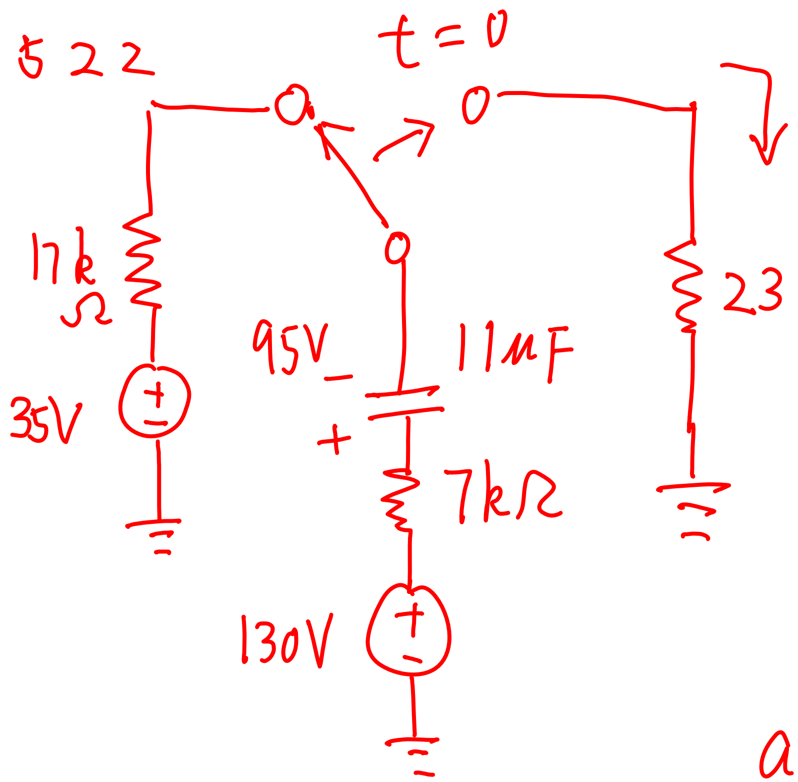
5 2 2



$i = ?$ at $t = 0^+$

In capacitor

$V_c(t)$ is continuous

$$i = \frac{dq}{dt} = C\,\frac{dV_c(t)}{dt} \neq \infty$$

$$Z_c = \frac{1}{j\omega C}$$

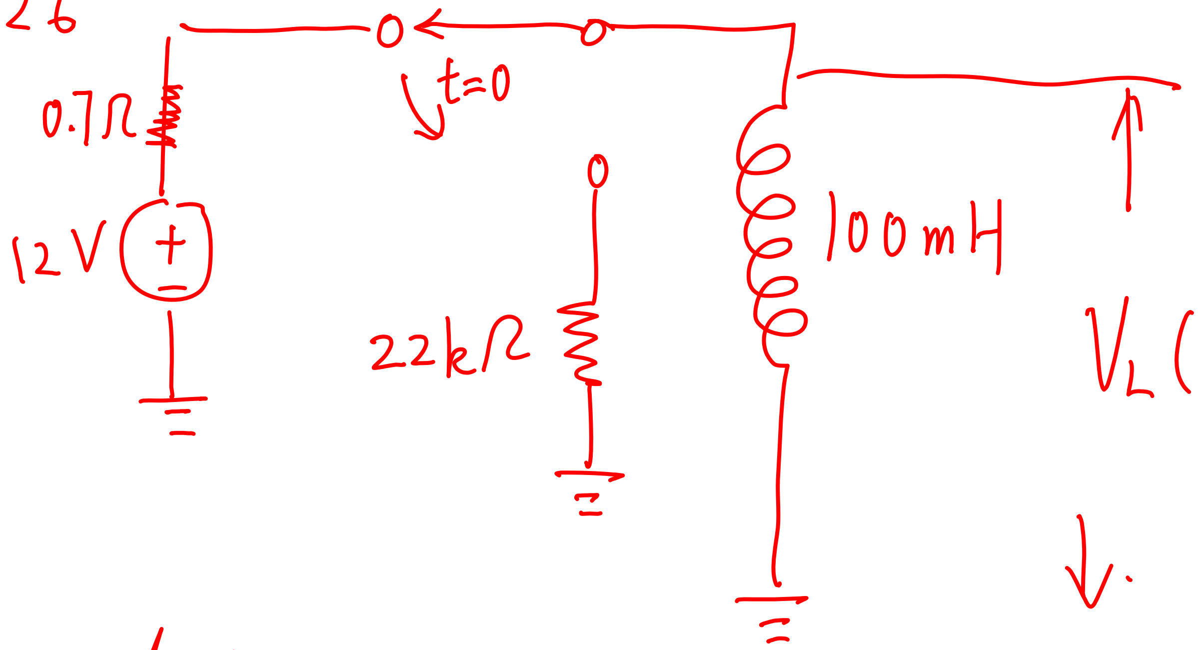
at $t < 0$

$$V_c = 95V$$

at $t = 0^+$

$$i = \frac{(130-95)V}{(23+7)\,k\Omega} = \frac{35V}{30k\Omega} = 1.17mA$$

5.26



$V_L(t=0^+) = ?$

In inductor $i(t)$ is continuous

$$V_L = L\frac{di(t)}{dt} = \infty$$

at $t<0$

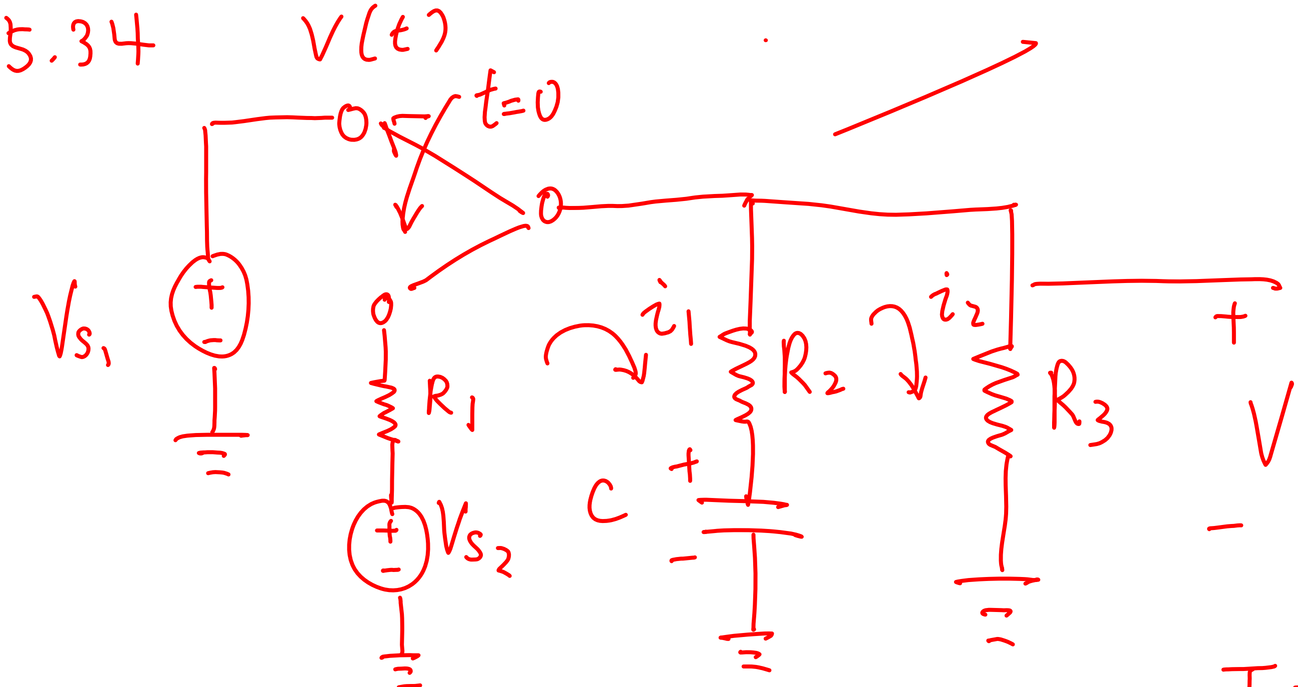
$$i_L = \frac{12V}{0.7\Omega} = 17.1\,(A)$$

