

# ECE 207L - CONTROLLED SOURCES - LAB 6 CIRCUITS WITH CONTROLLED VOLTAGE SOURCES - PART II

FALL 2003

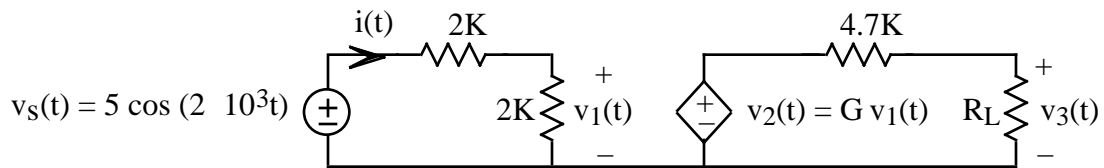
A.P. FELZER

## OBJECTIVE

The objective of this lab is to measure and make use of equivalent resistances and Thevenin Equivalents of resistor circuits containing controlled sources

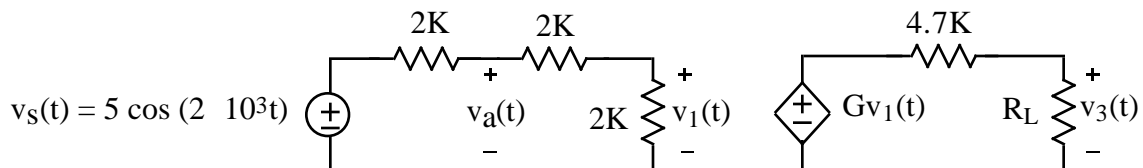
## LAB

- Given the following circuit with a voltage controlled voltage source

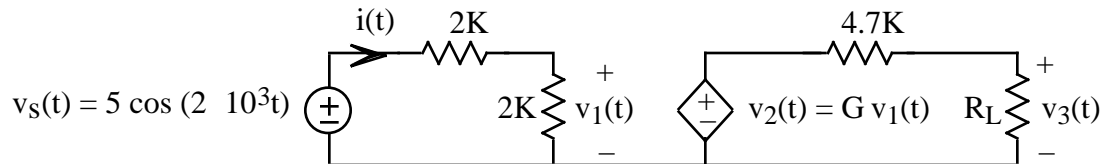


PARTNER 1:  $R_L = 4.7K$     PARTNER 2:  $R_L = 10K$

- First redraw the circuit diagram with the controlled source replaced by your op amp circuit from Lab 4. Show the power supplies and write in the pin numbers.
- Then measure your resistor values. Compare with nominal values
- Take measurements to calculate the equivalent resistance  $R_{eq} = v_s(t)/i(t)$  looking into the circuit from the input
- Make use of your value for  $R_{eq}$  to predict  $v_a(t)$  in the following circuit. Be sure to draw the equivalent circuit



- Measure  $v_a(t)$  in your circuit
- Compare the amplitudes of your measured and calculated voltages  $v_a(t)$
- Take measurements to find  $V_{TH}$  and  $R_{TH}$  as seen by  $R_L$  in the original circuit as follows



Do not connect a source or ohmmeter at the output of the circuit to measure  $R_{TH}$  - it will disrupt the inner workings of the op amp

- Make use of your Thevenin Equivalent results in part (g) to predict  $v_3(t)$  in the circuit
- Measure  $v_3(t)$
- Compare the amplitudes of your measured and predicted voltages  $v_3(t)$