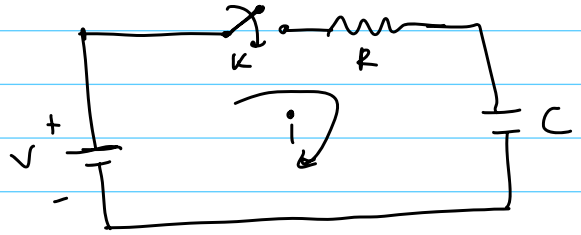
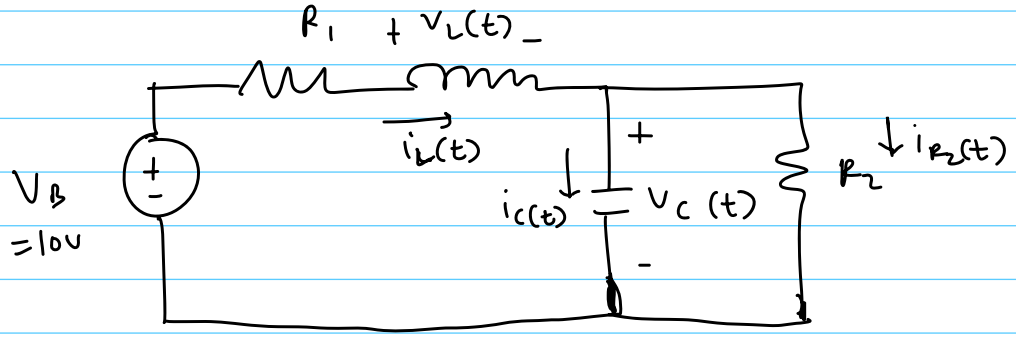
Discussion 5

Q1. In the circuit shown, the switch K is closed at $t = 0$. Find the values of $i, \frac{di}{dt}, \frac{d^2i}{dt}$ at $t = 0^+$, when $V = 100$ volts. $R = 1000\Omega, C = 1\mu F$.



Q2.



$R_1 = R_2 = 2\Omega$, Suppose $v_c(0^-) = 1V$

$i_L(0^-) = 2A$

Find the following quantities :-

1) $i_C(0^+)$ 2) $i_{R_2}(0^+)$ 3) $v_L(0^+)$ 4) $\left.\frac{dv_C}{dt}\right|_{0^+}$

5) $\left.\frac{di_L}{dt}\right|_{0^+}$ 6) $\left.\frac{di_L^2}{dt^2}\right|_{0^+}$ 7) $\left.\frac{d^2v_C}{dt^2}\right|_{0^+}$