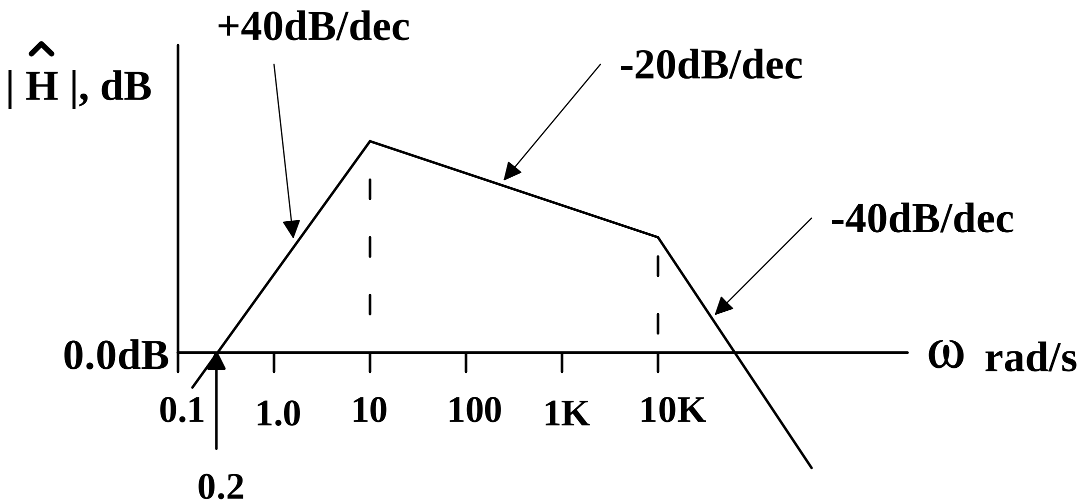
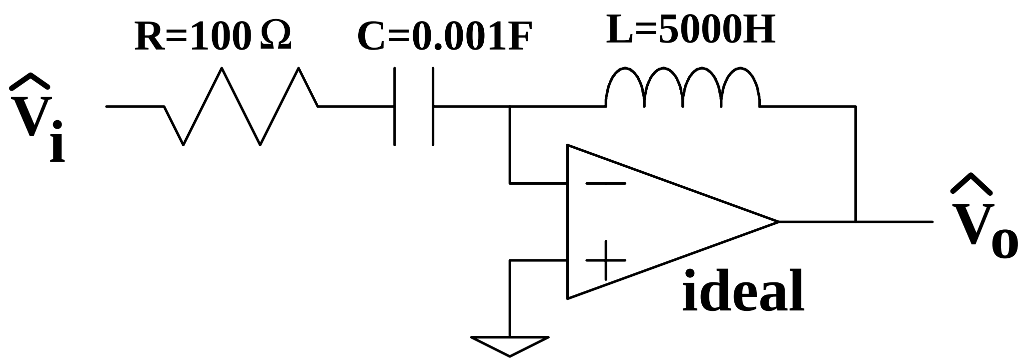
1.



$\angle \hat{H} = 0.0^{o}$ at 10^{6} rad/sec

Determine $\hat{H}(j\omega)$ from the Bode plot shown above. Note that the angle at high frequency is given.

2.

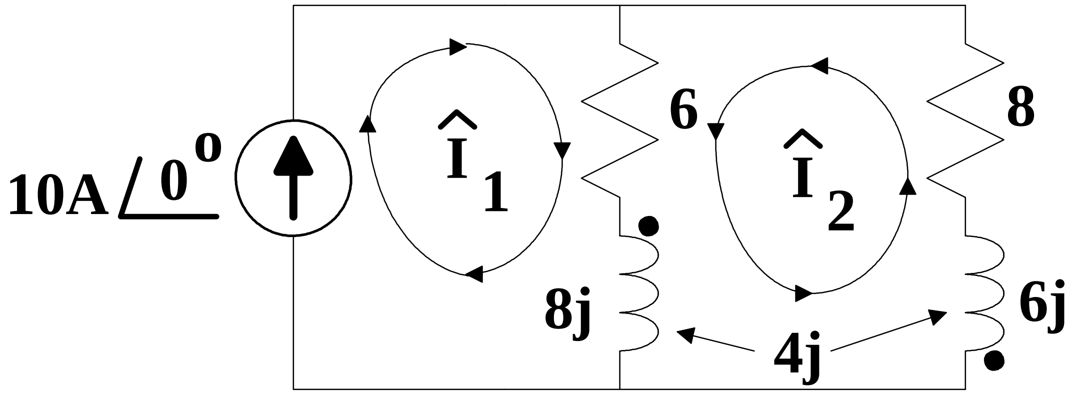


Determine the transfer function, $\hat{H}(j\omega)$, for the ideal op amp circuit shown above.

3. For the following transfer function: put it into standard form, evaluate at appropriate frequencies, and make an approximate graph of $\left|\hat{H}\right|, \text{dB}$ versus $\log(\omega)$.

