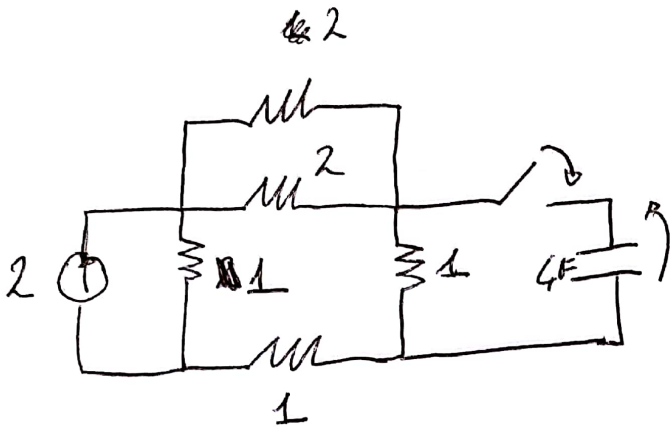
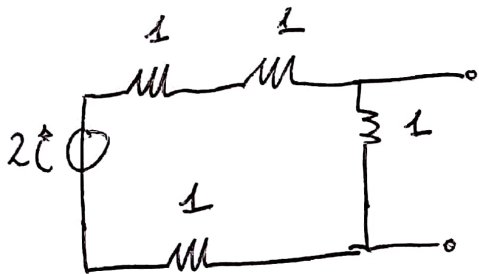


Ex 1

$$V_C(0^-) = \{0, \frac{1}{2}, 1\}$$



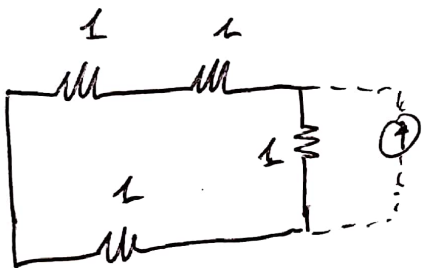
Eq. Th. ( $t > 0$ )



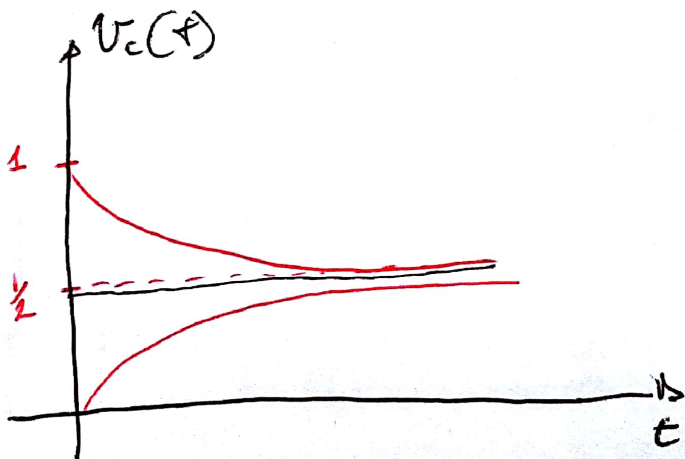
$$E_{TH} = 2 \cdot \frac{1}{4} = \frac{1}{2} V$$

$$R_{TH} = 3 \parallel 1 = \frac{3}{4}$$

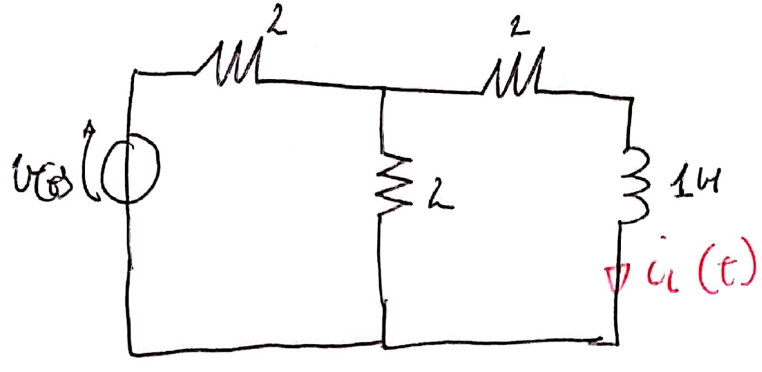
$$\tau = R_{TH} \cdot C = \frac{3}{4} \cdot 4 = 3s$$



$$V_C(t) = \left( V_C(0^-) - \frac{1}{2} \right) e^{-t/3} + \frac{1}{2}$$



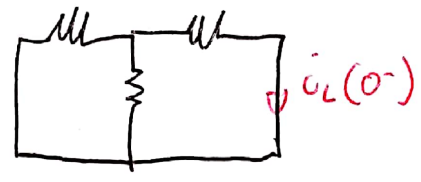
Ex 2



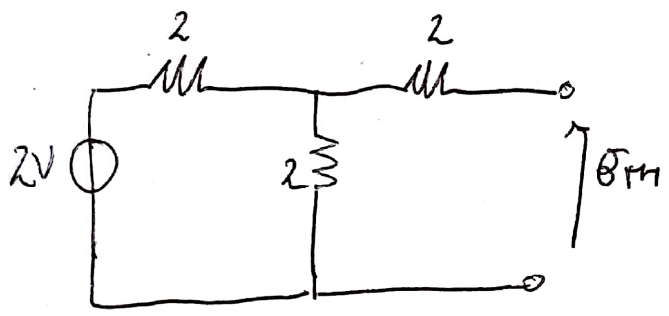
$$v(t) = 2 \cdot i_L(t)$$

C.I.  $t < 0$

$$i_L(0^-) = 0$$

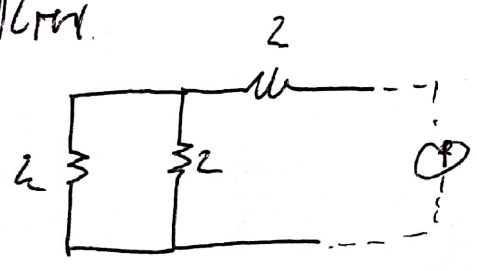


$t > 0$  Req. Th (in C.D.V.)



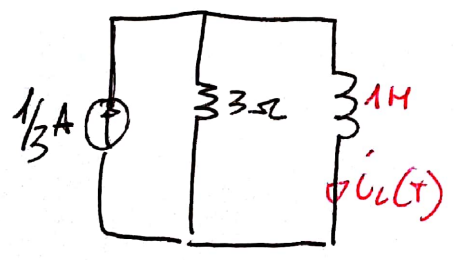
$$V_{Th} = 2 \cdot \frac{2}{4} = 1V$$

$R_{Th}$

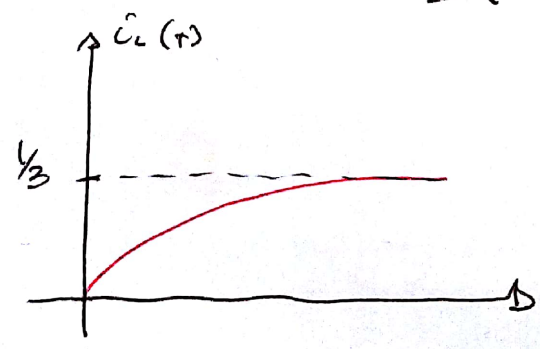


$$R_{Th} = 2 + (2 \parallel 2) = 3\Omega \quad \tau = GL = 1/3$$

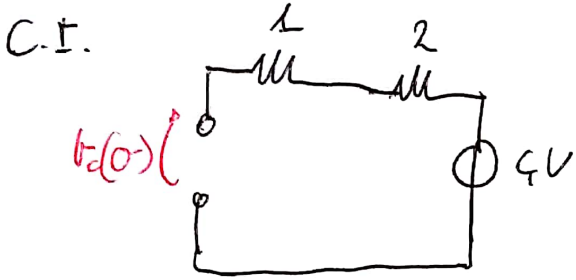
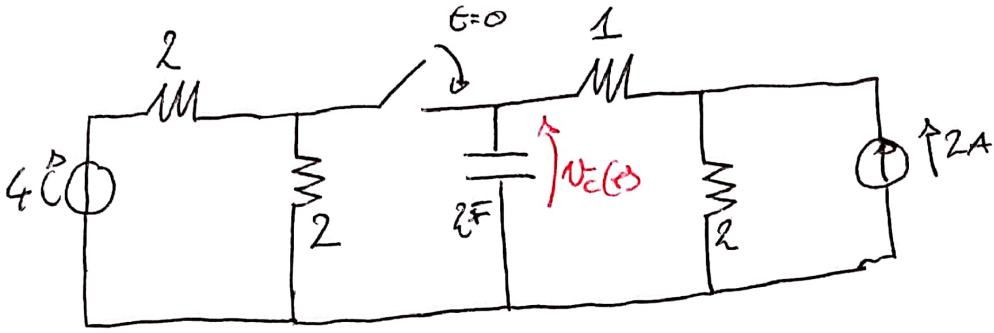
Eq. Norton



$$i_L(t) = (0 - \frac{1}{3})e^{-\frac{t}{\tau}} + \frac{1}{3} = \frac{1}{3}(1 - e^{-\frac{t}{\tau}})$$



