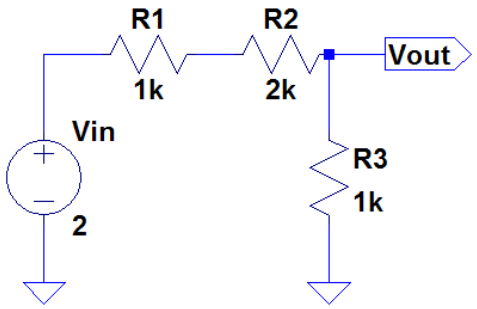
H.W. # 1 - Spring 2015 EE 320 Engineering Electronics I

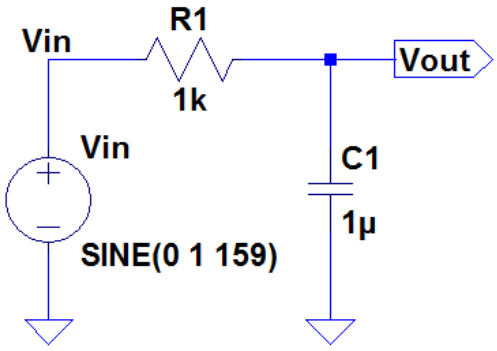
Use a text editor, such as notepad, to write a netlist for the following circuits to verify your hand calculations with LTspice simulations. Do not use the LTspice schematic editor (points will be taken off your score). 14 points total.

1. Find Vout and then use a .op (operating point) analysis to verify your hand calculations. 1 point for hand calculations and 1 point for netlist and verification with LTspice.



2. Repeat problem 1 if the input changes from -1 to 1V (so the output will change as well). Verify your hand calculations using a .dc sweep. 1 point for hand calculations and 1 point for netlist and verification with LTspice.

3. For the following circuit calculate Vout. Sketch Vout and Vin on the same plot against time ensuring that each sinusoid's magnitude and the phase shift between the sinusoids is clear. Verify hand calculations using a .tran (transient) LTspice analysis. 3 points for hand calculations and 2 points for netlist and LTspice verification.



4. Determine the magnitude, |Vout/Vin|, and phase, Angle(Vout/Vin), responses of the circuit in problem 3. Verify your equations using a .ac (ac analysis). 3 points for hand calculations and 2 points for netlist and LTspice verification.