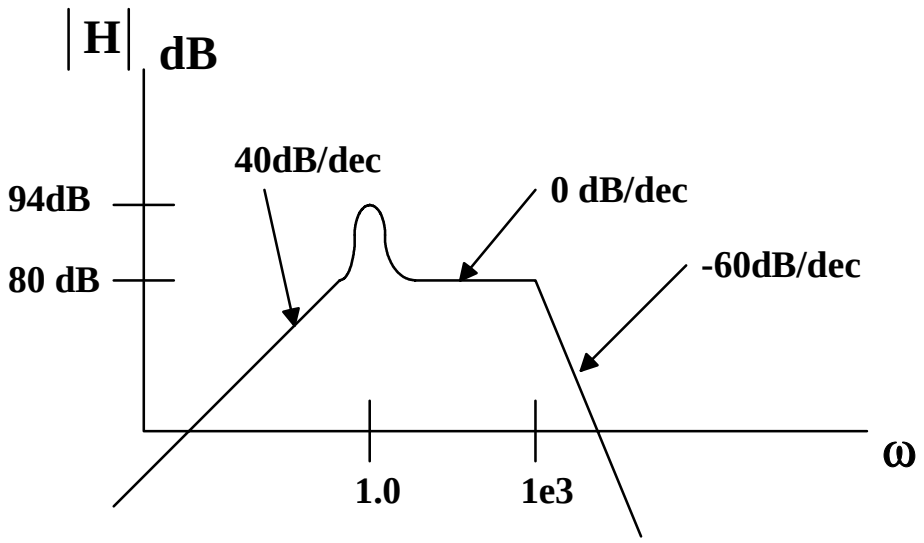
1.

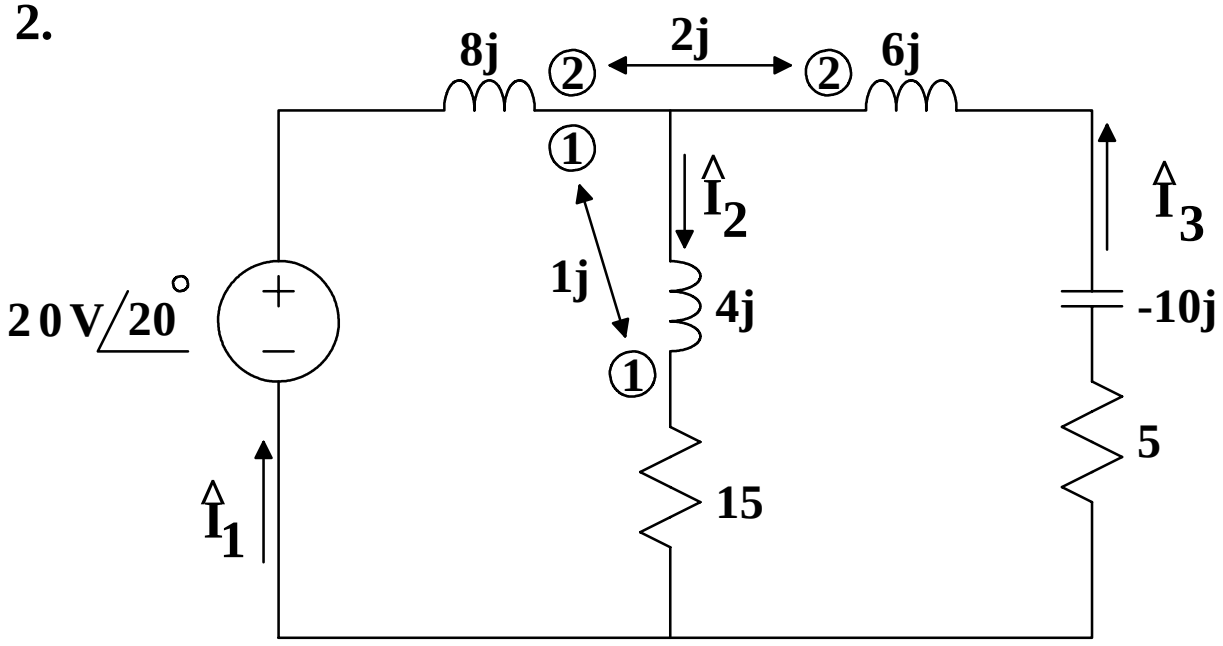


(a.) If the angle of the transfer function at frequencies << 1.0 radian /sec is zero, find the appropriate expression for $\left|\hat{H}(j\omega)\right|$.

(b.) Sketch the graph of $\angle\hat{H}$ versus the logarithm of angular frequency.

