Using the measured values of V_L and V_R, calculate the total voltage, V_T, as $V_T = \sqrt{V_R^2 + V_L^2}$. Does this value equal the applied voltage, V_A, of 5 V? _____ Using the measured values of voltage and current, calculate X_L as V_L/I and Z_T as V_T/I. X_L = _____, Z_T = _____ Using Formula (21–3), determine the phase angle, θ_Z. θ_Z = _____. How do these values compare to those originally calculated in Fig. 21–36. _____

In the space provided below, draw the phasor voltage triangle, including the phase angle, θ_v, for the circuit of Fig. 21–36. Use measured values for V_R, V_L, and V_T.

Ask your instructor for assistance in using the oscilloscope to measure the phase angle, θ, in Fig. 21–36. Note the connections designated for channels 1 and 2 in the figure.

Parallel *RL* Circuit

Examine the parallel *RL* circuit in Fig. 21–37*a*. Calculate and record the following circuit values:
X_L = _____, I_L = _____, I_R = _____, I_T = _____, Z_{EQ} = _____, θ_I = _____

Construct the circuit in Fig. 21–37*a*. Set the applied voltage, V_A, to 5 Vrms and the frequency, f, to 2 kHz. Using a DMM, measure and record the following circuit values:
I_L = _____, I_R = _____, I_T = _____
Using the measured values of I_L and I_R, calculate the total current, I_T, as $I_T = \sqrt{I_R^2 + I_L^2}$. Does this value agree with the measured value of total current? _____ Using the measured values of I_L and I_R, calculate the phase angle, θ_I, using Formula (21–6). θ_I = _____ Also, calculate X_L as V_A/I_L and Z_{EQ} as V_A/I_T using measured values. X_L = _____, Z_{EQ} = _____. How do these values compare to those originally calculated in Fig. 21–37*a*? _____

In the space provided below, draw the phasor current triangle, including the phase angle, θ_I, for the circuit of Fig. 21–37*a*. Use measured values for I_L, I_R and I_T.

Ask your instructor for assistance in using the oscilloscope to measure the phase angle, θ_I, in Fig. 21–37*b*. Note the connections designated for channels 1 and 2 in the figure. [The voltage drop across the sensing resistor (R_{sense}) has the same phase as the total current, I_T.]

Figure 21–37