## Physics 4700 Experiment 6 **Operational Amplifiers**

1) Design a non-inverting amplifier with gain of 0, 20, and 60 dB. Produce a Bode plot of the voltage gain vs. frequency from 10 Hz to 1 MHz. Superimpose the three curves on the same plot.

2) Design a summing amplifier. Summarize your result in a table for various combinations of DC input voltages.

3) Design a difference amplifier with gain of 20 dB. Summarize your result in a table for various combinations of DC input voltages.

4) Design a circuit to perform differentiation of a 1 kHz square wave, sine wave, and triangular wave. Capture the input and output waveforms and compare the amplitude of each waveform with what is expected for the differentiation of each waveform. Start with the triangular wave.

5) Design a circuit to perform integration of a 1 kHz square wave, sine wave, and triangular wave. Capture the input and output waveforms and compare the amplitude of each waveform with what is expected for the integral of each waveform. Start with the square wave.