# ECE 320 - Homework #1

EE 206 Review, Phasors. Due Monday, January 14, 2019

## 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 Vin contains a DC and 1.6Hz (10 rad/sec) signal:

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

- a) Determine the impedances of the inductor, capacitor, and resistor at DC and 10 rad/sec
- b) Determine the voltage, Y, using phasor analysis
- c) Check your answer using PartSim (or similar program)

6) 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, Y, using phasor analysis
- c) Check your answer using PartSim (or similar program)



Problem 5 & 6: