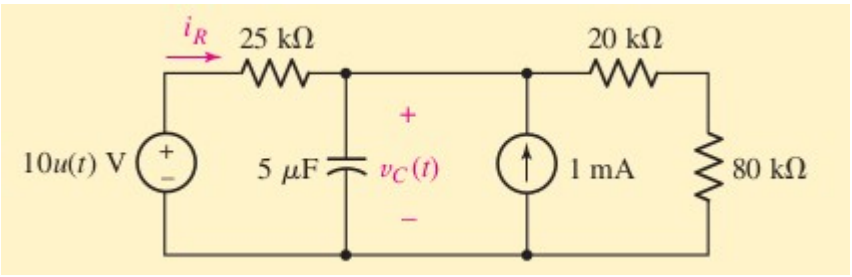


FIGURE 8.22 (*a*) A given circuit containing one capacitor and several resistors. (*b*) The resistors have been replaced by a single equivalent resistor; the time constant is simply $\tau = R_{eq}C$.

Driven RC and RL models

Q5. For the circuit of Fig. 8.44, find v C (t) at t equal to (a) 0 − ; (b) 0 + ; (c) ∞; (d) 0.08 s.



Q6. Determine i(t) for all values of time in the circuit of Fig. 8.37.

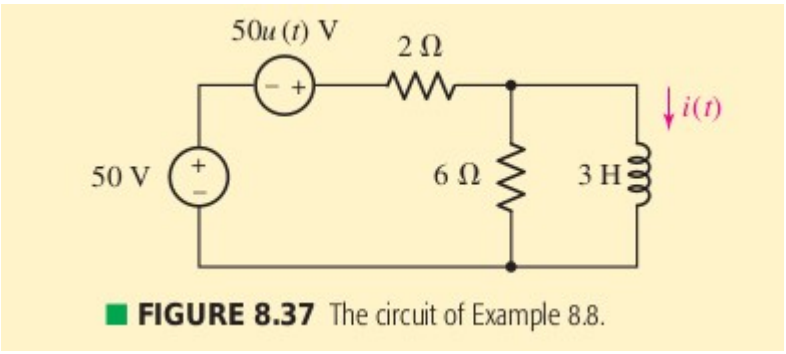


FIGURE 8.37 The circuit of Example 8.8.