

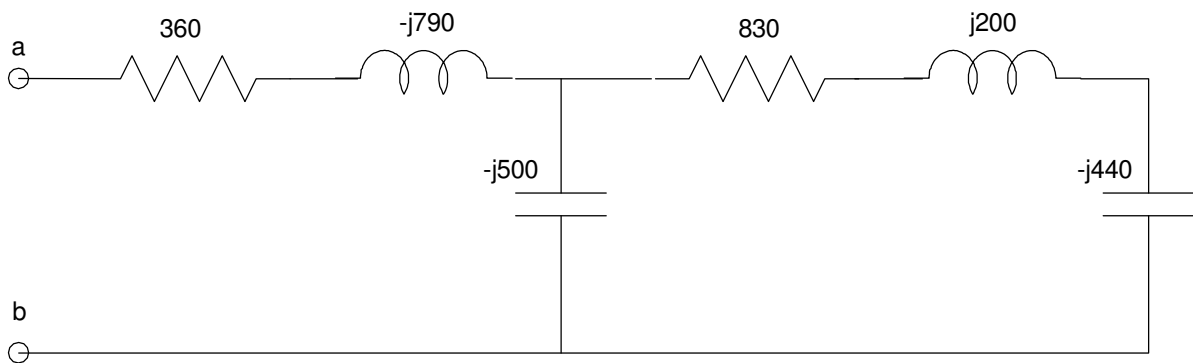
# ECE 111 - Homework #9

Week #9: ECE 311 Circuits II - Due 11am Tuesday, November 2nd  
Please submit as a Word or pdf file and email to Jacob\_Glower@yahoo.com with header ECE 111 HW#9

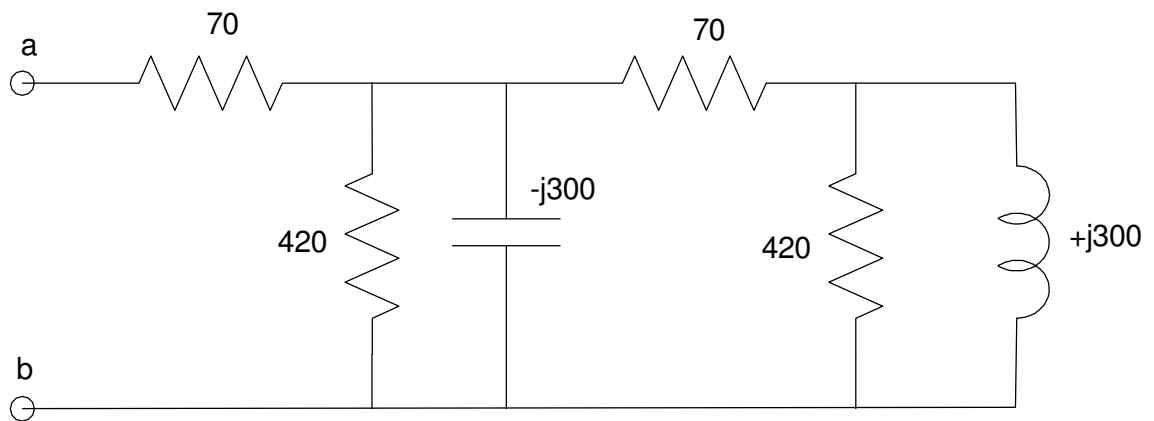
1) Solve for Y

- $Y = \left( \frac{(7+j8)(6+j2)}{(6+j3)} \right)$
- $Y = \left( \left( \frac{9+j8}{6-j10} \right) + \left( \frac{2+j9}{5-j5} \right) \right) \left( \frac{6+j7}{9+j10} \right)$

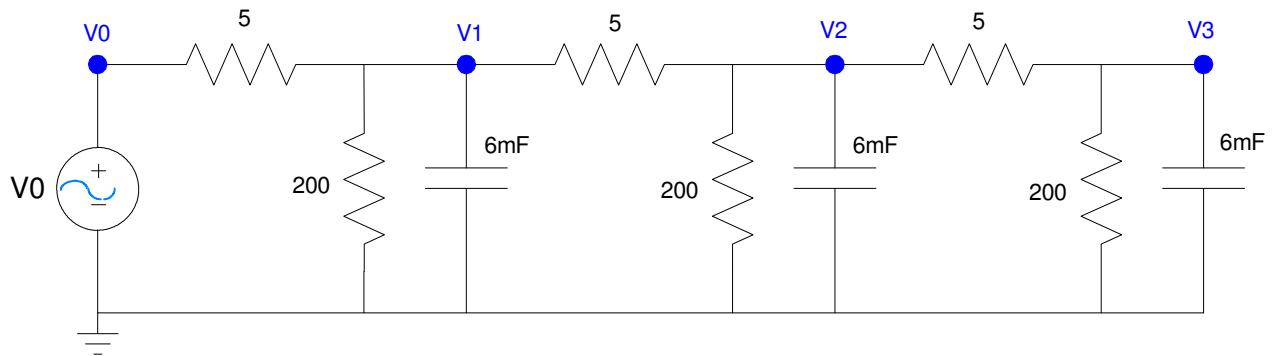
2) Determine the impedance Zab



3) Determine the impedance Zab



4) Assume  $V_0 = 10$



- Determine the impedances of each element at 0 rad/sec
- Write the voltage node equations
- Solve for  $V_1$ ,  $V_2$ , and  $V_3$ .

5) Check your results in CircuitLab

6) Assume  $V_0$  is a 10V, 3 rad/sec ( 0.477Hz )

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

- Determine the impedances of each element at 3 rad/sec
- Write the voltage node equations
- Solve for  $V_1$ ,  $V_2$ , and  $V_3$  as complex numbers
- Express  $V_1$ ,  $V_2$ , and  $V_3$  in terms of sine and cosine function:
  - hint:  $V_1 = a + jb$  (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