

ECE 320 - Homework #1

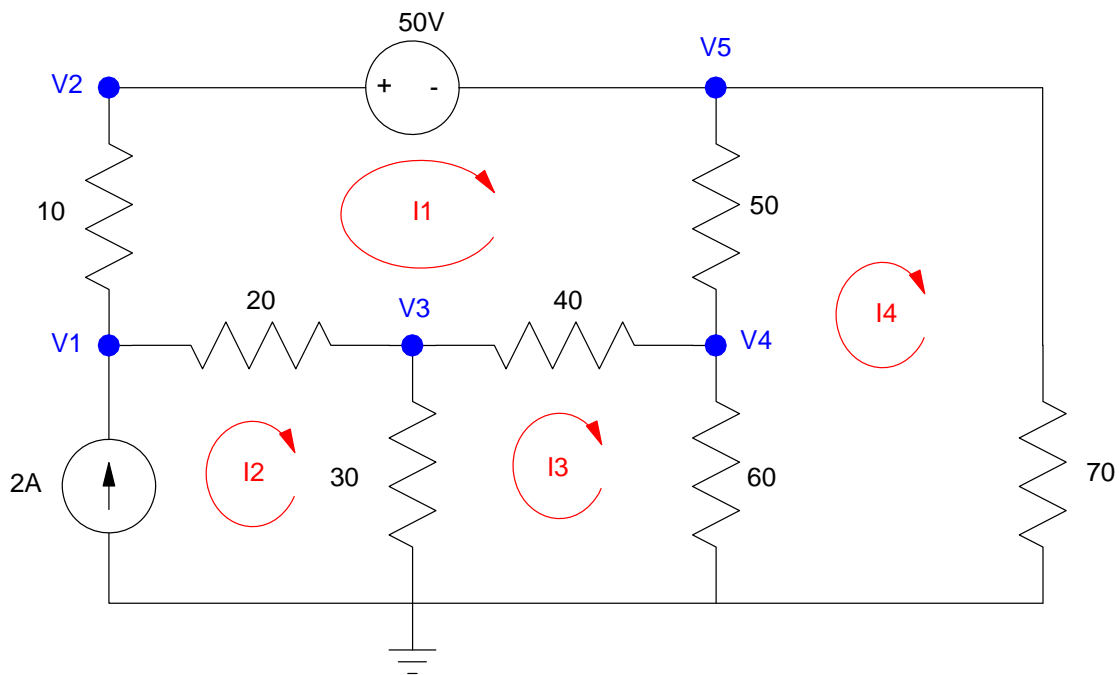
EE 206 Review, Phasors. Due Wednesday, January 17th, 2018

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

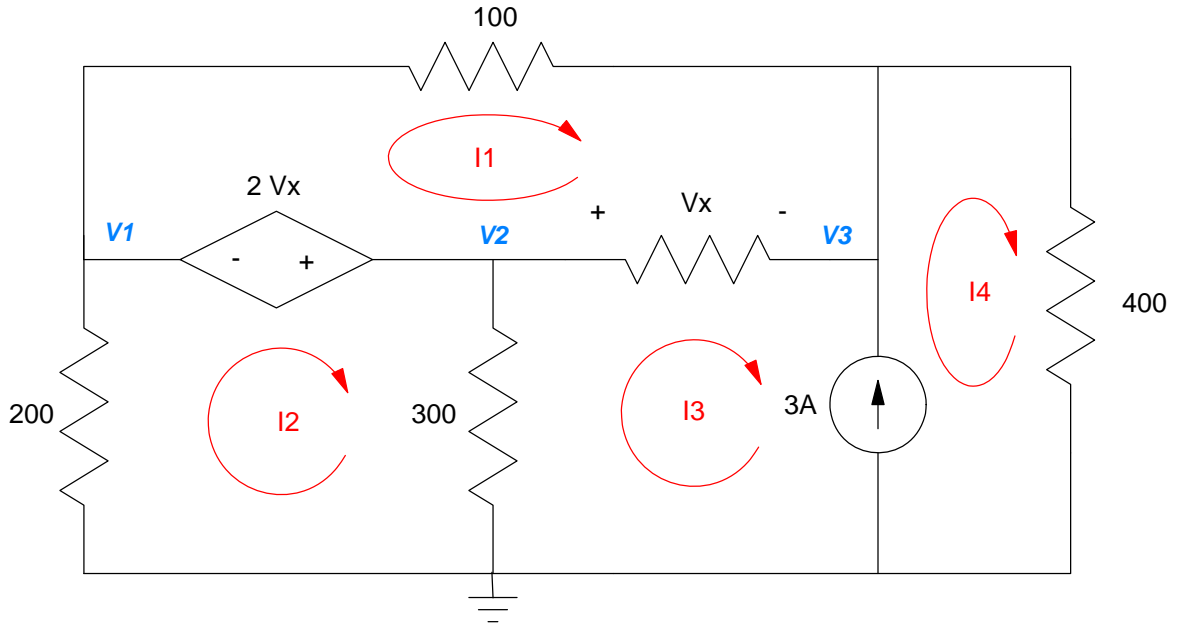
Problem 3 & 4 (figure on back side)

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)



Problem 3 & 4

5) Assume V_{in} contains a DC and 60Hz signal:

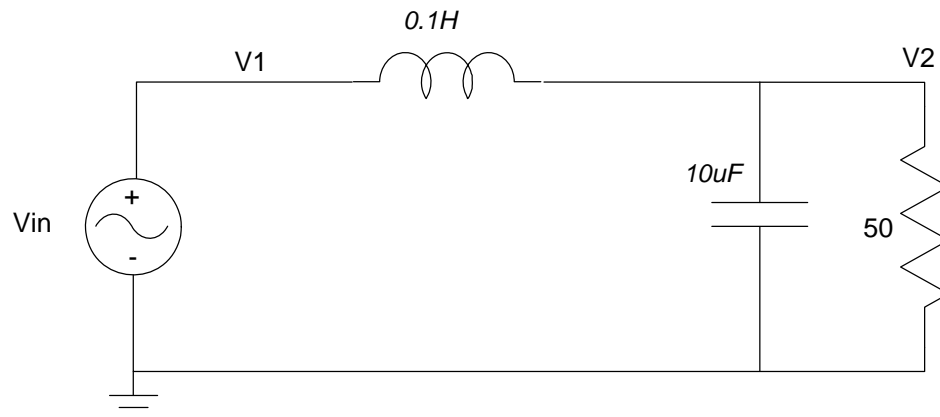
$$V_{in} = 10 + 3 \sin(377t)$$

- a) Determine the impedances of the inductor, capacitor, and resistor at DC and 377 rad/sec
- b) Determine the voltage, V_2 , using phasor analysis
- c) Check your answer using PartSim (or similar program)

6) Assume V_{in} contains a DC and 1kHz signal:

$$V_{in} = 5 + 3 \sin(6280t)$$

- a) Determine the impedances of the inductor, capacitor, and resistor at DC and 6280 rad/sec
- b) Determine the voltage, V_2 , using phasor analysis



Problem 5 & 6: