Phys 222 SI Session #28

**Topics:** AC RLC Circuits, Phasors

Intro discussion: Should kids be taught to code?

1. With the help of an oscilloscope, the total voltage the current in an LRC circuit are plotted in the figure below as a function of time. Which of the phasors drawn in the phasor diagram below corresponds to the total voltage?

2. A series RLC circuit has a sinusoidal voltage supplied to it at 197 kHz with a peak voltage of 270V, a resistance of 41 kΩ, a capacitor of 14 μF, and inductor of 63H. What is the peak current for this circuit?

3. The inductor in a radio receiver carries a current of amplitude 200mA when a voltage of amplitude 2.40V is across it at a frequency of 1400 kHz. What is the value of the inductance?

4. Assume a series RLC circuit where source voltage leads current by a phase angle $\phi$. Which of the following causes $\phi$ to increase?
   A. Increase the resistance of the resistor
   B. Increase the amplitude of the source voltage
   C. Decrease the inductance of the inductor
   D. Increase the frequency of the source voltage

5. Which one of the following phasor diagrams best represents a series LRC circuit driven at resonance?