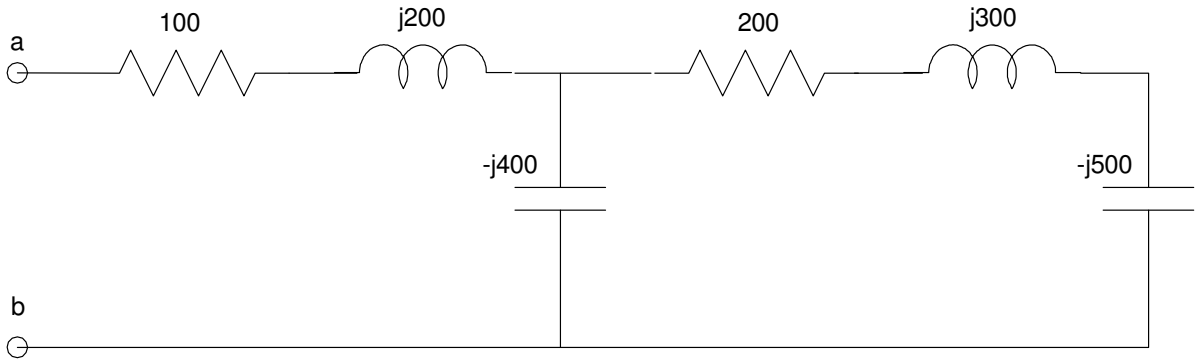
ECE 111 - Homework #9

Week #9: ECE 311 Circuits II - Due 11am, Tuesday, October 25th

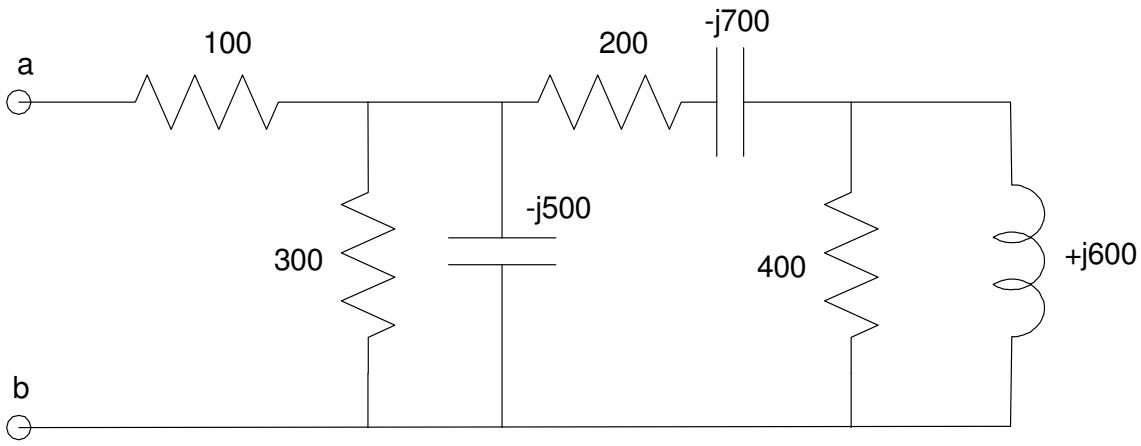
1) Solve for Y

- $Y = \left(\frac{(5+j2)(7-j3)}{(2-j6)} \right)$
- $Y = \left(\left(\frac{5+j2}{2-j6} \right) + \left(\frac{7-j3}{2+j5} \right) \right) \left(\frac{8+j3}{7+j9} \right)$

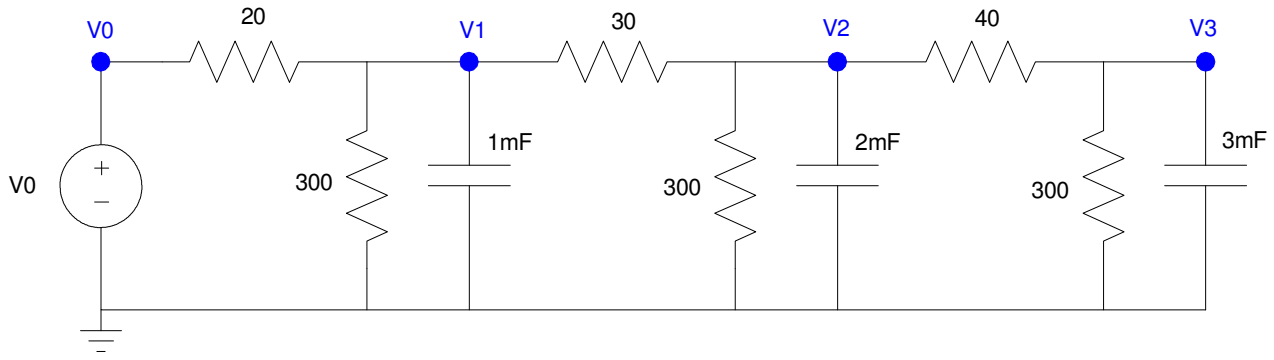
2) Determine the impedance Zab



3) Determine the impeadance Zab



4) Assume $V_0 = 10$



a) Determine the impedances of each element at 0 rad/sec

b) Write the votlage node equations

c) Solve for V1, V2, and V3.

5) Check your results in CircuitLab

6) Assume V0 is a 10V, 5 rad/sec (0.796Hz)

$$V_0 = 10\sin(5t)$$

a) Determine the impedances of each element at 5 rad/sec

b) Write the votlage node equations

c) Solve for V1, V2, and V3 as complex numbers

d) Express V1, V2, and V3 in terms of sine and cosine function:

- hint: V1 = a + jb (phasor representation) means $V_1(t) = a\cos(5t) - b\sin(5t)$

7) Check your results in CircuitLab using a transient simulation for 6 seconds