Name:_____
Name:_____
TA: _____Section:_____

Op Amps Lab Report

Part 1: Non-inverting Amplifier

1. DC: Record your DC measurements and compare measured gains with theory. For what range of input and output voltages is the output linearly related to the input?

2. AC: Measure the gains of crest voltage, trough voltage, average value (DC offset), and AC amplitude of the input sine wave. All these gains should be equal.

3. AC: Can you get a gain less than unity by tuning R2? What configuration does this amplifier reduce to when R2=0? Explain.

4. Clipping: Draw the input and output waveforms for an input sine wave with offset as stated in the manual. Measure and mark AC amplitudes, crest voltage, trough voltage, and average value (DC offset). Explain clipping; draw the ideal output in dashed line.
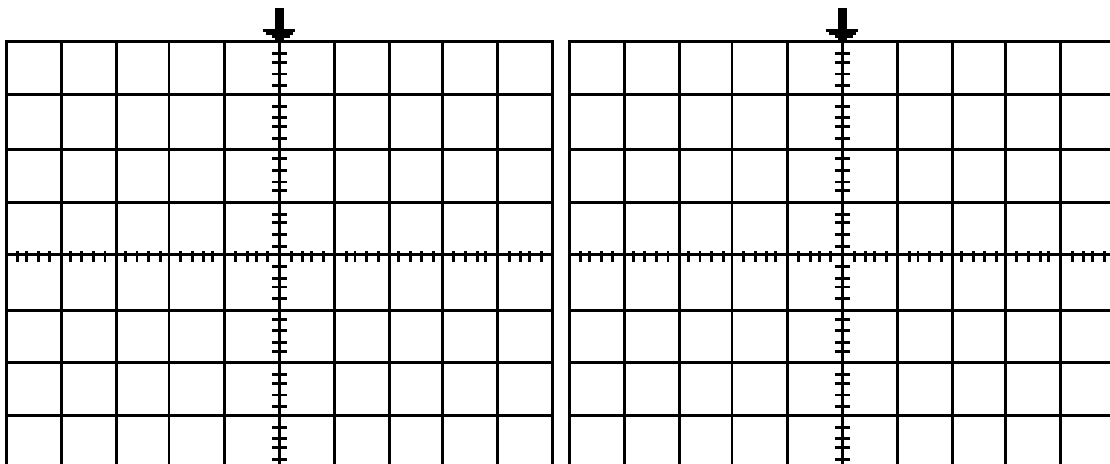
Part 2: Inverting Amplifier
What input offset did you need to get an output without distortion? Was the crest voltage of the input wave above or below V_{SS}?

What range of gain can you get in this circuit, as compared with the non-inverting amplifier?

What is the measured phase difference (in degrees) between the input and the output waveform? From where does this phase shift originate? (Hint: Is it **not** due to delay)

Cascade circuit
Measure the gain for the cascade circuit. Express this as a function of the gains of the two individual amplifiers used in this cascade.

Integrator
Sketch the input square wave and the resulting triangle output.
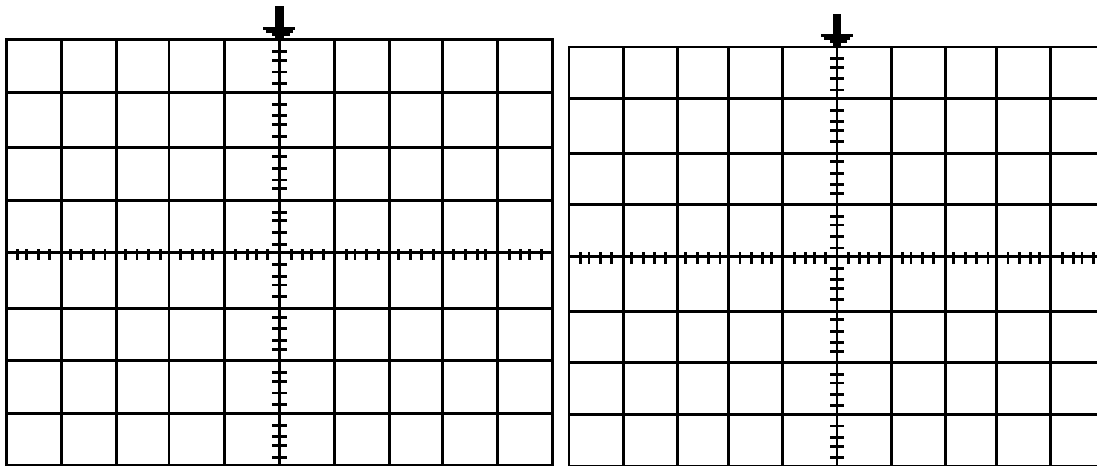
What is the measured and calculated time constant of the integrator (for a slow input)? What happens as you apply a sine wave signal and take the frequency up? Plot the frequency response (gain of circuit vs frequency) of the circuit from 1 Hz to 100KHz.

Differentiator
Sketch the input triangle wave and the resulting output. For a square input, compare measured and calculated time constant. What happens as you apply a sine wave signal and increase the frequency?