

ECT150  
 Homework #10 Problem Set Handout - RL, RC Phasor Analysis  
 Sr. Professor Wheeler

Total Points: 24 (3 per problem)

All work must be shown, and final answers boxed or underlined. No credit if work is not shown.

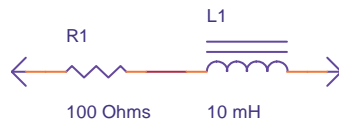
1. Calculate the total impedance ( $Z_T$ ) for the following circuits. Express your answers in both rectangular and polar form. Characterize each impedance as either capacitive, inductive, or purely resistive. (State why).



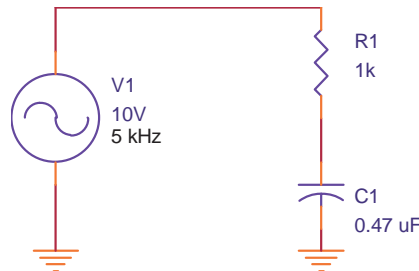
2. Calculate the total impedance of the circuit below at the following frequencies: 1000 Hz; 10 kHz. What happens to  $Z_T$  as frequency increases, and why?



3. Calculate the total impedance of the circuit below at the following frequencies: 1000 Hz; 10000 Hz. What happens to  $Z_T$  as frequency increases, and why?

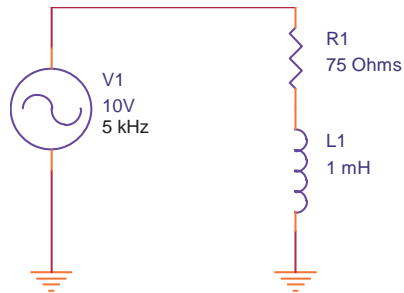


4. In the circuit below, solve for  $I_T$  and  $V_{R1}$  using phasor methods. Express in both polar and rectangular form.

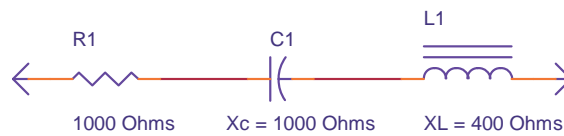


5. In the circuit of problem #4, solve for  $V_{C1}$ . Demonstrate KVL by adding  $V_{C1}$  and  $V_{R1}$  (you should get the source voltage).

6. In the circuit below, solve for  $V_{R1}$  and express in polar form.



7. What is the total impedance of the circuit below? Characterize it as either capacitive, inductive, or purely resistive. (State why).



8. What is the total impedance of the circuit below? Characterize it as either capacitive, inductive, or purely resistive. (State why).

