

ECE 207L - SINUSOIDAL STEADY STATE RESPONSES - LAB 25 FIRST ORDER RL CIRCUITS

FALL 2003

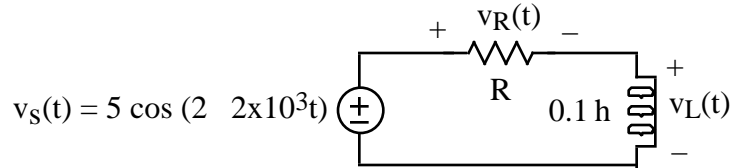
A.P. FELZER

OBJECTIVE

The objective of this lab is to measure sinusoidal steady state responses of first order RL circuits

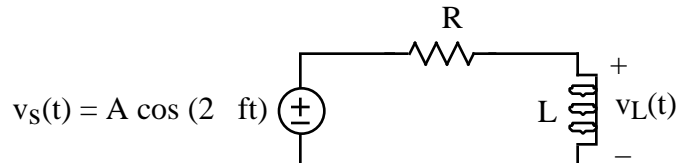
LAB

- Given the following first order RL circuit with sinusoidal input



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

- Measure your resistor and inductor values. Compare with nominal values
 - Make use of what you see on the scope to sketch graphs of $v_s(t)$, $v_R(t)$ and $v_L(t)$
 - Make use of what you see on the scope to find equations for $v_R(t)$ and $v_L(t)$
 - Make use of your measured voltages to verify that KVL is satisfied at $t = 0$ and $t = 0.4$ msec
 - Verify that the amplitudes of the sinusoids do not obey KVL
 - Calculate $v_R(t)$ and $v_L(t)$
 - Compare your measured and calculated values for the amplitudes and phases of $v_R(t)$ and $v_L(t)$
- Given the following first order RL circuit with sinusoidal input



Make use of the scope to see how

- Increasing R affects the amplitude of the steady state $v_L(t)$.
- Increasing L affects the amplitude of the steady state $v_L(t)$.
- Increasing A affects the amplitude of the steady state $v_L(t)$.
- Increasing f affects the amplitude of the steady state $v_L(t)$.