PHYS 202 ac circuit and Resonance Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

      V = IZ     

96. To receive AM radio, you want an RLC circuit that can be made to resonate at any frequency between 500 and 1650 kHz. This is accomplished with a fixed 1.00 μH inductor connected to a variable capacitor. What range of capacitance is needed?

100. The lowest frequency in the FM radio band is 88.0 MHz. (a) What inductance is needed to produce this resonant frequency if it is connected to a 2.50 pF capacitor? (b) The capacitor is variable, to allow the resonant frequency to be adjusted to as high as 108 MHz. What must the capacitance be at this frequency?

102. An RLC series circuit has a 1.00 kΩ resistor, a 150 μH inductor, and a 25.0 nF capacitor. (a) Find the circuit’s impedance at 500 Hz. (b) Find the circuit’s impedance at 7.50 kHz. (c) If the voltage source has Vrms = 408 V , what is Irms at each frequency? (d) What is the resonant frequency of the circuit? (e) What is Irms at resonance?