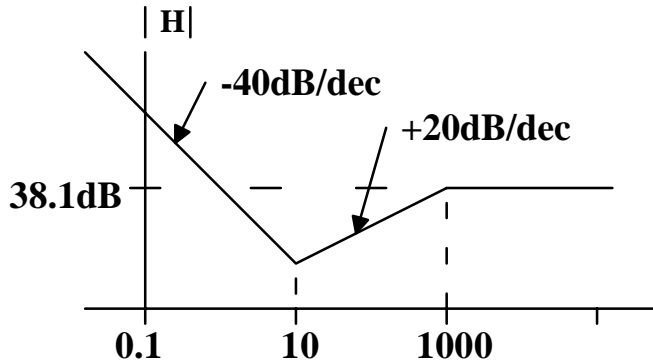


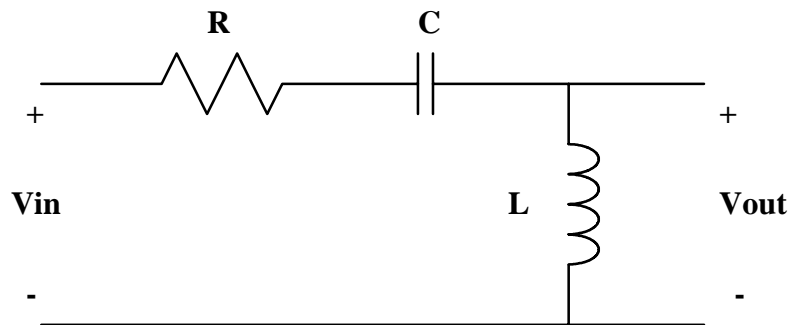
PHY 3270  
EXAM #3

1. Given the magnitude Bode plot shown to the right, and given that the angle of  $H$  is zero at low frequencies, find  $H(j\omega)$ .



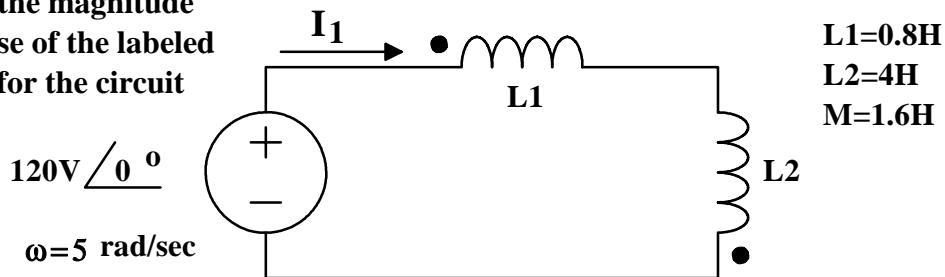
2.

$L=1.0\text{H}$   
 $C=100\mu\text{F}$   
 $R=1.0\text{k}\Omega$

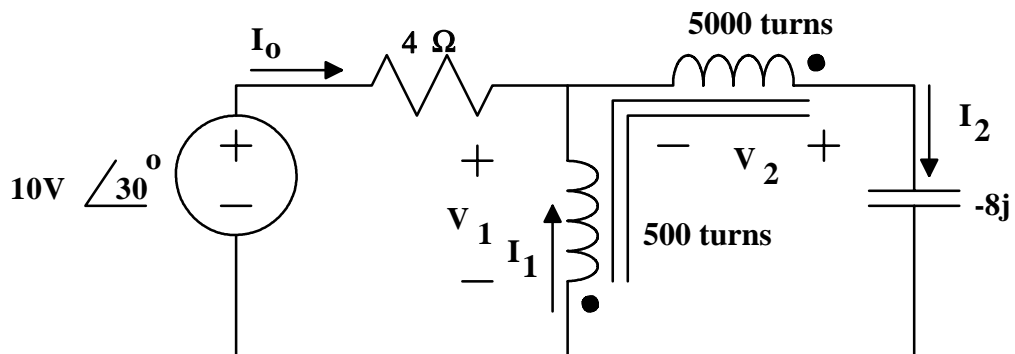


- Determine the transfer function for the circuit above.
- Make a magnitude Bode plot for the function.
- Make a frequency Bode plot for the function.

3. Find the magnitude and phase of the labeled current for the circuit shown.

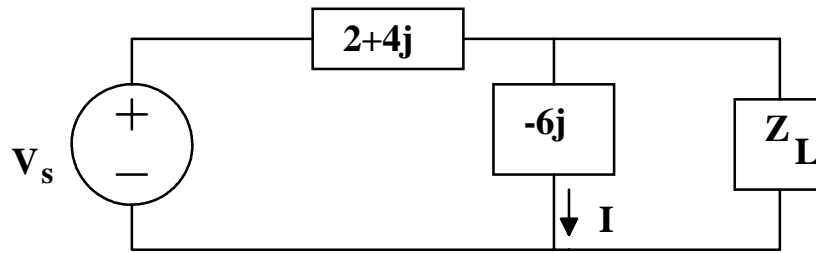


4.



Using the voltages and currents referenced as they are in the diagram above, write down the set of equations that would be required to solve for the five unknowns. The transformer is ideal.

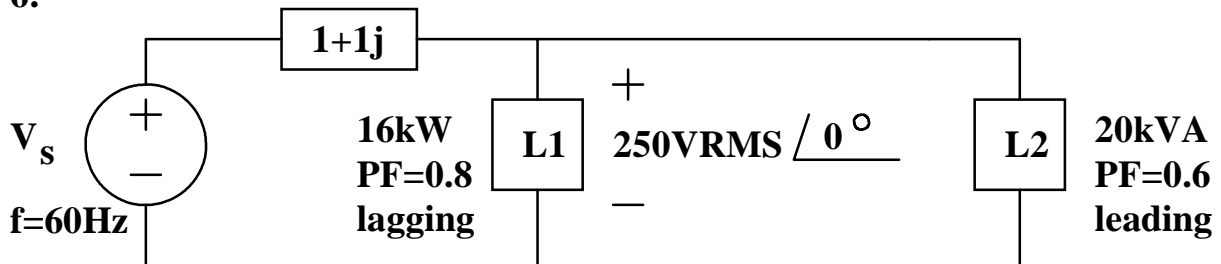
5.



When  $Z_L$  is adjusted to receive maximum power from the circuit,  $I$  is observed to be  $3.0A \angle 60^\circ$

What is the value of load impedance and what power does it absorb on average?

6.



Find the source voltage as a function of time.

7. A balanced, Y-Y, three phase circuit has an abc phase sequence. The average power dissipated in each load is 4000W at a PF=0.7071 lagging. If the line-to-line voltage at the load for the first voltage in the sequence is 240VRMS at 45 degrees:

(a.) What is the load impedance; and:

(b.) What is the third line current in the sequence defined in the direction from source to load?