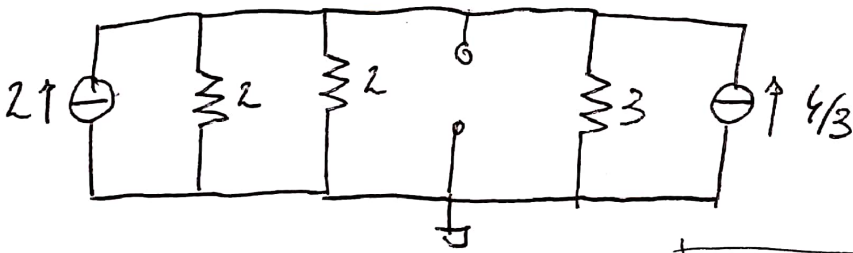
Ex 3



Th. Eq.  $\rightarrow v_c(0^-) = 4V$

$t > 0$

Trasforma T-DN a sx, N-OT a dx. Svolge la serie a sx e ritrasforma T-DN

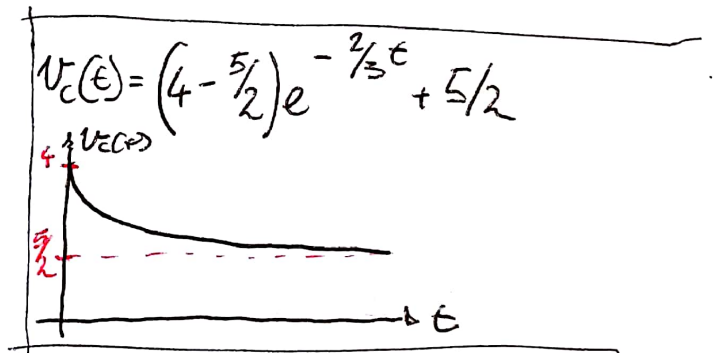


$E_{TH}$

$$\left(\frac{1}{2} + \frac{1}{2} + \frac{1}{3}\right)V = 2 + \frac{4}{3}$$

$$\frac{3+3+2}{6}V = \frac{6+4}{3} \Rightarrow V = E_{TH} = \frac{10}{3}$$

$$\Rightarrow V = E_{TH} = \frac{10}{3} \cdot \frac{6^2}{8} = \frac{20}{8} = \frac{5}{2}$$

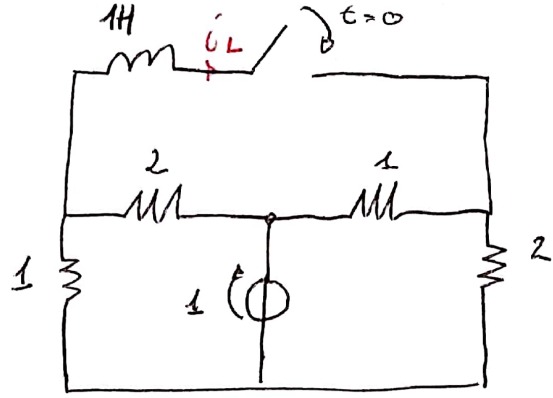


$$R_{TH} = (2 \parallel 2) \parallel 3 = \frac{3}{4} \Rightarrow \tau = \frac{3}{2}$$

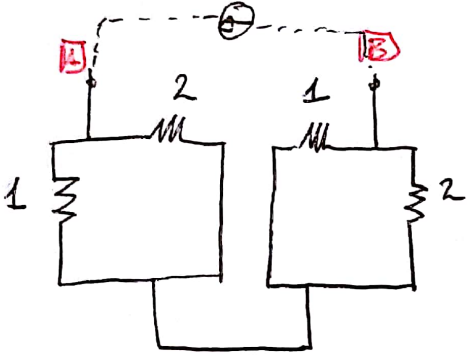
$\delta \times 4$

C.I.

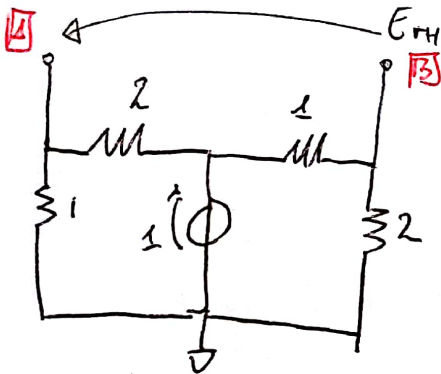
$i_L(0^-) = 0$



Eq. Th.

