

Measuring Current with an Oscilloscope (39:09)

Describe how an oscilloscope can be used to measure current in an electrical circuit.

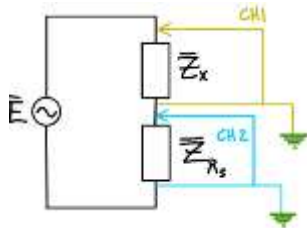
Identify an appropriate size rule for a sensing resistors

Discuss the appropriateness of the following scenarios incorporating sensing resistors:

- 1) 100Ω load resistor and 5Ω sensing resistor
- 2) 120mH inductor at 60Hz and 5Ω sensing resistor
- 3) 120mH inductor at 1.5kHz and 5Ω sensing resistor

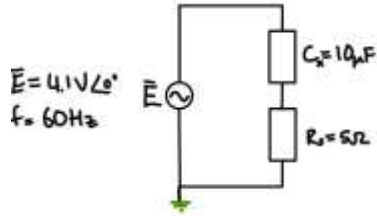
Identify the limitations of oscilloscopes with respect to the reference lead.

Discuss why this is an improper use of an oscilloscope. Draw the correct method of using an oscilloscope in a series circuit.

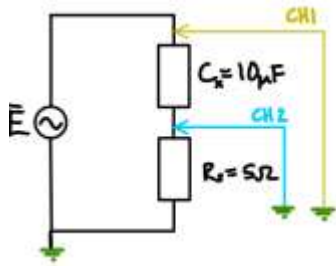


Identify what properties are directly and indirectly being measured when a sensing resistor is included in a circuit. Identify the advantage of this technique.

Given the following information determine the anticipated current drawn by C_x .



When configured in the following fashion employing the same vertical sensitivity explain why CH1 shows a sinusoidal voltage waveform and CH2 shows a flat line.



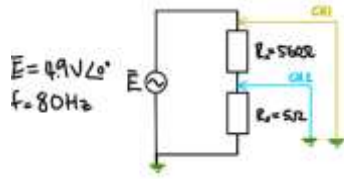
Given the following display and sensitivity settings determine the electrical properties of the waveform on CH2. Given CH2 is the voltage across a 5Ω resistor determine the phasor equivalent of current through it.



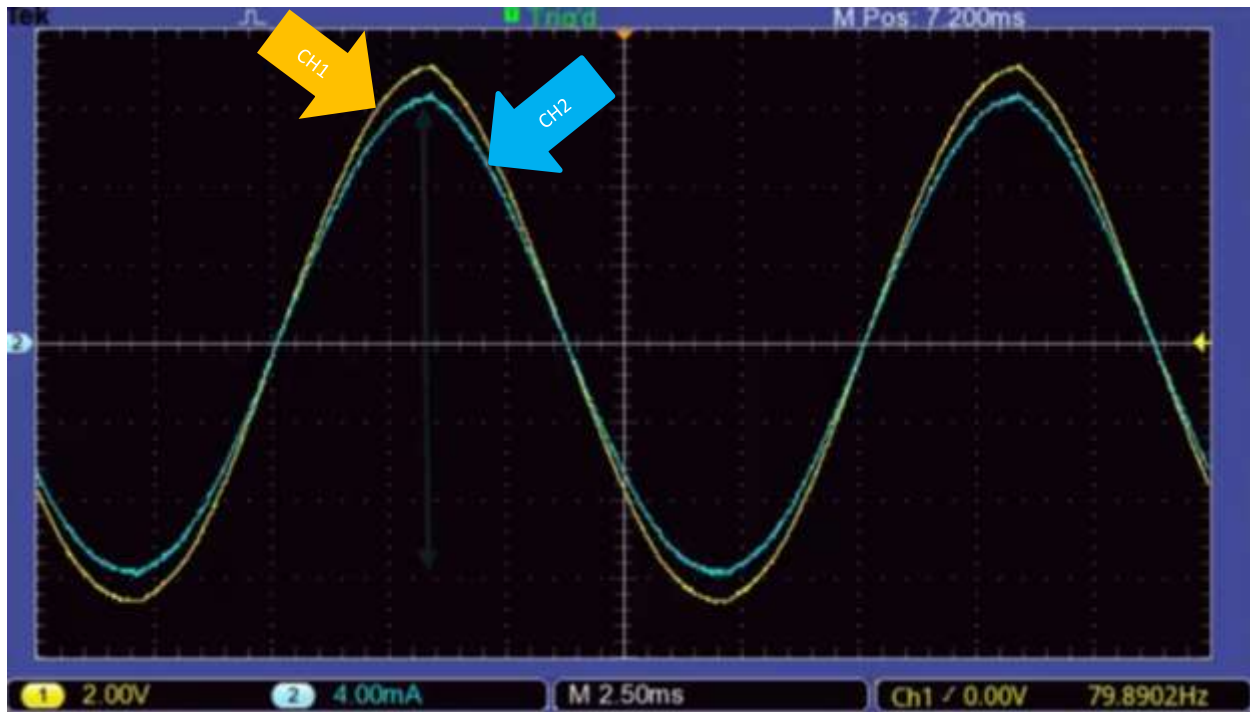
Discuss the source and magnitude of any measurement errors induced by incorporating a sensing resistor in a circuit.

Identify the means of setting up the Tektronix TBS1032B to automatically measure current on CH2 with an appropriate scaling factor for the chosen sensing resistor.

Given the following information determine the anticipated current drawn by R_x .



Given the following display and sensitivity settings determine the electrical properties of the waveform on CH2. Given CH2 is the voltage across a 5Ω resistor determine the phasor equivalent of current through it.



Given the following display and sensitivity settings determine the electrical properties of the waveforms on CH1 and CH2. Given CH2 is the voltage across a 5Ω resistor determine the phasor equivalent of current through it. Determine the impedance of the unknown element and its component level values.



ERROR at 30:40 CH2 has a peak to peak span of 6.4 divisions instead of 4.4 divisions. Same error affects impedance calculations at 33:05.