Op-Amp Lab Report

Name:_____

Name:_____

TA:_____

Session:_____

Part 1: Noninverting amplifier

(a) DC measurement:

(1) Verify the proper amplification range of the DC input.

Input (V)										
Output (V)										
Gain										

Proper amplification range (output voltage range):_____

(2) Gain measurement

R_2 (Ω)			
Theoretical gain			
Measured gain			

(b) AC measurement:

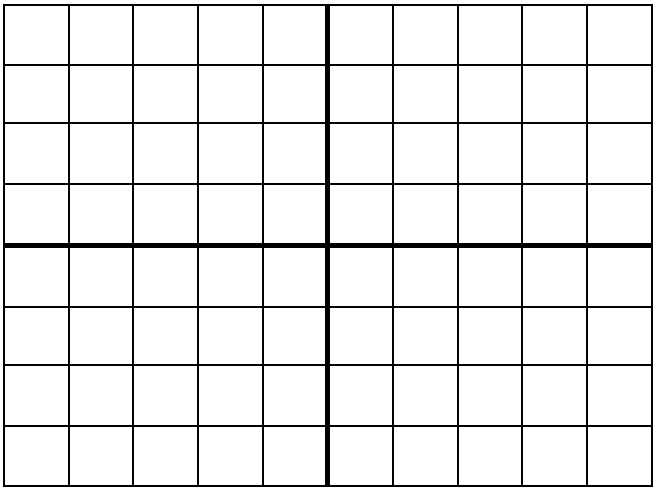
(1) Can you get a gain smaller than unity? _____

Explain:

(2) Clipping

Draw input waveform (please label axes and indicate amplitude and DC offset):

Draw output waveform and draw the ideal output in dashed line (label all the axes and indicate the amplitude and DC offset value):



Explain why clipping happens:

Part 2 Inverting amplifier

(a) What input offset did you need to get an output without distortion if input is 2.5Vpp? What did you observe as you turn R_2 and change DC offset?

(b) What range of output voltage can you get in this circuit, as compared with the non-inverting amplifier with DC input? What decides the output voltage range?

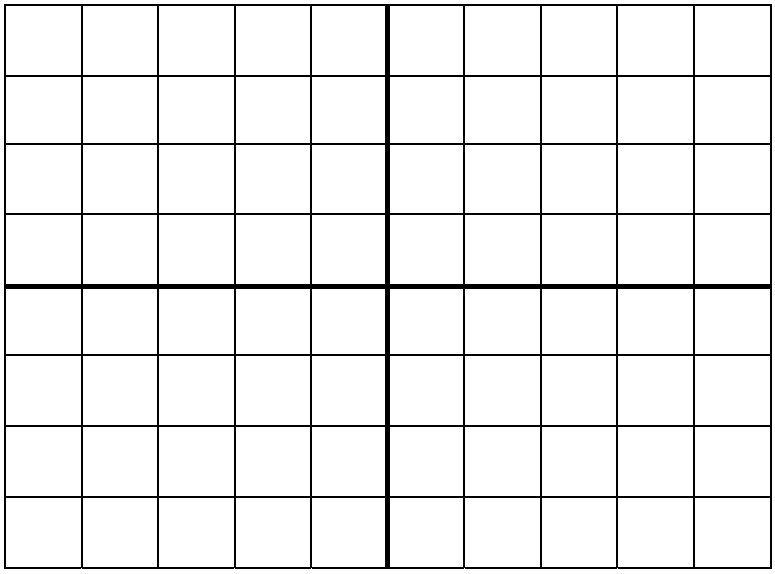
(c) What is the measured phase difference (in degrees) between the input and the output signals? From where does this phase shift originate?

Part 3: Cascade circuit

What is the gain of the cascade circuit? What is the relation between this gain and gains of the two individual amplifiers (inverting and non-inverting)?

Part 4 Integrator

(a) Sketch the input square wave and the output wave.

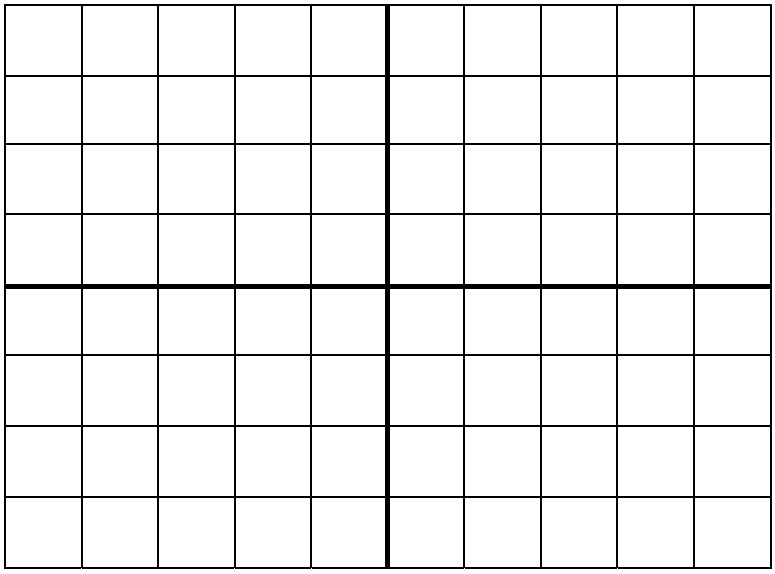


(c) What is the measured and calculated time constant of this integrator? Are they in good agreement?

(d) Sketch the frequency response of the amplifier (gain vs. frequency). Does it have any filter effect?

Part 5: Differentiator

(a) Sketch input triangle wave and output wave.



(b) What is the measured and calculated time constant of this integrator? Are they in good agreement?

(c) Add DC offset to the input signal, is there any change on the output signal? Why?