ECE 320 - Homework #1

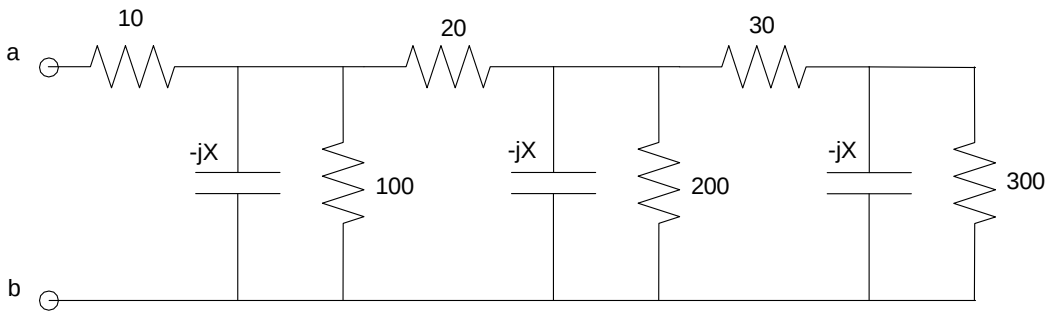
EE 206 Review, Phasors. Due Wednesday, January 22nd

Please make the subject "ECE 320 HW#1" if submitting homework electronically to Jacob_Glower@yahoo.com (or on blackboard)

Resistors in series and parallel

1) Assume X = infinity (DC analysis). Determine the resistance Rab

2) Assume -jX = -j100. Determine the resistance Rab (it will be a complex number)



Problem 1 & 2

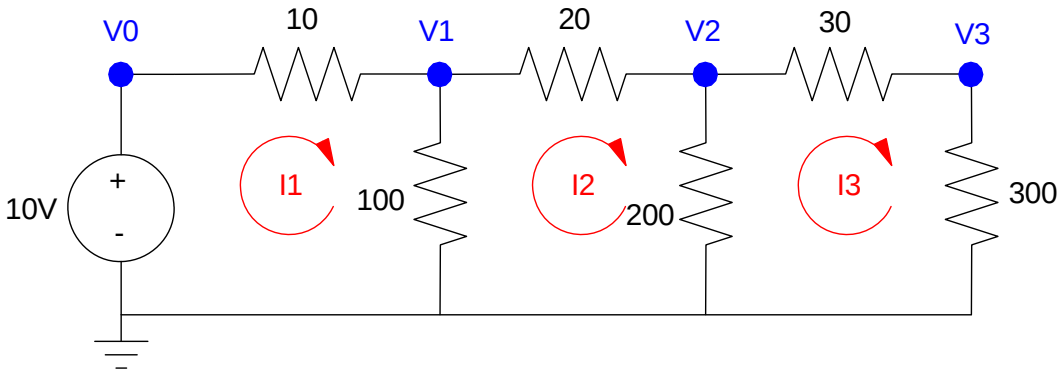
Voltage Nodes & Current Loops

3) (Voltage Nodes): For the following circuit

- a) Write the voltage node equations
- b) Solve using Matlab (or similar program)
- c) Check your answers in PartSim (or similar circuit simulator)

4) (Current Loops) For the following circuit

- a) Write the current loop equations
- b) Solve using Matlab (or similar program)



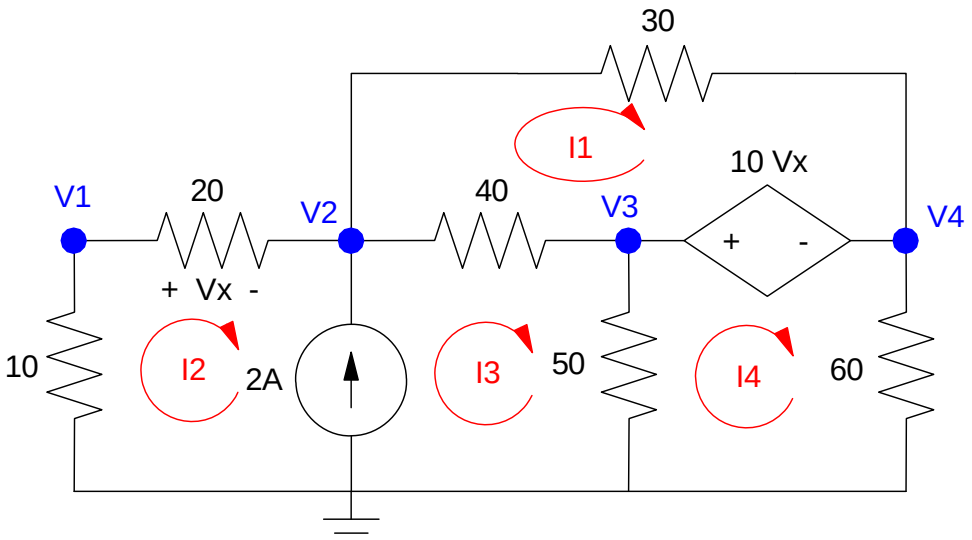
Problem 3 & 4

5) (Voltage Nodes): For the following circuit

- a) Write the voltage node equations
- b) Solve using Matlab (or similar program)

6) (Current Loops) For the following circuit

- a) Write the current loop equations
- b) Solve using Matlab (or similar program)

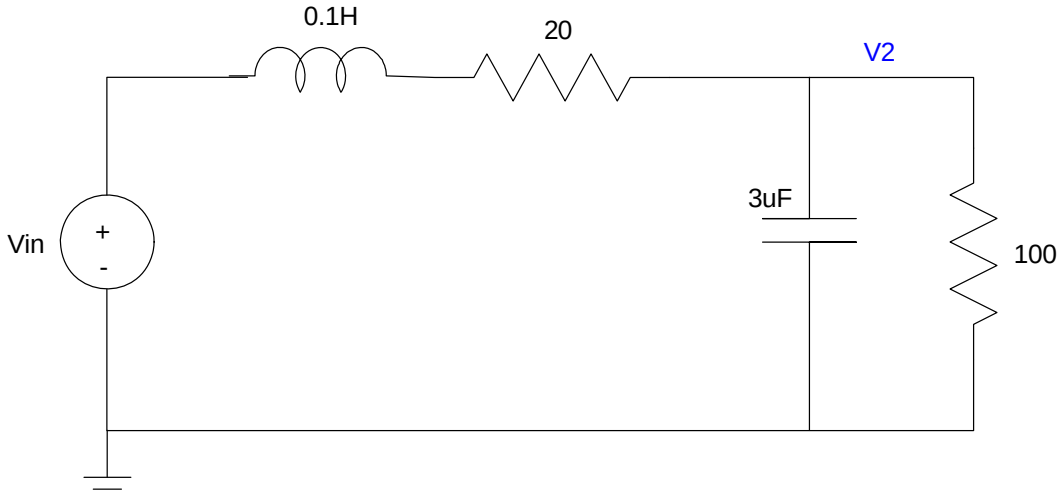


Problem 5 & 6

7) Assume Vin contains a DC and 500 rad/sec (79.57Hz) signal:

$$V_{in} = 10 + 3\sin(500t)$$

- a) Determine the impedances of the inductor, capacitor, and resistor at DC and 500 rad/sec
- b) Determine the voltage, V2, using phasor analysis
- c) Check your answer using PartSim (or similar program)



Problem 7