

Exercise 7.2.1

From Kirchoff's law the current I in an RC (resistance-capacitance) circuit (Fig. 7.1) obeys the equation

$$R \frac{dI}{dt} + \frac{1}{C} I = 0.$$

- (a) Find $I(t)$.
- (b) For a capacitance of $10,000 \mu\text{F}$ charged to 100 V and discharging through a resistance of $1 \text{ M}\Omega$, find the current I for $t = 0$ and for $t = 100$ seconds.

Note. The initial voltage is $I_0 R$ or Q/C , where $Q = \int_0^\infty I(t) dt$.

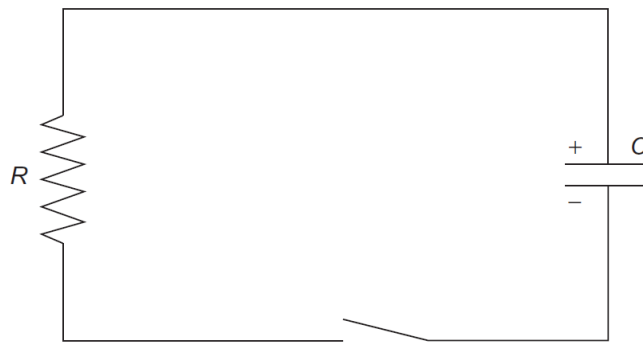


FIGURE 7.1 RC circuit.