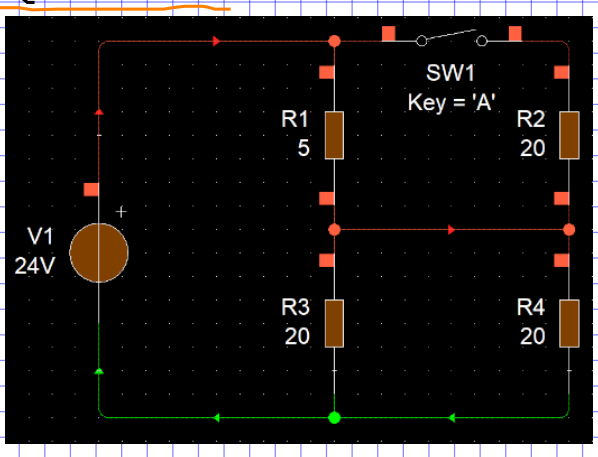
Clase 17 23.11.2022

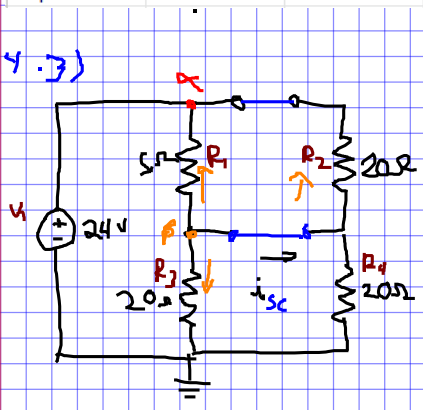
$i(0) = 800\,mA$



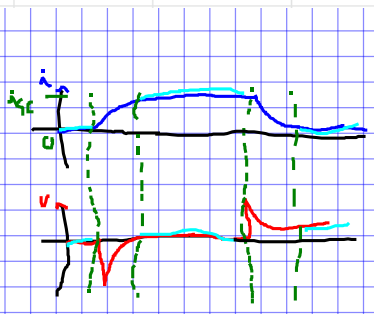
NI Multisim 14.0

	uControladores	PCB	S. Analógica	S. Digital	Facilidad	Construcción de Circuitos en Protoboard	Portabilidad
Multisim	x	x	8.5	8	7	x	?
Proteus	9	8.5	7.5	8	8	x	?
Livewire	x	7.5	7	7	9	x	10
Eagle	x	9	x	x	6	x	?
Fritzing	x	7.5	x	x	7	8	10
LTspice	x	x	9.5	7	7	x	x

4.7)



$V = L \frac{di}{dt}$



$-i_{R1} - i_{R2} - i_{R3} - i_{R4} = 0$

$-\frac{V_B - 24}{5} - \frac{V_B - 24}{20} - \frac{V_B}{20} - \frac{V_B}{20} = 0$

$-4V_B + 96 - V_B + 24 - V_B - V_B = 0$

$-7V_B = -120\ V \cdot \Omega$

$V_B = 17.14\ V$

Applying CKL at node left Beta :

$-i_{R1} - i_{R3} - i_{SC} = 0$

$-i_{SC} = -i_{R1} - i_{R3}$

$= -\left(\frac{V_B - 24}{5} + \frac{V_B}{20}\right)$

$= -\left(\frac{17.14 - 24}{5} + \frac{17.14}{20}\right)$

$= -(-1.372 + 0.857)$

$i_{SC} = 0.51A = 510\ mA$

$\tau = \frac{L}{R_t} = \frac{3.5H}{14\Omega} = \frac{1}{4} = 0.25\ s$

$\frac{1}{\tau} = \frac{1}{\frac{1}{4}} = 4$

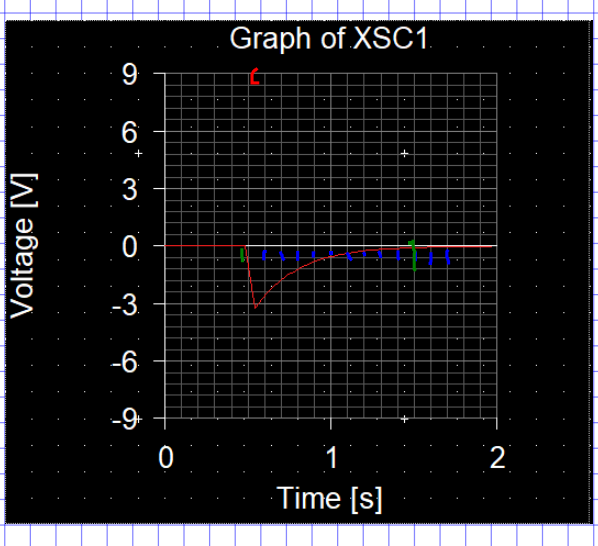
$i(t) = i_{SC} + [i(0) - i_{SC}]\, e^{-\frac{t}{\tau}}$

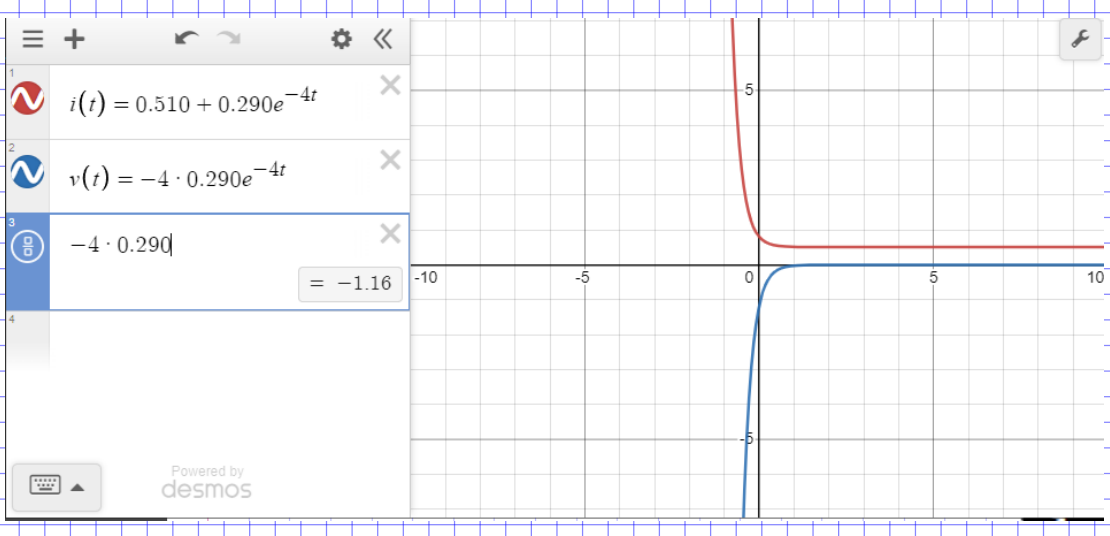
$= 510mA + (800\ mA - 510mA)\, e^{-4t}$

$i(t) = 510 + 290\, e^{-4t}\ mA$

5)

$5\tau = 1.25\ s$





P 8.3-26 Determine $v_o(t)$ for $t > 0$ for the circuit shown in Figure P 8.3-26.

9)

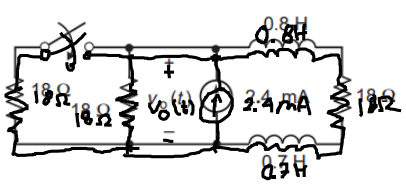


Figure P 8.3-26