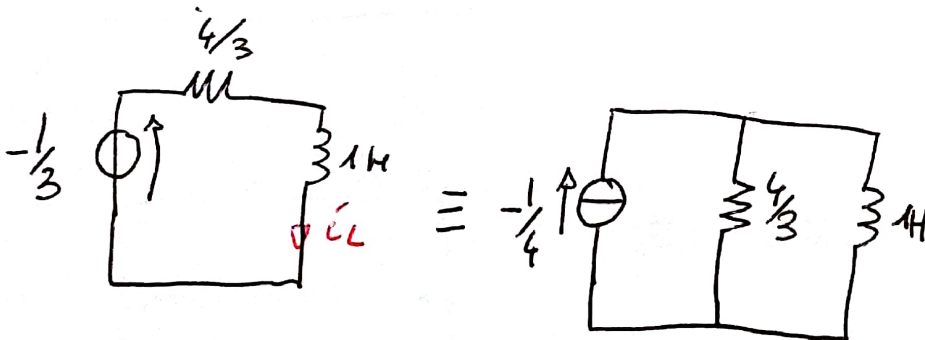


$R_{TH} = 2\Omega + 2\Omega = \frac{2}{3} + \frac{2}{3} = \frac{4}{3}$



$E_{TH} = V_A - V_B = -\frac{1}{3}$

$V_A = 1 \cdot \frac{1}{1+2} = \frac{1}{3}$      $V_B = 1 \cdot \frac{2}{1+2} = \frac{2}{3}$

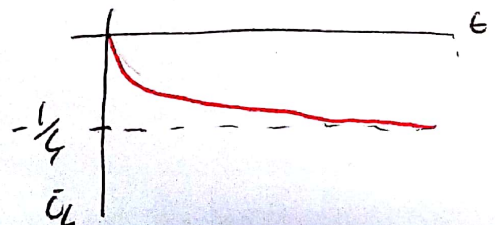


$i_L(\infty) = -\frac{1}{4}$

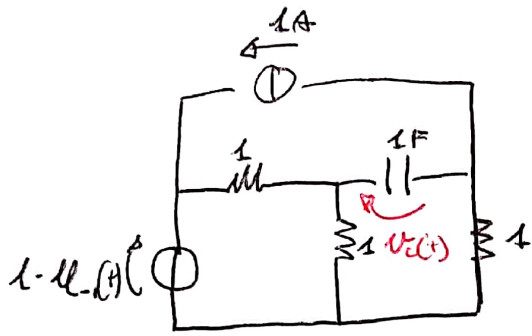
$\tau = G \cdot L = \frac{3}{4}$

$i_L = (i_L(0^-) - i_L(\infty))e^{-\frac{t}{\tau}} + i_L(\infty) = \left(\frac{1}{4}\right)e^{-\frac{4}{3}t} - \frac{1}{4}$

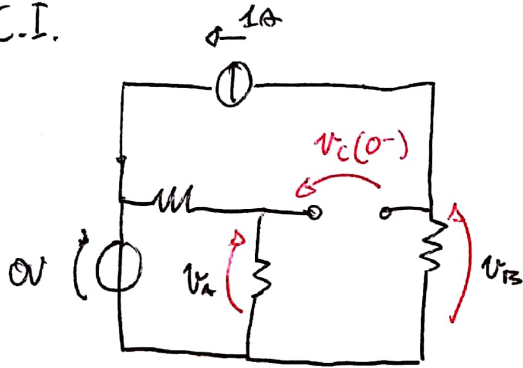
$= \left(1 - e^{-\frac{4}{3}t}\right) \cdot \left(-\frac{1}{4}\right)$



Ex 5



C.I.



$v_A$ : Partición de tensión en  $0V = 0$

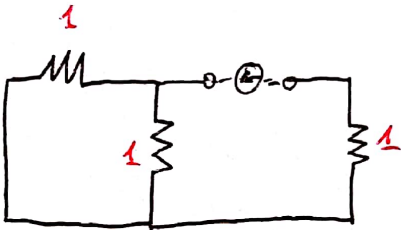
$v_B$ :  $1A$  w source

$$v_B = -R \cdot i = -1V$$

$$v_c(0^-) = v_A - v_B = 1V$$

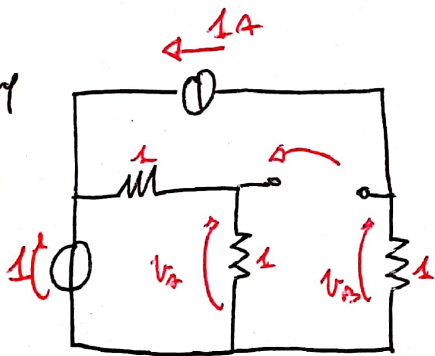
$t > 0$

R.eq



$$R_{eq} = 1 \parallel 1 + 1 = \frac{3}{2} \Omega \Rightarrow \tau = \frac{3}{2} \cdot 1 = \frac{3}{2} s$$

E.eq



$v_A$ : Partición  $1 \cdot \frac{1}{2} = \frac{1}{2}$

$v_B = -1V$

$$v_{TH} = v_A - v_B = \frac{3}{2} = v_c(\infty)$$

$$v_c(t) = \left(1 - \frac{3}{2}\right) e^{-\frac{2}{3}t} + \frac{3}{2}$$