ECE 111 - Homework #9

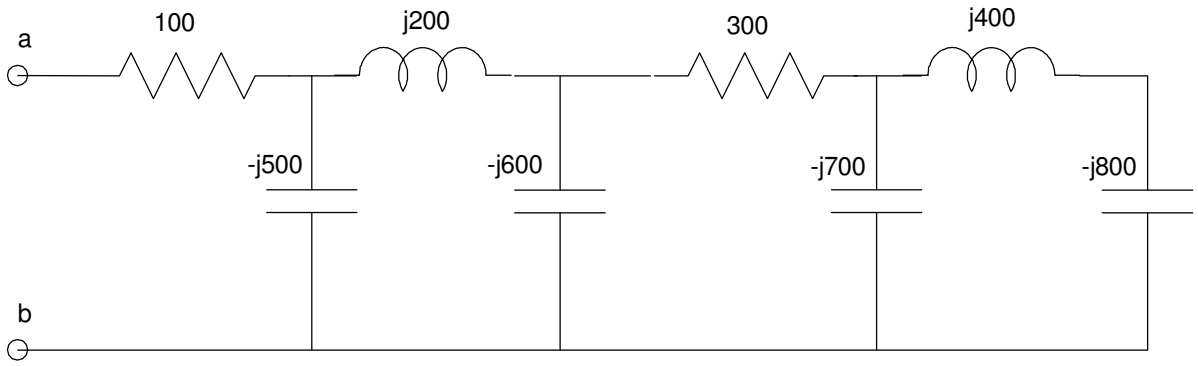
Week #9: ECE 311 Circuits II - Due Tuesday, March 21st

Please email to jacob.glower@ndsu.edu, or submit as a hard copy, or submit on BlackBoard

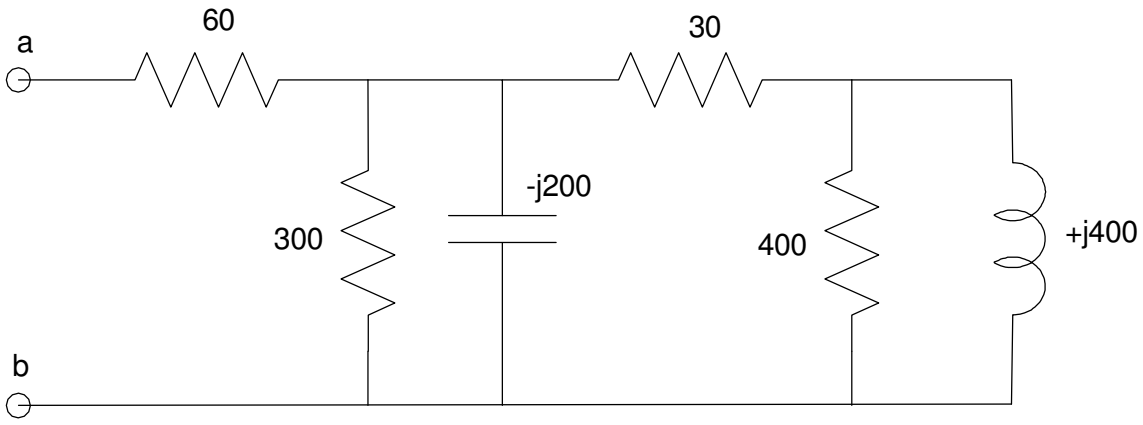
1) Solve for Y

- $Y = \left(\frac{(4+j12)(2-j13)}{(2-j)} \right)$
- $Y = \left(\left(\frac{4+j12}{2-j} \right) + \left(\frac{2-j13}{2+j} \right) \right) \left(\frac{3+j8}{9+j7} \right)$

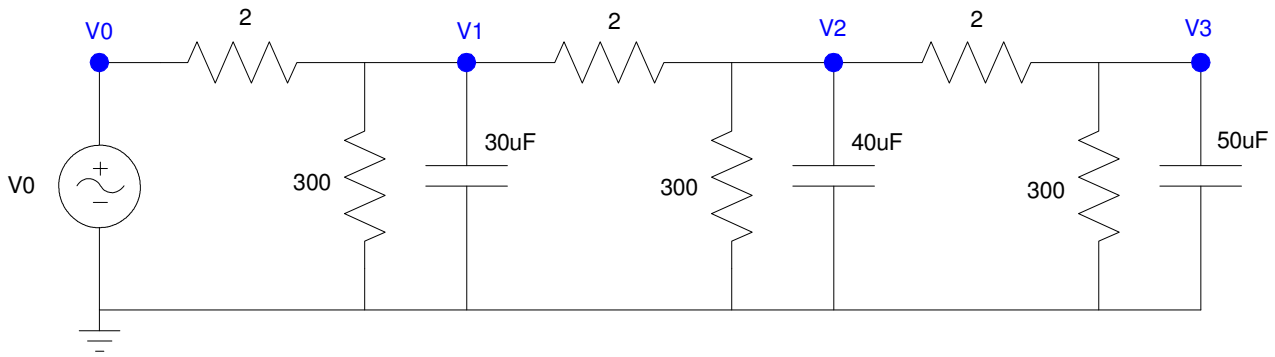
2) Determine the impedance Zab



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, 2000 rad/sec (318.3Hz)

$$V_0 = 10\sin(2000t)$$

a) Determine the impedances of each element at 2000 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 $V_1(t) = a\cos(2000t) - b\sin(2000t)$

7) Check your results in CircuitLab using a transient simulation for 10ms (time step = 10us).