

Consider a circuit with an ideal 60 Hz generator with peak voltage of 220 V connected to a 1 H inductor and a 1Ω resistor connected in series. Find an expression for the current as a function of time.

Consider a LC circuit consisting of a ac generator, an inductor with inductance L , and a capacitor with capacitance C connected in series. What is the resonant frequency? If I swap out the inductor with an inductor whose inductance is ηL , where η is a arbitrary factor, how does the resonant frequency change?

Consider an ac generator with frequency, f , with peak voltage V , connected in series with a resistor (R), an inductor (L) and a capacitor (C). What is the resonant frequency? What is the average power at this frequency?

Consider a circuit with a resistor (R), an inductor (L) and a capacitor (C) connected in series. At $t=0$, a charge Q_0 is on the capacitor. What is the charge Q as a function of time?