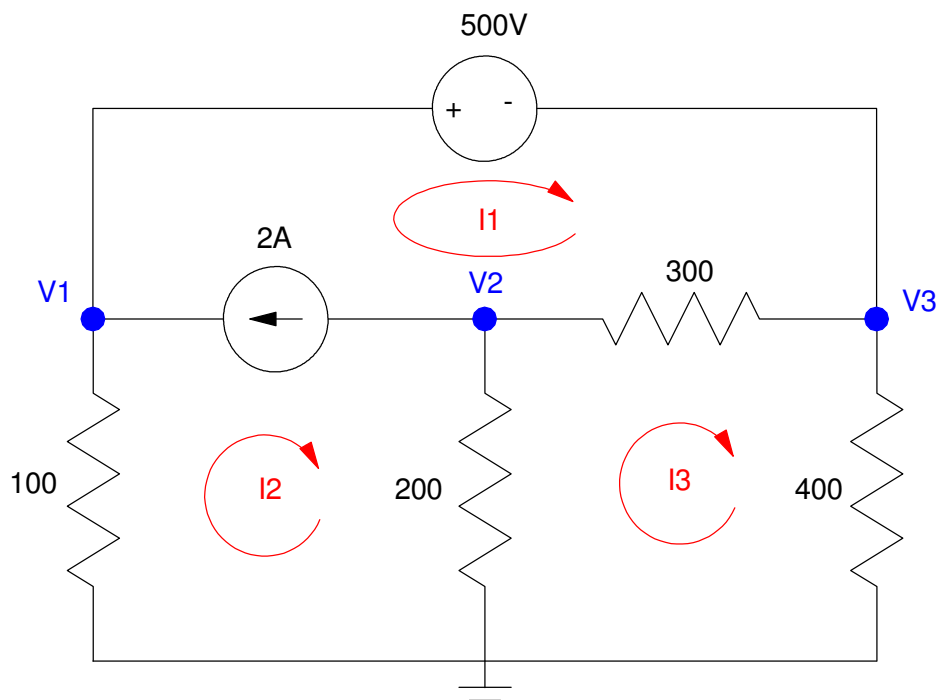# ECE 320 - Homework #1

EE 206 Review, Phasors. Due Monday, August 27th, 2018

1. Voltage Nodes:

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

2. Current Loops:

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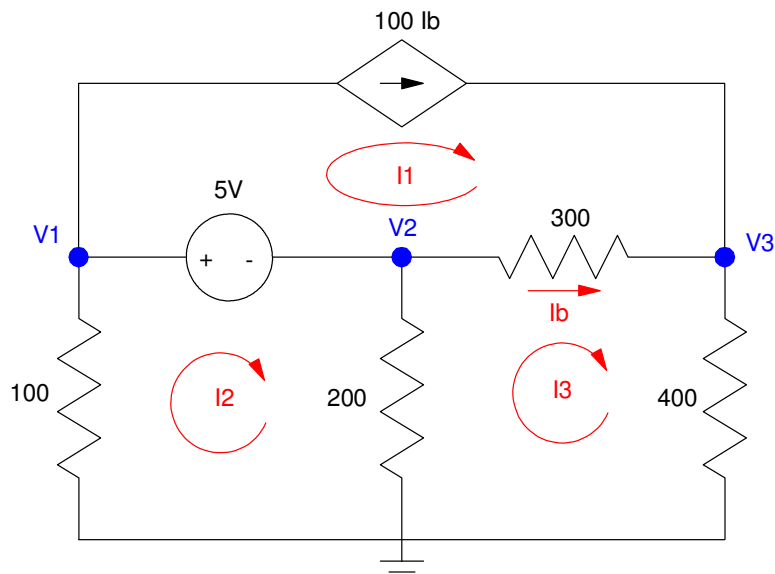

Problem 1 - 2

Problem 3 & 4 (figure on back side)

3. Voltage Nodes:

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

4. Current Loops:

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

100 lb

5V

V1

300

V3

V2

I1

Ib

100

I2

200

I3

400

Problem 3 & 4

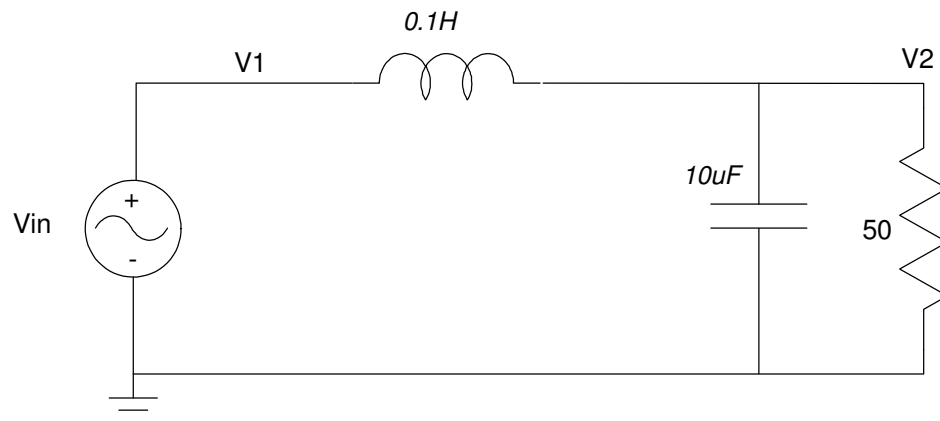5) Assume Vin contains a DC and 16Hz (100 rad/sec) signal:

$$V_{in} = 10 + 3\sin(100t)$$

- • a) Determine the impedances of the inductor, capacitor, and resistor at DC and 100 rad/sec
- • b) Determine the voltage, V2, using phasor analysis
- • c) Check your answer using PartSim (or similar program)

6) Assume Vin contains a DC and 160Hz signal:

$$V_{in} = 5 + 3\sin(1000t)$$

- • a) Determine the impedances of the inductor, capacitor, and resistor at DC and 1000 rad/sec
- • b) Determine the voltage, V2, using phasor analysis

0.1H

V1

V2

10uF

Vin

50

Problem 5 & 6: