ECE 111 - Homework #9
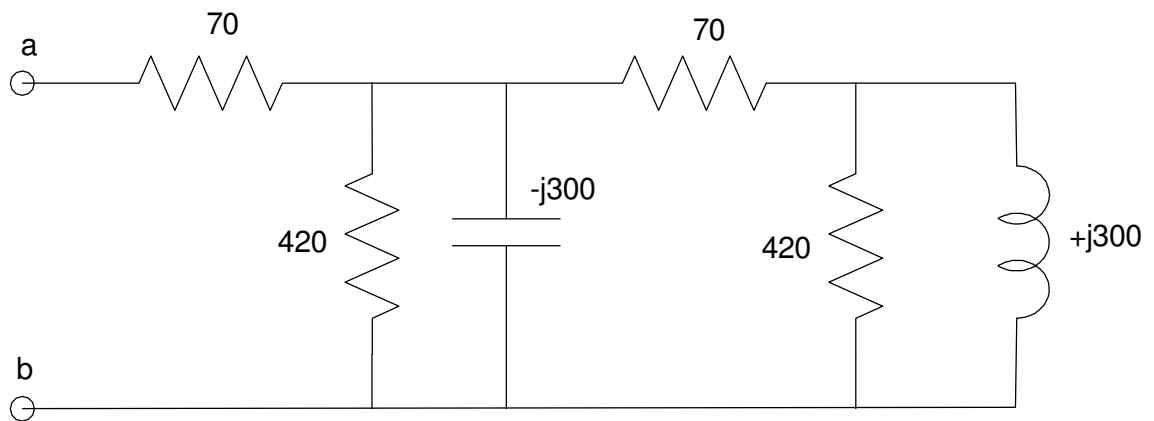
1) Solve for Y

- $Y = \left(\dfrac{(7+j8)(6+j2)}{(6+j3)} \right)$

- $Y = \left(\left(\dfrac{9+j8}{6-j10} \right) + \left(\dfrac{2+j9}{5-j5} \right) \right) \left(\dfrac{6+j7}{9+j10} \right)$
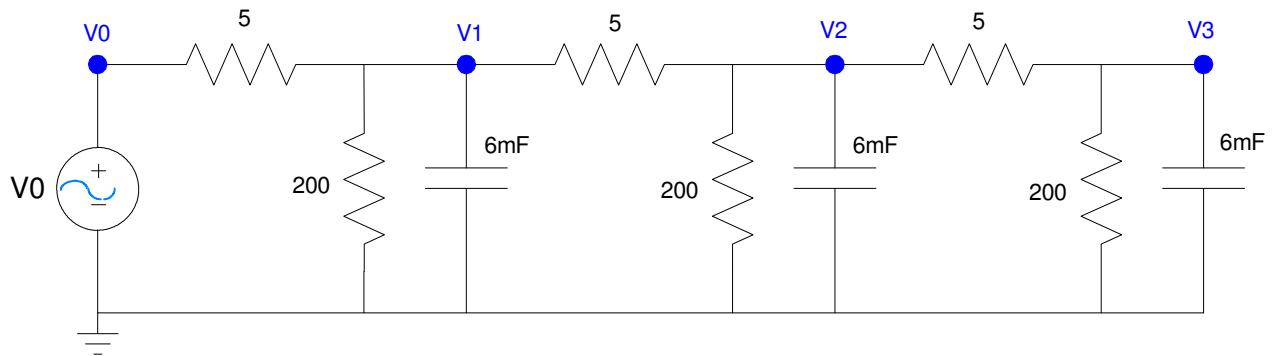
2) Determine the impedance Zab
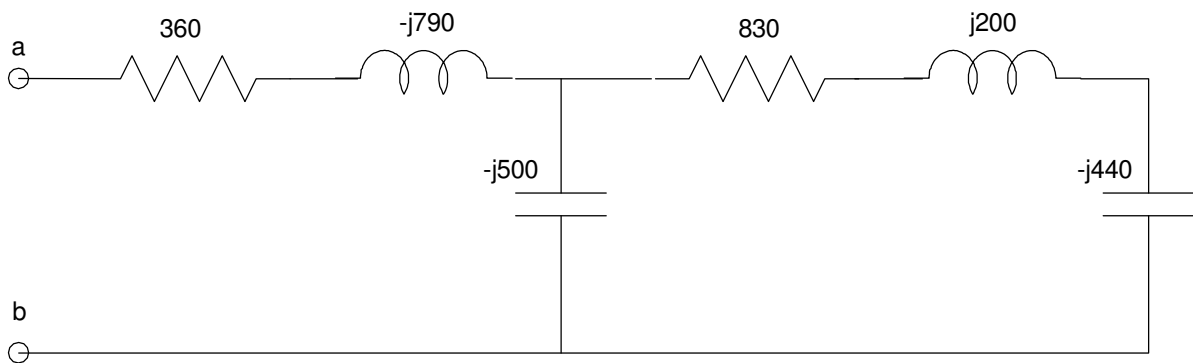
3) Determine the impeadance Zab

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, 3 rad/sec (0.477Hz)

$$V_0 = 10\sin(3t)$$

a) Determine the impedances of each element at 3 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 $V_1(t) = a\cos(3t) - b\sin(3t)$

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