

GEORGIA INSTITUTE OF TECHNOLOGY
School of Electrical and Computer Engineering

Course EE 2250
Electric Circuit Analysis

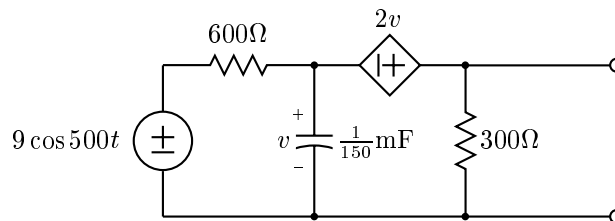
Assigned: February 4, 1999
Due: February 11, 1999

Problem Set #5

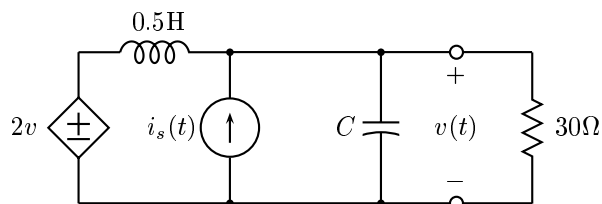
Reminder: Quiz #2 will be held on Thursday, Feb. 11, 1999. It will be a closed book, closed notes quiz and will cover the material from Problem Sets 3 and 4.

Reading: Read the following sections from Dorf and Svoboda:
Chapter 10, Sections 10.10–10.11, 10.14; (Node and Mesh Methods)
Chapter 13, Sections 13.3–13.5 (Frequency Responses of Circuits)

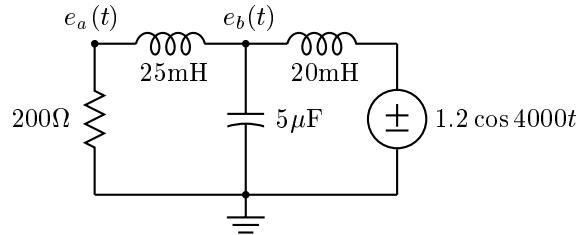
Problem 5.1: Find the Thévenin equivalent circuit for the circuit shown in the figure below using the mesh current method.



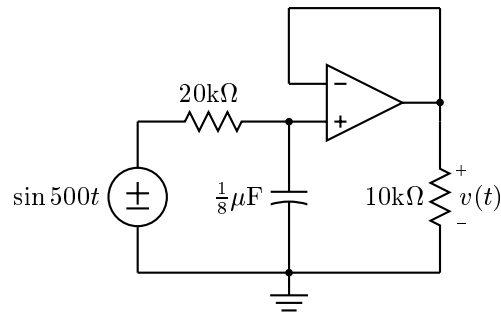
Problem 5.2: Find $v(t)$ by first replacing the circuit to the left of the terminals with its Thévenin equivalent circuit when $C = 10$ mF. The current in the current source is $i_s(t) = 10 \cos 20t$.



Problem 5.3: Find the two node voltages $e_a(t)$ and $e_b(t)$ in the circuit below.

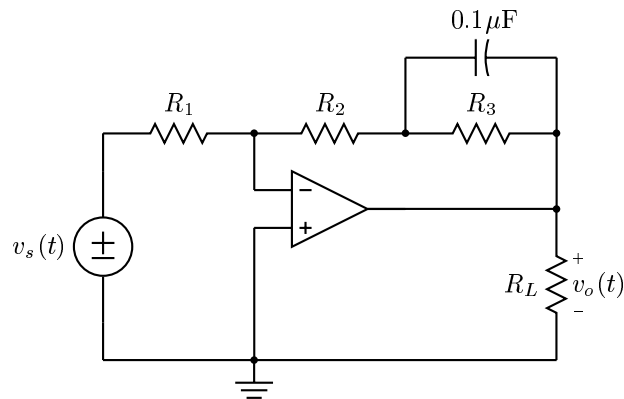


Problem 5.4: For the circuit below find $v(t)$.



Problem 5.5: In the circuit below the value of R_1 is $10\text{k}\Omega$.

- Determine the values of R_2 and R_3 so that the gain at low frequencies is 5 and the gain at high frequencies is 2.
- Determine the frequency at which the gain is midway between these two values, i.e. the frequency at which the gain is 3.5.



Problem 5.6: Sketch the asymptotes for the magnitude Bode plot of the frequency response of the circuit below.

