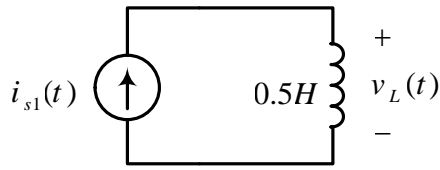


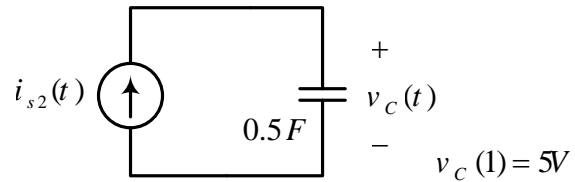
Name:

I.D. Number:



$$i_{s1}(t) = 5e^{-100t} \quad \text{for } t \geq 0$$

(a)



$$i_{s2}(t) = 20e^{-t} \quad \text{for } t \geq 1$$

(b)

- In circuit (a) above, find $v_L(t)$ for $t > 0$.
- Also in circuit (a), calculate the power absorbed by the inductor at $t = 0$.
- In circuit (b), find $v_C(t)$ for $t \geq 1$.

$$\text{a) } v_L(t) = 0.5 \times 5 \times (-100e^{-100t}) = -250e^{-100t} \quad V$$

$$\text{b) } P_L(t) = i_L(t)v_L(t) = (5e^{-100t}) \times (-250e^{-100t}) = -1250e^{-200t}$$

$$P_L(0) = -1250 \quad W$$

$$\text{c) } v_C(t) = \frac{1}{C} \int_{t_0}^t 20e^{-t} dt + v_C(t_0) = \frac{1}{0.5} \int_1^t 20e^{-t} dt + 5 = -40e^{-t} + 40e^{-1} + 5 = -40e^{-t} + 19.72$$