While measuring the total current, I_T, connect and disconnect the 0.22-μF capacitor several times. You should notice that I_T decreases when the capacitor is connected. Explain why this happens. _____

_____

Using measured values, calculate the net reactive current, I_X, as $I_L - I_C$ or $I_C - I_L$ depending on which current is larger.
I_X = _____
Using the experimental value of I_X and the measured value of I_R, calculate the circuit's phase angle, θ_I. θ_I = _____
Using measured values, calculate the following:
apparent power = _____, real power = _____,
PF = _____

In Figure 23–34*a*

a. Did the apparent power increase, decrease, or stay the same when the capacitor was added? _____

b. Did the phase angle, θ_I, become more negative, less negative, or did it stay the same when the capacitor was added? _____

c. Did the real power increase, decrease, or stay the same when the capacitor was added? _____

d. Did the power factor, PF, increase, decrease, or stay the same when the capacitor was added? _____

Add a 10-Ω sensing resistor as shown in Fig. 23–34*b*. Next, connect the oscilloscope to measure the phase angle, θ_I, between V_A and I_T. Note the connections designated for channels 1 and 2 in the figure. While viewing the displayed waveforms on the oscilloscope, connect and disconnect the 0.22-μF capacitor several times. Explain what happens to the phase angle when the capacitor is connected. _____

_____