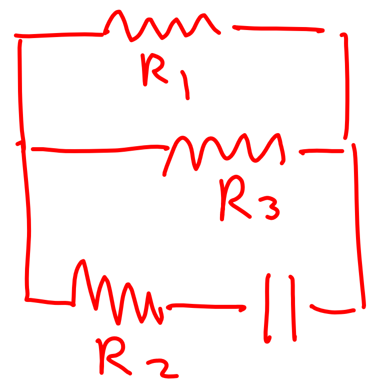
at $t=0^+$

$$V_L = -V_R = -i_L \cdot 22k\Omega = -(17.1A)\cdot(22k\Omega)$$

$$= 376\ (kV)$$

5.34





$$\tau = ? = R_{eq} C$$

$$= (R_1 // R_3 + R_2) C$$

$$= \left(\frac{R_1 R_3}{R_1 + R_3} + R_2\right) C$$

At $t < 0$ $\quad V_C = V_{s_1} = 17V$

$$V_{R_3} = 17V$$

$t = 0^+$ $\quad i_1(0^+) \quad i_2(0^+)$

$$V(0^+) = i_2(0^+) R_3$$

$t = +\infty$ $\quad V(\infty) = R_3 \dfrac{V_{s_2}}{R_1 + R_3}$

$$V(t) = V(\infty) + \left(V(0^+) - V(\infty)\right) e^{-\frac{t}{\tau}}$$