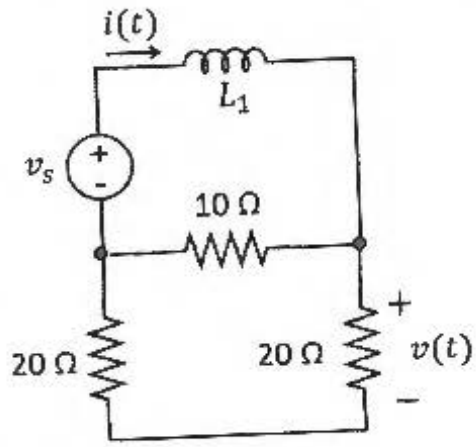
When $t < 0$, $v_s = V_0$ — V0 : 40 V

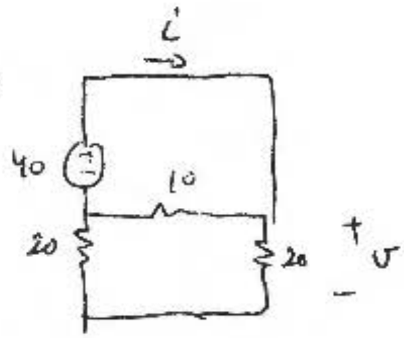
When $t > 0$, $v_s = V_1$ — V1 : 64 V

Find $i(t) = A_1 + B_1 \cdot e^{-t/\tau_1}$ for $t > 0$ — L1 : 2 mH

and $v(t) = A_2 + B_2 \cdot e^{-t/\tau_2}$ for $t > 0$



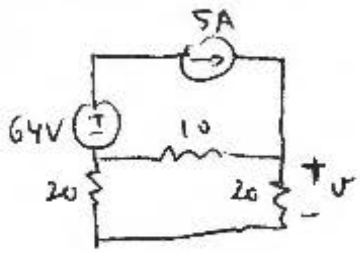
(a) $t = 0^-$



$i(0^-) = \frac{40}{10//40} = \frac{40}{8} = 5\,A$

$v(0^-) = 40 \cdot \frac{20}{20+20} = 20V$

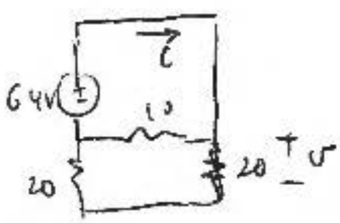
(b) $t = 0^+$



$i(0^+) = 5A$

$v(0^+) = (5A)\cdot(10//40)\,\frac{20}{20+20} = 20V$

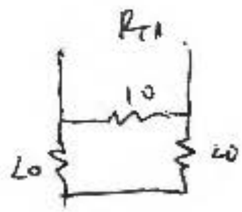
(c) $t = \infty$



$i(\infty) = \frac{64}{10//40} = 8A$

$v(\infty) = 64 \cdot \frac{20}{20+20} = 32V$

(d)



$R_{TH} = 10//40 = 8\Omega$

$\tau = \frac{L_1}{R_{TH}} = \frac{2\cdot 10^{-3}}{8} = 0.25\cdot 10^{-3}$

$A_1 = i(\infty) \Rightarrow \boxed{A_1 = 8A}$ $\qquad$ $A_2 = v(\infty) \Rightarrow \boxed{A_2 = 32V}$

$B_1 + A_1 = i(0^+) \Rightarrow \boxed{B_1 = -3A}$ $\qquad$ $B_2 + A_2 = v(0^+) \Rightarrow \boxed{B_2 = -12V}$

$$\boxed{\tau_1 = \tau_2 = 0.25\ ms}$$