

ECE 207L - REVIEW OF RESISTOR CIRCUITS - LAB 2 NODE EQUATIONS

FALL 2003

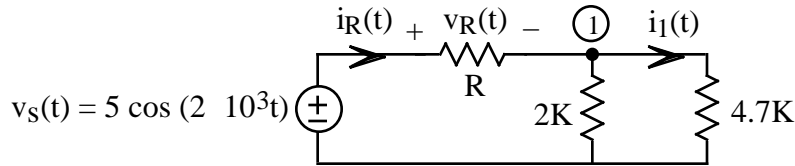
A.P. FELZER

OBJECTIVE

The objective of this lab is to review node analysis of resistor circuits with sinusoidal sources.

LAB

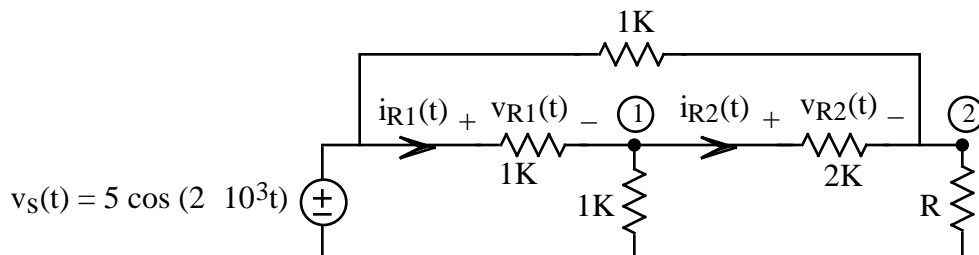
1. Given the following circuit



PARTNER 1: $R = 1K$ PARTNER 2: $R = 2K$

- a. Measure your resistor values. Compare with nominal values.
- b. Measure the node voltage $v_1(t)$.
- c. Use node equations to solve for $v_1(t)$.
- d. Compare your calculated and measured amplitudes for $v_1(t)$.
- e. Measure $v_R(t)$ and then use it to calculate $i_R(t)$.
- f. Make use of current division to calculate $i_1(t)$.
- g. Use your $v_1(t)$ to calculate $i_1(t)$.
- h. Compare your calculated and measured amplitudes for $i_1(t)$ in parts (f) and (g).

2. Given the following circuit



PARTNER 1: $R = 1K$ PARTNER 2: $R = 2K$

- a. Measure your resistor values. Compare with nominal values.
- b. Display the node voltages on the scope. Make use of what you see to draw pictures of and write equations for $v_1(t)$ and $v_2(t)$.
- c. Make use of your node voltages to calculate the voltages $v_{R1}(t)$ and $v_{R2}(t)$.
- d. Measure $v_{R1}(t)$ and $v_{R2}(t)$.
- e. Compare the amplitudes of your calculated and measured $v_{R1}(t)$ and $v_{R2}(t)$.
- f. Make use of your values for $v_{R1}(t)$ and $v_{R2}(t)$ to calculate $i_{R1}(t)$ and $i_{R2}(t)$.