prova: e203 B

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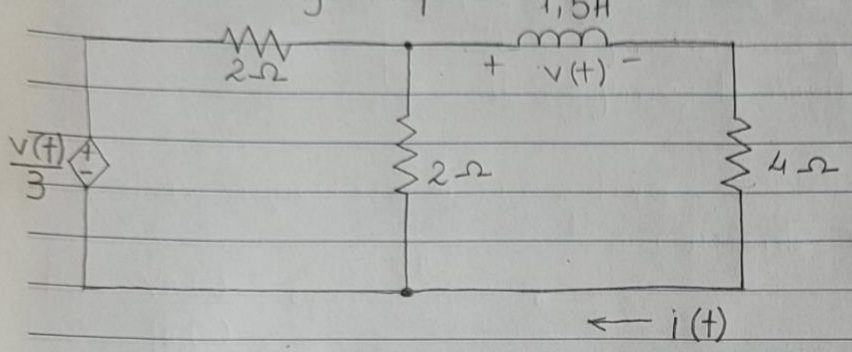
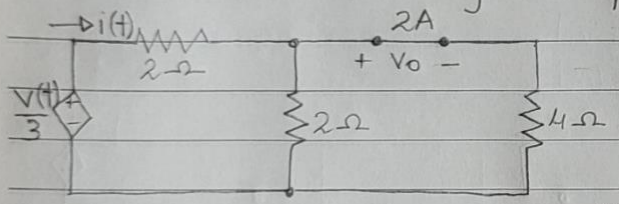
1) → $I_L(t_0) = 2A$

$t \geq 0s$ → determinar $i(t)$

$t < 0s$: regime permanente → indutor = curto-circuito



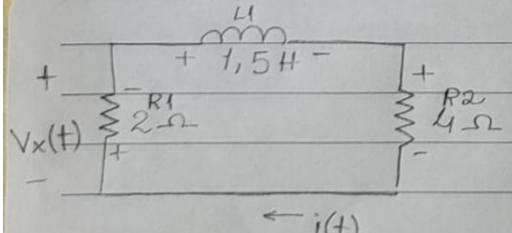
→ chave fechada: regime permanente:



$V_o = 0\ V$

neste caso, ao termos $v(t) = V_o(t) = 0V$, temos uma FTCT de valor 0V, já que é dependente do valor de $v(t)$ → $FTCT = \frac{v(t)}{3}$ [V]

→ chave aberta:



lei de Kirchof p/ tensão

$VR1 + VL1 + VR2 = 0$

$2 \cdot i(t) + 1,5 \cdot \frac{di_L(t)}{dt} + 4 \cdot i(t) = 0$

$\left[6\, i(t) + 1,5 \frac{di(t)}{dt} = 0 \right] : 1,5$

$> 4\, i(t) + \frac{di(t)}{dt} = 0$ → $a = 4$ $A = 0$

$\tau = \frac{1}{4} = 0,25$ → $5\tau = 1,25\ s.$

$i(t) = K_1 + K_2 \cdot e^{-4t}$

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determinar K1 : $K1 = \frac{A}{a} = \frac{0}{4} = 0$

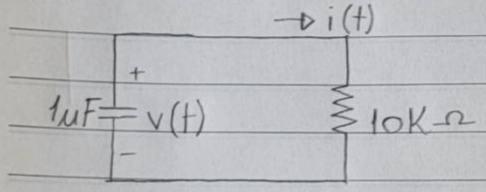
determinar K2 :

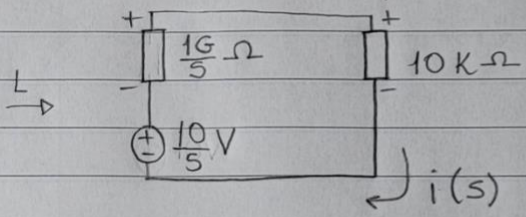
K2 = Io (corrente instantânea próxima do instante 0s)

K2 = 2A

assim, temos : $i(t) = 2 \cdot e^{-4t}$ [A], para $t > 0s$

2) $V_0 = 10V$ determinar $v(t)$, para $t \geq 0s$





$Z_c = \frac{1}{s \cdot 1 \times 10^{-6}} = \frac{1 \times 10^6}{s}$

Lei de Kirchof para tensão: $-\frac{10}{s} - \frac{1G}{s} \cdot i(s) + 10K \cdot i(s) = 0$

$\frac{10}{s} = i(s) \cdot \left(\frac{-1G}{s} + 10K\right) \rightarrow \frac{10}{s} = \left(\frac{-1G + 10Ks}{s}\right) \cdot i(s)$

$i(s) = \frac{10}{-1G + 10K \cdot s} : \frac{10}{10} = \frac{1}{100K + 1K \cdot s} \rightarrow \frac{1}{s + a}$

$i(t) = e^{-100 \cdot t}$ [A]

$v(t) = 10K \cdot e^{-100 \cdot t}$ [V]