Networks and Systems EEL 3123, Section 1
HOMEWORK 2 – Assigned Sep 21, 2011, Due on Sep 28, 2011

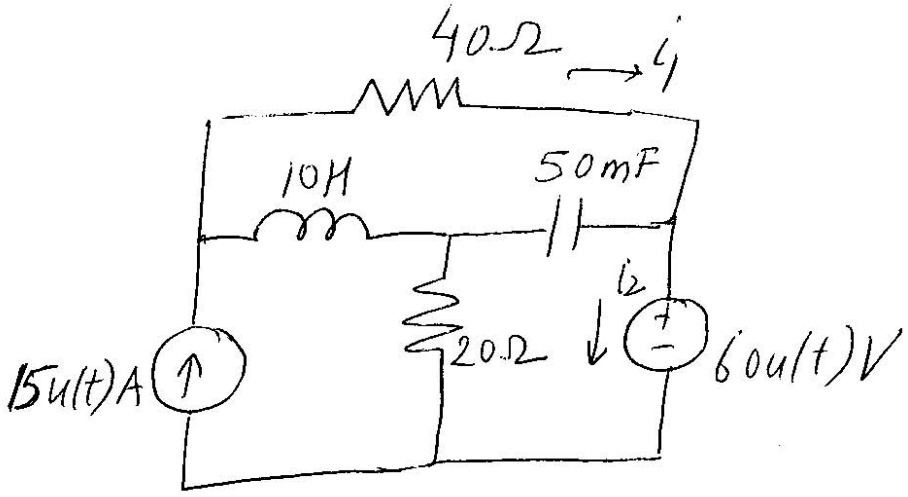
Covers Chapter 13. If there are doubts, you are welcome to see me and discuss your problems. Your notes and the textbook should be ample material to solve these problems:

1. There is no energy stored in the circuit in Figure below. at the time the sources are enrgized.

   (a) Find $I_1(s)$ and $I_2(s)$.

   (b) Use the initial and final-value theorems to check the initial and final-values of $i_1(t)$ and $i_2(t)$.

   (c) Find $i_1(t)$ and $i_2(t)$ for $t \geq 0$.

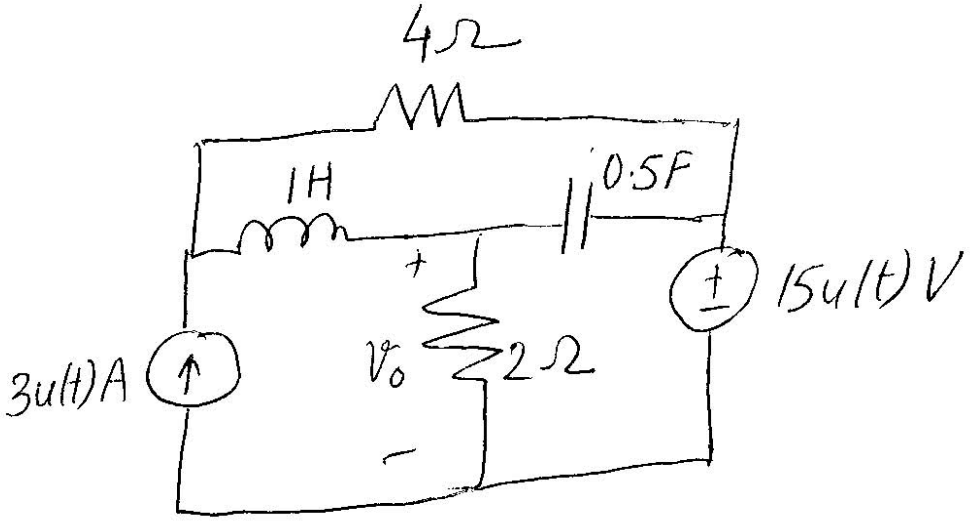


2. There is no energy stored in the circuit in Fig below at $t = 0^-$.

   (a) Find V_0.

   (b) Find v_0.

   (c) Simplify circuit at initial and final times and compare with computed solution from (b) at initial and final times.



3. The op amp in the circuit seen in Fig. below is ideal.

   (a) Find the transfer function V_0/V_g.

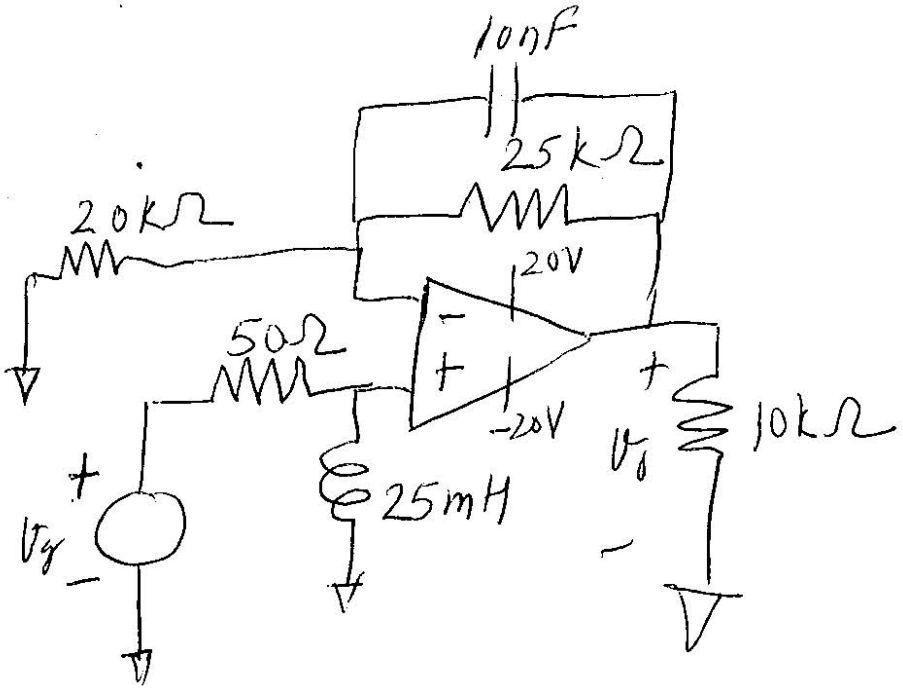
   (b) Find v_0 if $v_g = 10u\,(t)$ V.

   (c) Find the steady-state expression for v_0 if $v_g = 8\cos\,(2000t)$ V.

4. When the input voltage of $240u\,(t)$ V is applied to a circuit, the response is known to be

$$v_0 = \left(75 - 100e^{-800t} + 25e^{-3200t}\right) u\,(t) \text{ V}.$$

   What will the steady-state response be if $v_g = 40\cos\,(1600t)$ V.


10nF
25kΩ
20kΩ
20V
50Ω
-20V
10kΩ
25mH
+
Vg
-
+
Vo
-