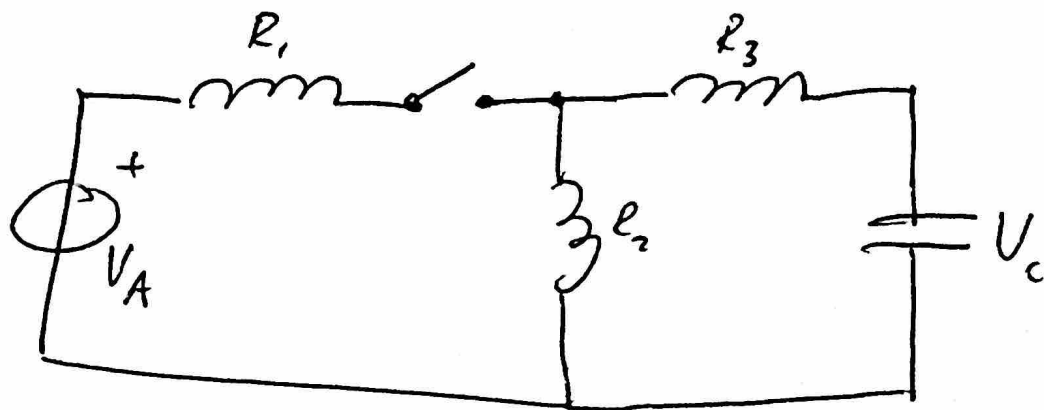
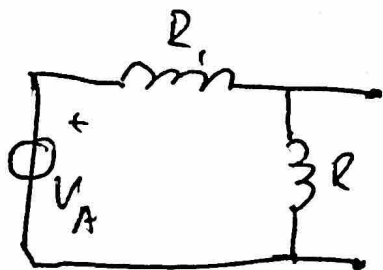


PROBLEM 4



$$\begin{aligned} V_A &= 6V \\ R_1 &= 10000 \Omega \\ R_2 &= 10000 \Omega \\ R_3 &= 5000 \Omega \\ C &= 100 \text{ nF} \end{aligned}$$



$$R = \frac{R_2 \cdot R_3}{R_2 + R_3} + R_1 \Rightarrow \frac{10000 \cdot 5000}{10000 + 5000} = 3333$$

$$R = 3333 \Omega$$

$$V_C(\infty) = V_A \frac{R}{R + R_1} \Rightarrow 6 \cdot \frac{3333}{3333 + 10000} = 4.5 \text{ V}$$

$$V_C(0) = 0$$

$$R_{TH} = R + R_1 \Rightarrow 3333 + 10000 = 13333 \Omega$$

$$\tau = R_{TH} \cdot C \Rightarrow 13333 \cdot 0.0000001 = 1.3 \text{ ms}$$

$$V_C(t=0.002) = 4.5 + (0 - 4.5) \cdot e^{-\frac{0.002}{0.0013333}}$$

$$V_C(t=0.002) = 3.44 \text{ V}$$