Second order circuits 001

Problem has been graded.

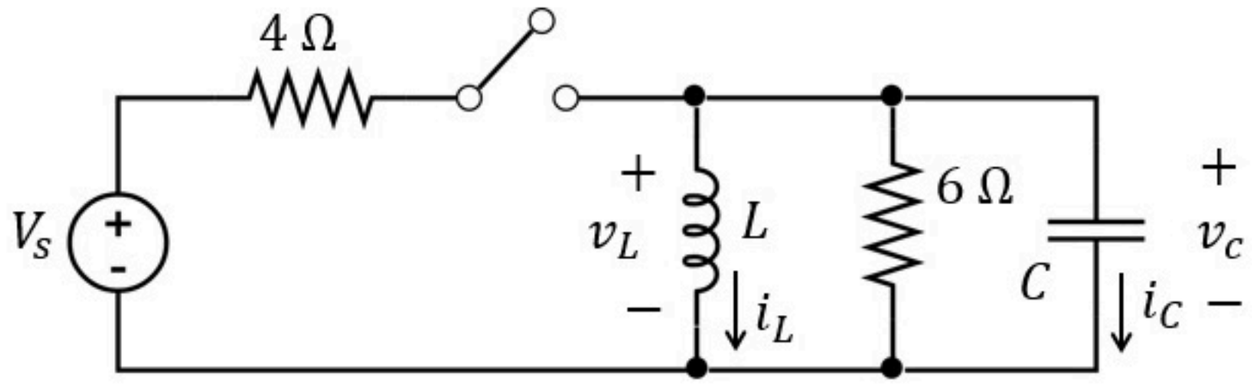
The switch opens at time t = 2 s. Before the switch opens, the system has reached steady state.

Find these voltages and currents (i.e., just before the switch opens):

$$i_{L1} = i_L(2^-) \quad v_{L1} = v_L(2^-) \quad i_{C1} = i_C(2^-) \quad v_{C1} = v_C(2^-)$$

Find these voltages and currents (i.e., just after the switch opens):

$$i_{L2} = i_L(2^+) \quad v_{L2} = v_L(2^+) \quad i_{C2} = i_C(2^+) \quad v_{C2} = v_C(2^+)$$



Given Variables:

Vs : 8 V

C : 2 nF

L : 2 mH

Calculate the following:

iL1 (A) :

2 ✓

vL1 (V) :

0 ✓

iC1 (A) :

0 ✓

vC1 (V) :

0 ✓

iL2 (A) :

2 ✓

vL2 (V) :

0 ✓

iC2 (A) :

-2 ✓

vC2 (V) :

0 ✓

Hint: In steady state, the capacitor and inductor behave as an open and short respectively.