Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

**Inductive Reactance**

**Assignment # 2 - Compute Applied Voltage and Impedance of RL Circuits**

1. Select true statements relating to R-L series circuits by placing an “X” in the appropriate blanks.

\_\_\_\_\_ a. The current in a series R-L circuit is the same in the inductor as in the resistor

(at all times).

\_\_\_\_\_ b. In a purely inductive circuit, the current lags the applied voltage by 90 degrees

(π /2 radians).

\_\_\_\_\_ c. In a practical circuit containing inductance and resistance, the current will lag

the voltage by an angle somewhere between almost zero and almost 90

degrees.

\_\_\_\_\_ d. The voltage across the inductor is always in phase with the applied voltage.

\_\_\_\_\_ e. The voltage across the resistor is always in phase with the applied voltage.

\_\_\_\_\_ f. The voltage across the resistor is always in phase with the current flowing

through the resistor.

\_\_\_\_\_ g. The applied voltage is the vector sum of the voltage drops across the resistor

and the inductor.

\_\_\_\_\_ h. If 100 volts is applied to a circuit having 50 ohms of resistance and 50

ohms of inductive reactance, there will be 50 volts across the resistor

and 50 volts across the inductor.

1. If there are 10 ohms of resistance in series with 10 ohms of inductive reactance, the circuit impedance will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ohms. (Use this space to show your formula)
2. If there is a 30 volt drop across the resistor and a 40 volt drop across the inductor in a series R-L circuit, the applied voltage is \_\_\_\_\_\_\_\_ volts, and the cosine of the phase angle is \_\_\_\_\_\_\_\_\_\_\_. (Remember, the cosine of the phase angle equals VR/VS.)

(Use the space below to show your formula)

1. Solve as indicated using the circuit values given.
   1. XL = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. Z = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. I = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. θ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. VR = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   6. VL = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

