

Homework 7

1. (7.1, p306) The switch in the circuit in Fig. 1 has been closed for a long time before opening at $t = 0$. Determine the voltage across the capacitor $v(t)$ for $t \geq 0$.

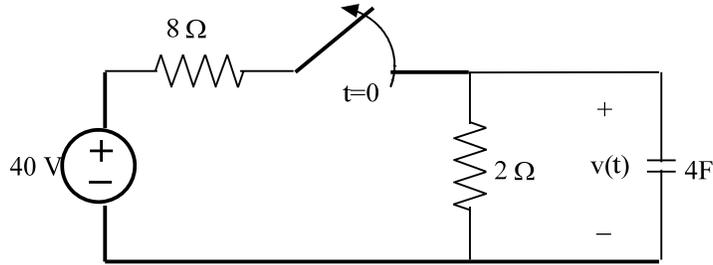


Fig. 1.

2. (7.4, p307) In the circuit in Fig. 2, the voltage and current expressions are
- $$v = 400e^{-5000t} \quad (\text{V}) \quad \text{for } t \geq 0^+$$
- $$i = 10e^{-5000t} \quad (\text{A}) \quad \text{for } t \geq 0$$

Find

- R .
- τ .
- L .
- The initial energy stored in the inductor.

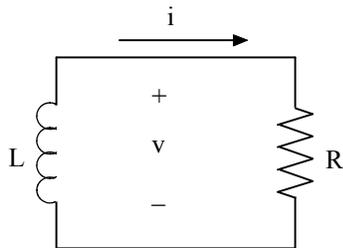


Fig. 2.

3. (7.23 (a)-(d), p310) In the circuit in Fig. 3, the voltage and current expressions are

$$v = 48e^{-25t} \quad (\text{V}) \quad \text{for } t \geq 0$$

$$i = 12e^{-25t} \quad (\text{mA}) \quad \text{for } t \geq 0^+$$

Find

(a) R.

(b) C.

(c) τ (in milliseconds).

(d) The initial energy stored in the capacitor.

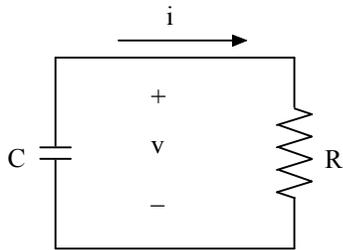


Fig. 3.