

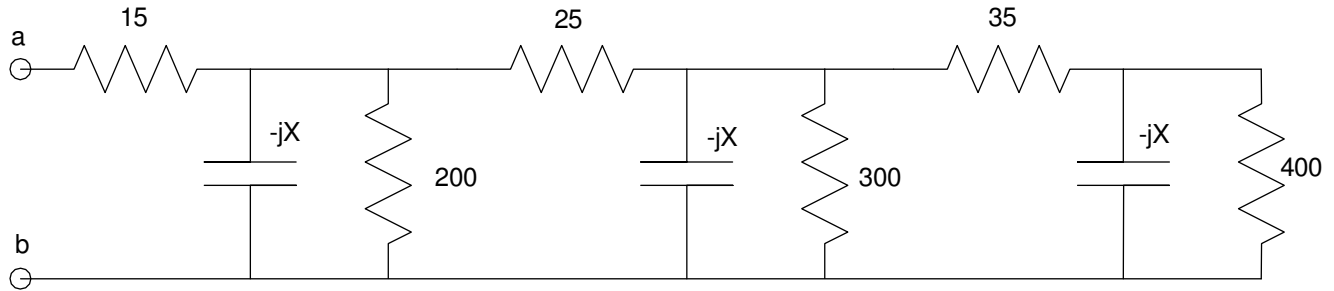
# ECE 320 - Homework #1

EE 206 Review, Phasors. Due Wednesday, January 19th

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

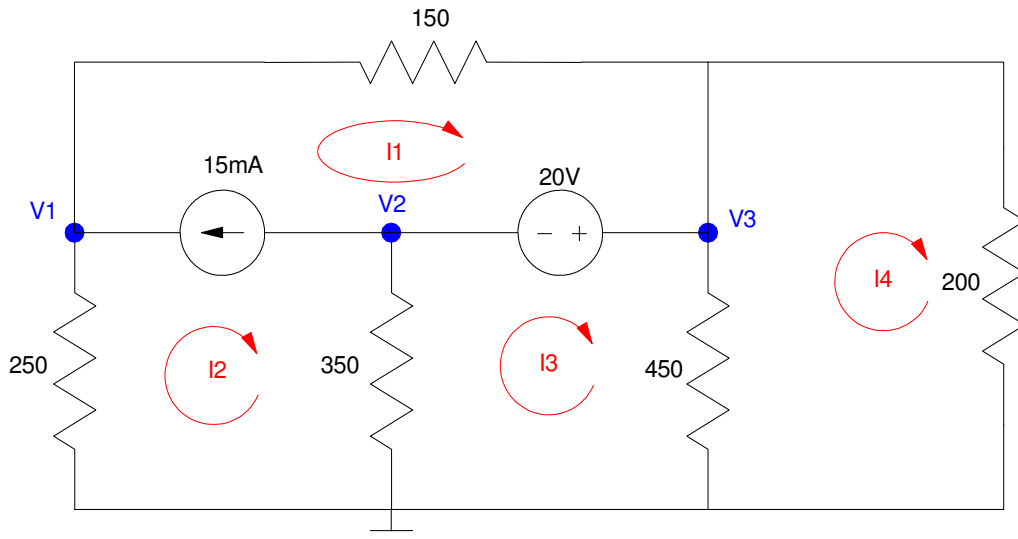
- 1) Assume  $X = \text{infinity}$  (DC analysis). Determine the resistance  $R_{ab}$  (it will be a real number)
- 2) Assume  $-jX = -j100$ . Determine the resistance  $R_{ab}$  (it will be a complex number)



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  $V_{in}$  contains a DC and 400 rad/sec (63.66Hz) signal:

$$V_{in} = 10 + 6 \cos(450t) + 4 \sin(450t)$$

- a) Determine the voltage,  $V_2$ , using phasor analysis
- b) Check your answer using CircuitLab (or similar program)

