

AC Ohms Law (57:07)

ERROR at 26:17 $339V_{PEAK} = 240V_{RMS}$

Describe the relationship of voltage, impedance, and current.

Identify all 3 basic permutations of AC Ohm's Law.

Describe the phase shift of current with respect to voltage for resistors. Draw a plot of these properties.

Differentiate between passive and active elements with respect to voltage polarity, current direction, and power delivery. Give an example of each.

Describe a reactive element.

Describe the phase shift of current with respect to voltage for capacitors. Draw a plot of these properties.

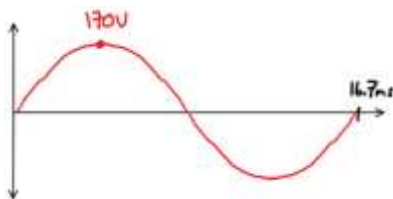
Describe the phase shift of current with respect to voltage for inductors. Draw a plot of these properties.

Draw a plot of voltage, current, and power for a resistive element. Identify a distinguishing feature of power for resistive elements. Discuss average power for purely resistive elements.

Draw a plot of voltage, current, and power for a capacitive element. Identify a distinguishing feature of power for capacitive elements. Discuss average power for purely capacitive elements.

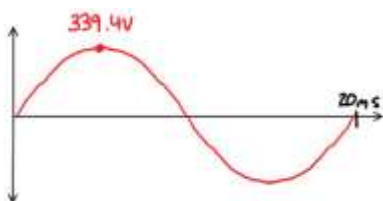
Draw a plot of voltage, current, and power for an inductive element. Identify a distinguishing feature of power for inductive elements. Discuss average power for purely inductive elements.

Given this plot of voltage use AC Ohm's Law to determine the current through a 200Ω resistor.



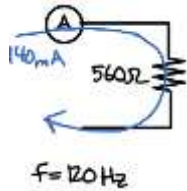
Given this plot of voltage use AC Ohm's Law to determine the current through an $8\mu\text{F}$ capacitor.

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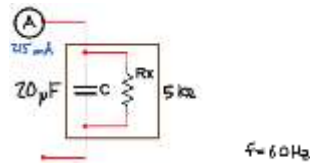


Given sinusoidal AC voltage with an effective value of 48V at a frequency of 400Hz across a 42mH inductor with 10Ω of internal resistance determine the effective value of the current through it and the phase shift between voltage and current.

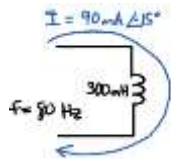
Given the following information determine the voltage across the resistor.



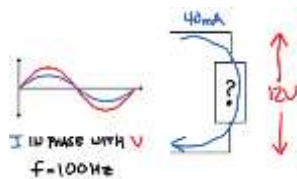
Given the following information determine the voltage across the non-ideal capacitor. Determine the relative phase shift of current with respect to voltage.



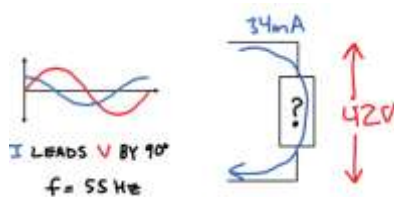
Given the following information determine the voltage across the inductor. Determine the relative phase shift of current with respect to voltage.



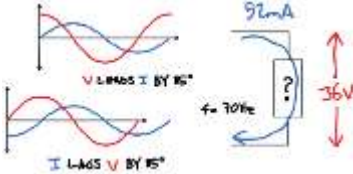
Given the following information determine the impedance of the unknown element.



Given the following information determine the impedance of the unknown element. Determine the component value of this reactive element.



Given the following information determine the impedance of the unknown element. Determine the component value of this reactive element.



Differentiate between absolute and relative phase shift. Identify which property is more important.