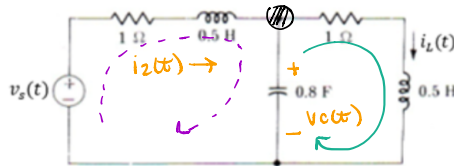


## Hoja de trabajo No. 2

1. Encuentre la función de transferencia  $\frac{I_L(s)}{V_s(s)}$ . Determine la corriente del inductor para  $v_s(t) = 2H(t)$  V.



FAPEA: calcular  

$$V(s) = \frac{V_C(s)}{V_S(s)}$$

sumatoria de corrientes.

$$\dot{v}_C(t) = 0.8 \frac{d}{dt} v_C(t)$$

$$\textcircled{1} \quad 0.8 \frac{d}{dt} v_C(t) + \dot{i}_L(t) = \dot{i}_2(t)$$

sumatoria de voltajes

$$-v_s(t) + 1 \dot{i}_2(t) + L \frac{d}{dt} \dot{i}_2(t) + v_C(t) = 0$$

$$-v_s(t) + \dot{i}_2(t) + 0.5 \frac{d}{dt} \dot{i}_2(t) + v_C(t) = 0 \quad \textcircled{2}$$

sumatoria de voltajes

$$-v_C(t) + 1 \dot{i}_L(t) + L \frac{d}{dt} \dot{i}_L(t) = 0$$

$$-v_C(t) + \dot{i}_L(t) + 0.5 \frac{d}{dt} \dot{i}_L(t) = 0$$

Asumo cond. iniciales = 0

$$0.8 s v_C(s) + I_L(s) = I_2(s) \quad \text{EC \#1}$$

$$-v_s(s) + I_2(s) + 0.5 s I_2(s) + v_C(s) = 0 \quad \text{EC \#2}$$

$$-v_C(s) + I_L(s) + 0.5 s I_L(s) = 0 \quad \text{EC \#3}$$

• reordenado.

$$0.8s V_o(s) - I_2(s) + I_L(s) = 0$$

$$V_o(s) + (1 + 0.5s) I_2(s) = V_s(s)$$

$$-V_o(s) + (1 + 0.5s) I_L(s) = 0$$