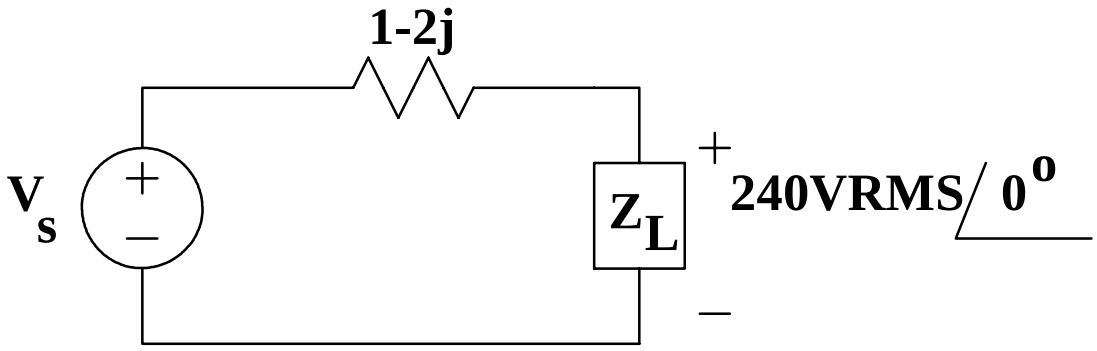
(c.) If the time dependent input voltage (to the circuit whose transfer function is given above) is $V_i = 20V\cos(1e4\frac{rad}{s}\,t),$ what is the time dependent output voltage?

2.



Write down 3 equations required to find the labeled currents in the diagram shown above. Do not solve the equations.

3.



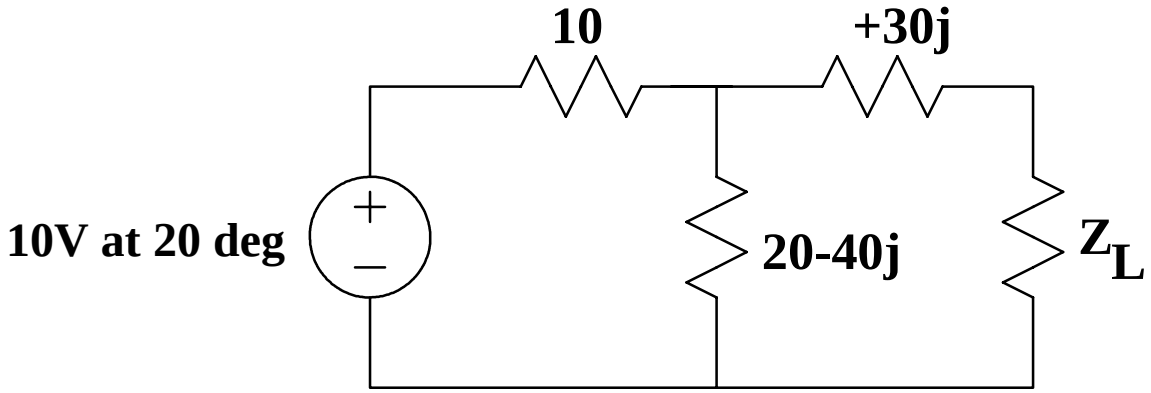
The average power absorbed by the load Z_L is 8.00kW at a lagging power factor of 0.700.

(a.) Find Z_L .

(b.) Find $\hat{V}_S$.

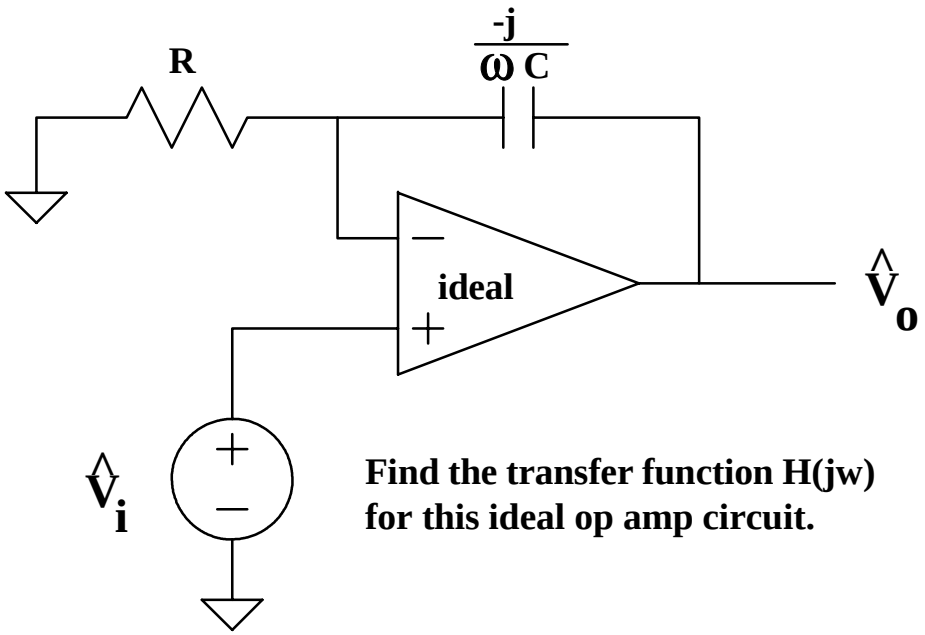
4. A three phase, positive sequence, Y-connected generator has an impedance of $(0.20 + 0.50j)\Omega/\phi$. The internal phase voltage of the generator is 120V. The generator feeds a balanced, three phase, Y-connected load having an impedance of $(39 + 28j)\Omega/\phi$. The impedance of the line connecting the generator to the load is $(0.80 + 1.5j)\Omega/\phi$. The a-phase internal voltage of the generator is specified as the reference phasor. Find all three line-to neutral voltages at the load.

5.



Find the maximum average power to Z_L

6 .



Find the transfer function H(jw) for this ideal op amp circuit.