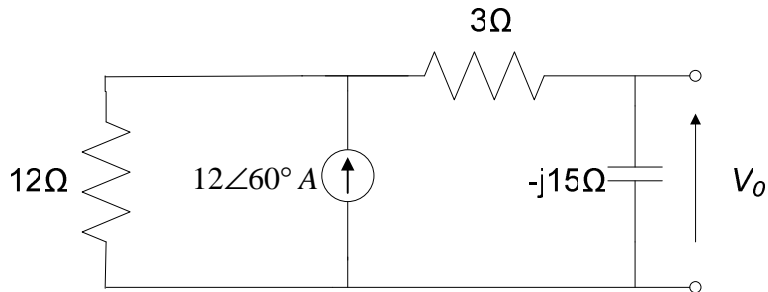


Problem Set 8 (Fall 2008)

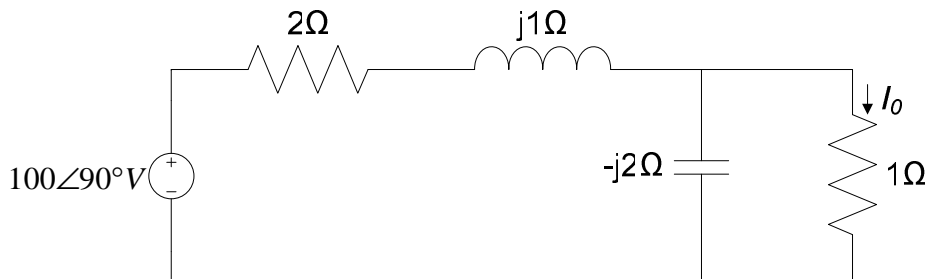
8.1 Find the frequency-domain voltage V_o , as shown in the circuit below.



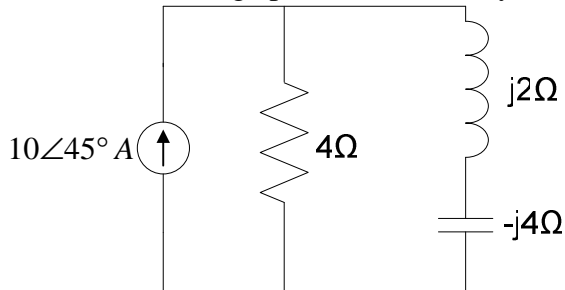
8.2 Find the frequency-domain voltage V_o , as shown in the circuit below.



8.3 Find the frequency-domain current I_o , as shown in the circuit below.

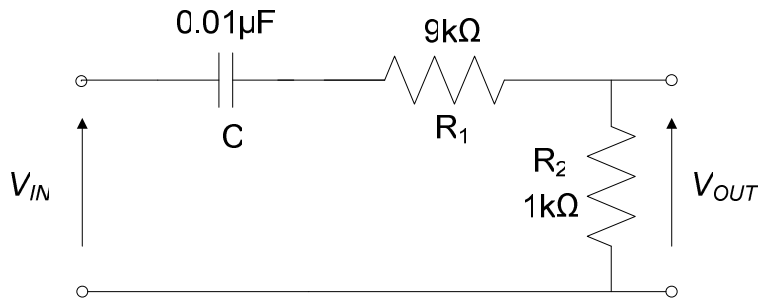


8.4 Find the average power absorbed by the network below.

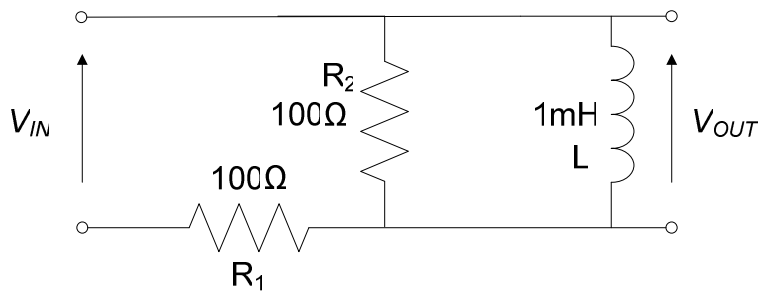


Transfer Function Problems: For each of the following three circuits, determine the voltage transfer function, V_{OUT}/V_{IN} , the cut-off freq., ω_o , and the general filter type, i. e. high-pass or low-pass.

8.5

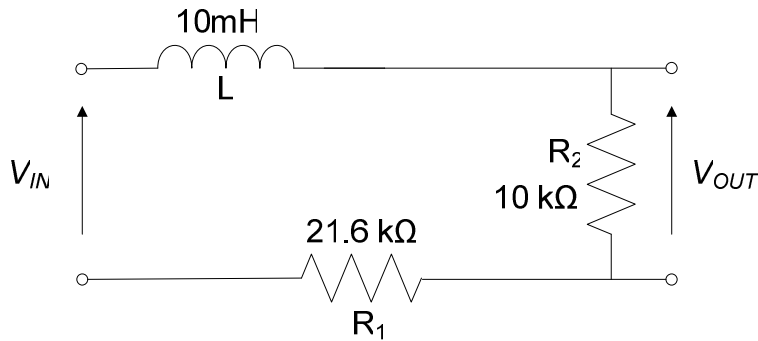


8.6



Hint: Convert V_{IN} , R_1 & R_2 to their Thevenin equivalent as seen by L . (This can be a useful thing to remember.)

8.7



Bode Plot Problems: For each of the following four transfer functions, draw Bode plots (magnitude and phase).

$$8.8 \quad \frac{V_{OUT}}{V_{IN}} = \frac{10}{1 + j10\omega}$$

$$8.9 \quad \frac{V_{OUT}}{V_{IN}} = \frac{100}{j\omega - 10}$$

$$\mathbf{8.10} \quad \frac{V_{OUT}}{V_{IN}} = \frac{1}{1 + \frac{1}{j10\omega}}$$

$$\mathbf{8.11} \quad \frac{V_{OUT}}{V_{IN}} = \frac{200j\omega}{1 + 20j\omega}$$

8.12 V_{OUT} Calculation Problems: Given $\omega = 1$ rad./sec. and $V_{IN} = 10\angle +135^\circ$ volts, find V_{OUT} for each of the above four transfer functions.