

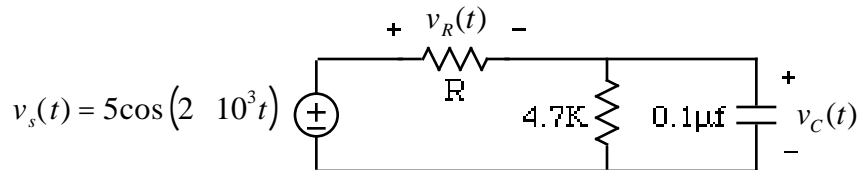
ECE 209L - PHASOR CIRCUITS - LAB 5 OUR FIRST PHASOR CIRCUIT

FALL 2003

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OBJECTIVE

The objective of this lab is to demonstrate that phasor analysis works for RC circuits like the following



PARTNER 1: $R = 3K$ PARTNER 2: $R = 4.7K$

LAB

1. **Prelab** - Obtain and measure your resistor and capacitor values. Then compare your nominal and measured values. Put your results in a Table
2. Build the circuit and then make use of what you see on the scope to obtain equations for $v_R(t)$ and $v_C(t)$
3. **Prelab** - Draw the phasor circuit with your measured values and then analyze it to obtain equations for $v_R(t)$ and $v_C(t)$
4. Compare your measured and calculated values for the amplitudes and phases of $v_R(t)$ and $v_C(t)$. Put your results in a Table
5. Make use of Mathcad to obtain a Table of $v_s(t)$ and $v_R(t) + v_C(t)$ at $t=0, 0.2 \text{ msec}, 0.4 \text{ msec}, \dots, 1 \text{ msec}$ for $v_R(t)$ and $v_C(t)$ as measured in Problem (2)
6. Make use of your results in Problem (5) to verify that Kirchhoff's Voltage Law

$$v_s(t) = v_R(t) + v_C(t)$$

is satisfied at each of the times $t=0, 0.2 \text{ msec}, 0.4 \text{ msec}, \dots, 1 \text{ msec}$. Make use of a Table as follows

t (msec)	$v_s(t)$	$v_R(t) + v_C(t)$	% Difference