UNIVERSITY OF CALIFORNIA AT BERKELEY

College of Engineering Department of Electrical Engineering and Computer Sciences

EE105 Lab Experiments

Report 10: Differential Amplifiers

3.2.2	Measure I_{C1} , I_{C2} , I_{C3} , and $V_{OUT,DC}$. How do they compare with hand calc	ulations
	$I_{C1} =$	
	$I_{C2} =$	
	$I_{C3} =$	
	$V_{OUT,DC} =$	
3.2.3	Sketch the waveforms at v_{in+} and v_{out+} .	
		7

3.2.4 Measure the peak-to-peak voltages of v_{in+} and v_{out+}

Name:

Lab Section:

$v_{in+,p-p} =$
$v_{out+,p-p} =$

3.2.5	Qualitatively	describe ho	$w v_{out+}$	and v_{out-}	are related.	Is this w	hat you'd	expect?
-------	---------------	-------------	--------------	----------------	--------------	-----------	-----------	---------

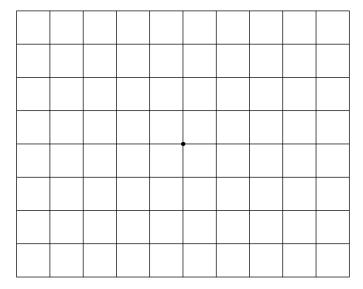
3.2.6 Measure the peak-to-peak voltage of $v_{out+} - v_{out-}$ and calculate the differential gain of the circuit. Does this match the gain you calculated in the prelab?

$$v_{out,p-p} = A_{DM} =$$

3.2.8 Measure the gain. Does it match your prelab calculations? Does it match your result from 3.2.6?

$$A_{DM} =$$

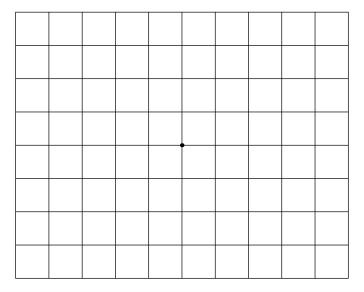
3.3.2 Sketch the output waveform. Why isn't it sinusoidal?



3 3 4	Calculate the	differential	gain of the	amplifier	with the	e added lo	ad

1 1	
A_{DM}	=

3.3.5 Sketch v_{out} . What is the measured differential gain of the circuit? How does it compare to your hand calculations? Does it match the gain you observed in step 3.2.6? Should it?



A_{DM}	=

- 3.4.1 Attach your netlist on a separate sheet.
- 3.4.2 Use SPICE to find I_{C1} , I_{C2} , I_{C3} , and $V_{out,DC}$. Compare these values with your calculations from the prelab and measurements in lab.

$I_{C1} =$	
$I_{C2} =$	
$I_{C3} =$	
$V_{OUT,DC} =$	

3.4.3	Attach your plot on a separate sheet	What is the gain	as measured	from the plot?	Does it match
	your hand calculations? Does it matc	n your measurement	s?		

 $A_{DM} =$