

Boise State University
Electrical Engineering Department

EE 210: Circuits I
Spring 2017

Due Date: Wed. 4/19/2017

Problem 1.

An inductor has a linear change in current from 50 mA to 100 mA in 2 ms and induces a voltage of 160 mV. Calculate the value of the inductor.

Problem 2.

The voltage across a 200-mH inductor is given by

$$v(t) = 3t^2 + 2t + 4 \text{ V for } t > 0.$$

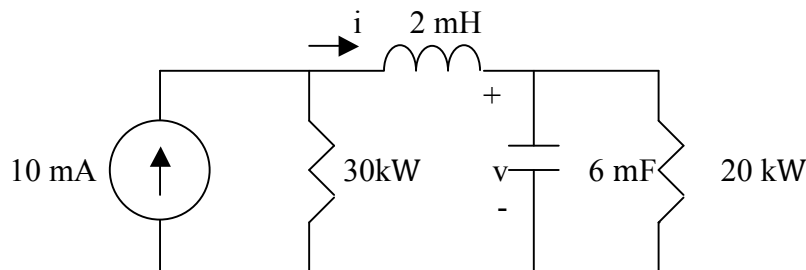
Determine the current $i(t)$ through the inductor. Assume that $i(0) = 1 \text{ A}$.

Problem 3.

The current in an 80-mH inductor increases from 0 to 60 mA.
How much energy is stored in the inductor?

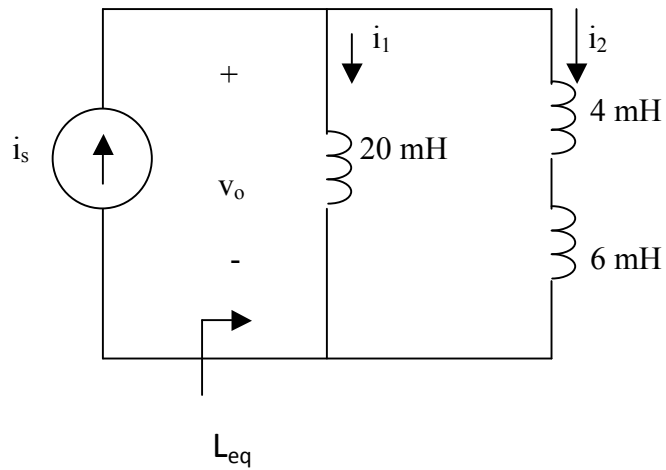
Problem 4

Under steady-state dc conditions, find i and v in the circuit in Fig. below
(Final Answer: $i = 6 \text{ mA}$, $v = 120 \text{ V}$)



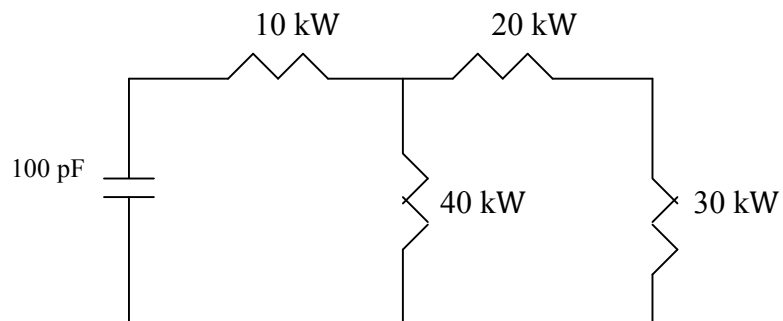
Problem 5

Consider the circuit in Fig. below. Find: (a) L_{eq} , $i_1(t)$ and $i_2(t)$ if $i_s = 3e^{-t}$ mA, (b) $v_o(t)$, (c) energy stored in the 20-mH inductor at $t=1$ s.



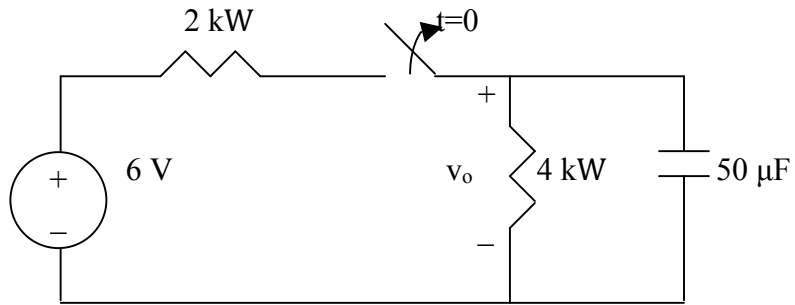
Problem 6

Determine the time constant for the circuit in Fig. below



Problem 7

The switch in Fig. below opens at $t=0$. Find v_o for $t > 0$.

**Problem 8**

For the circuit in Fig. below, find i_o for $t > 0$.