$$\hat{H} = \frac{+10^5\omega^2}{(1+10j\omega)(10^4-\omega^2+j\omega)}$$

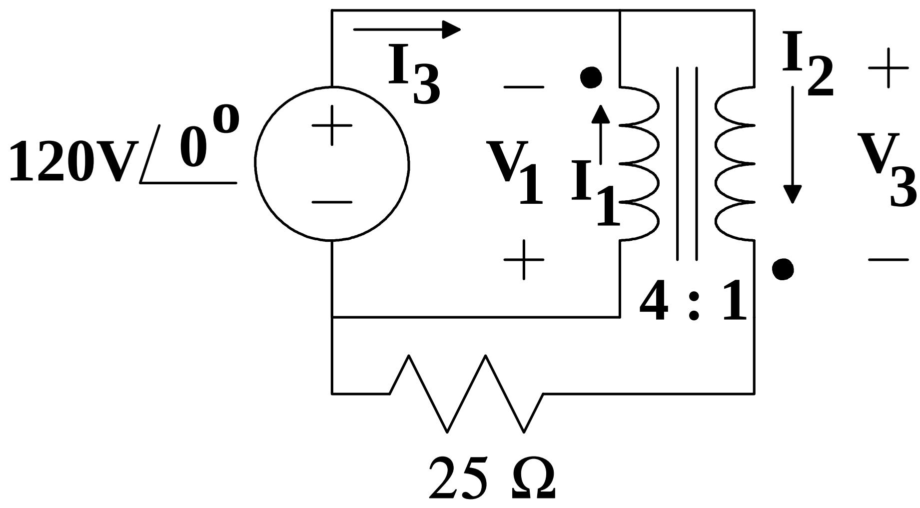
4.



(a.) Draw the equivalent of the circuit shown above. **NOTE**: that the mesh current
$\hat{I}_1$ flows clockwise, but the current $\hat{I}_2$ flows counterclockwise.

(b.) Write down the set of equations required to solve for $\hat{I}_2$, but do not solve.

5.



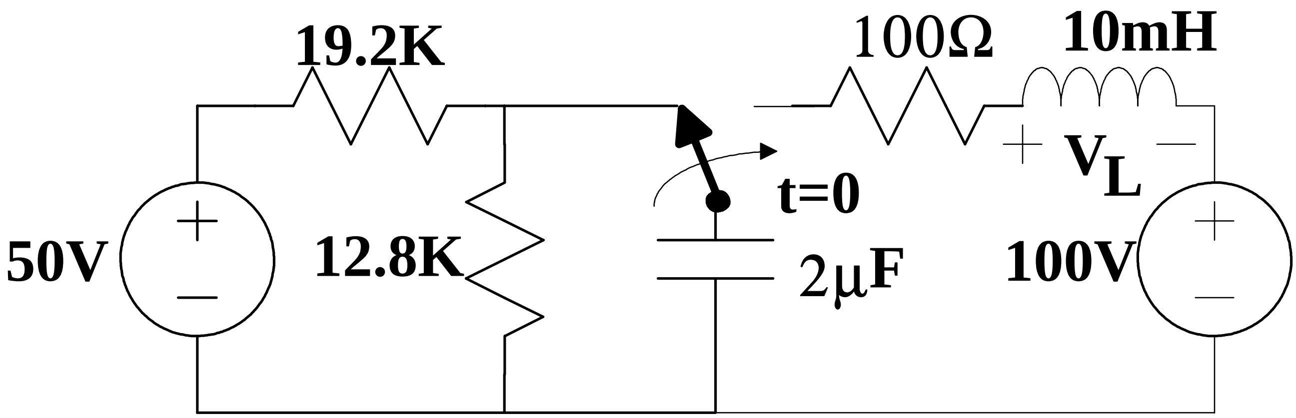
For the ideal transformer circuit shown above, write down the set of equations that would allow one to solve for the 5 labeled unknowns. Do not solve the equations.

6. A balanced three phase load requires 480 kW (total for all three phases) at a leading power factor of 0.80. The load is fed from a line having an impedance of $(0.005 + j0.025)\Omega/\varphi$. The line voltage at the load, $\left|\hat{V}_{AB}\right|$, is 600V.

(a.) Determine the magnitude of the line voltage at the sending end of the line.

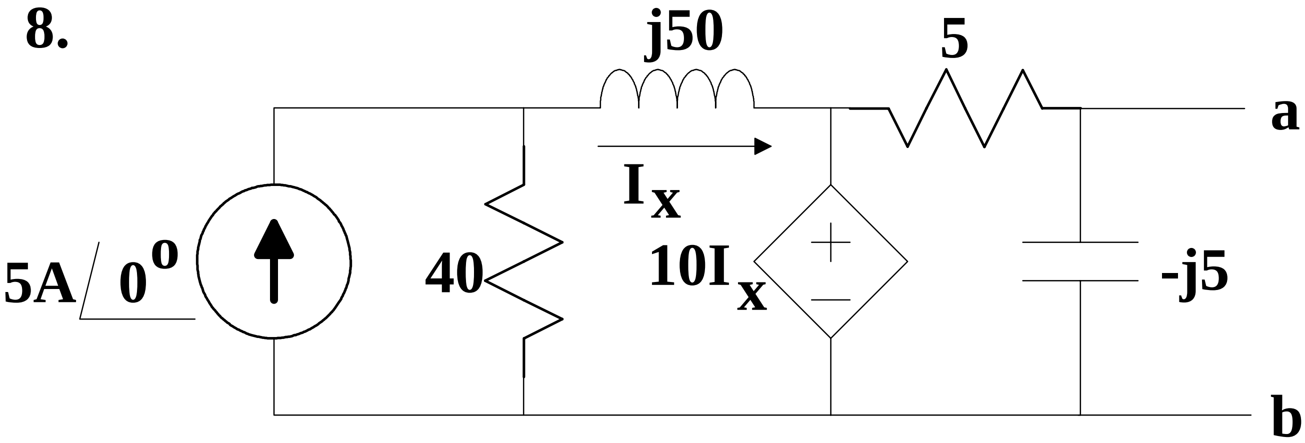
(b.) Calculate the power factor at the sending end of the line.

7.



The switch has been at the left contact for a very long time. At t=0, the switch is flipped to the right contact. Determine $V_L(t)$ for $t \geq 0$.

8.



Write down the complete set of equations that would allow one to solve for the Thevenin impedance between terminals a and b, of the circuit shown above. Do not solve the equations.