## ECE 320 - Homework #1

EE 206 Review, Phasors. Due Monday, August 31st

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 CircuitLab (or similar circuit simulator)

## 4) (Current Loops) For the following circuit

- a) Write the current loop equations
- b) Solve using Matlab (or similar program)
- c) Check your answers in CircuitLab (or similar circuit simulator)



5) Find the Thevenin equivalent for the following circuit Skip #5





6) 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)

