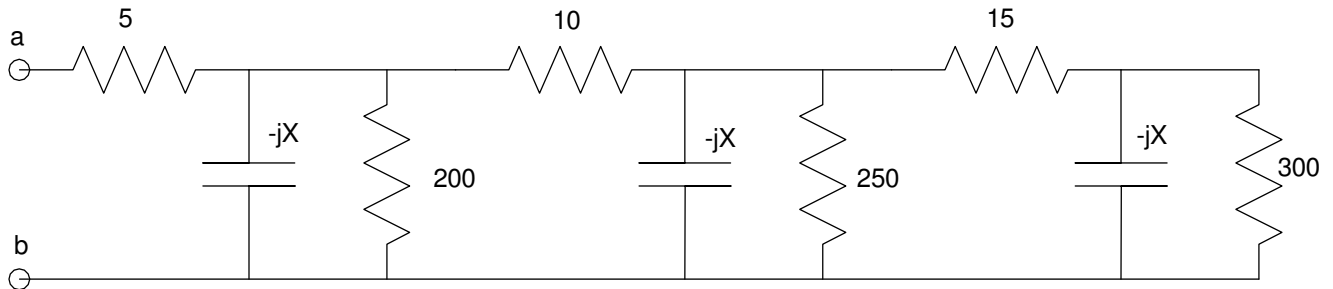# ECE 320 - Homework #1

EE 206 Review, Phasors. Due Wed, Jan 20th

Please submit as a Word or pdf file if submitting on Blackboard or emailing to Jacob_Glower@yahoo.com with subject ECE 320 HW#1
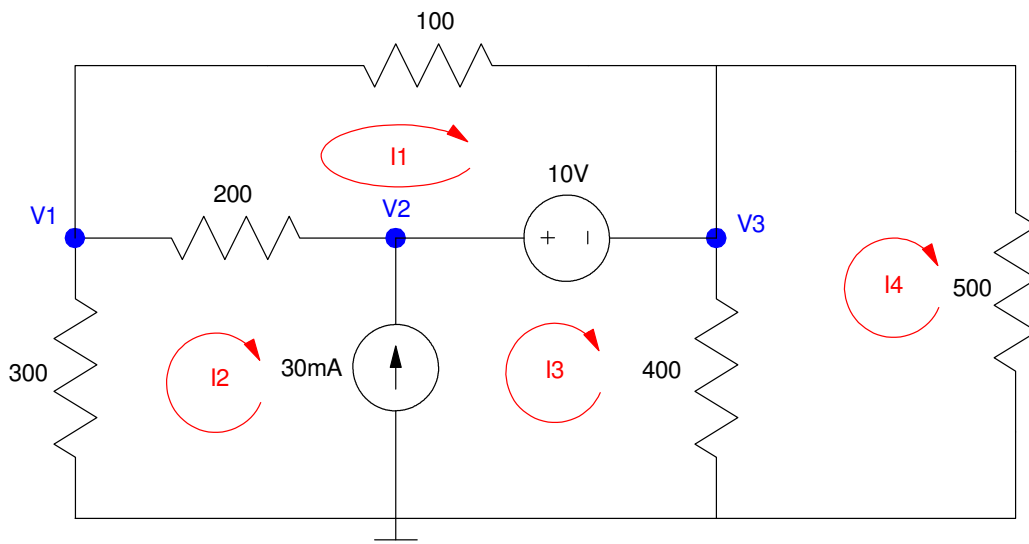
Resistors in series and parallel

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

2) Assume -jX = -j200. 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)

Problem 3 & 4

5) Assume Vin contains a DC and 400 rad/sec (63.66Hz) signal:

$$V_{in} = 10 + 5\cos(400t) + 6\sin(400t)$$

- a) Determine the voltage, V2, using phasor analysis
- b) Check your answer using CircuitLab (or similar program)