UNIVERSITY OF CALIFORNIA AT BERKELEY
College of Engineering
Department of Electrical Engineering and Computer Sciences

EE105 Lab Experiments

Report 10: Differential Amplifiers

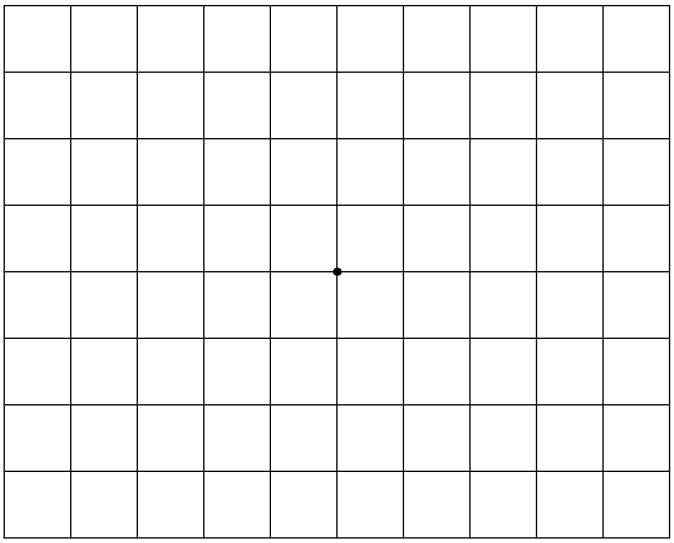
Name:

Lab Section:

3.2.2 Measure I_{C1}, I_{C2}, I_{C3}, and $V_{OUT,DC}$. How do they compare with hand calculations?

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

3.2.3 Sketch the waveforms at v_{in+} and v_{out+}.



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

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

3.2.5 Qualitatively describe how v_{out+} and v_{out-} are related. Is this what 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?

$v_{out,p-p} =$

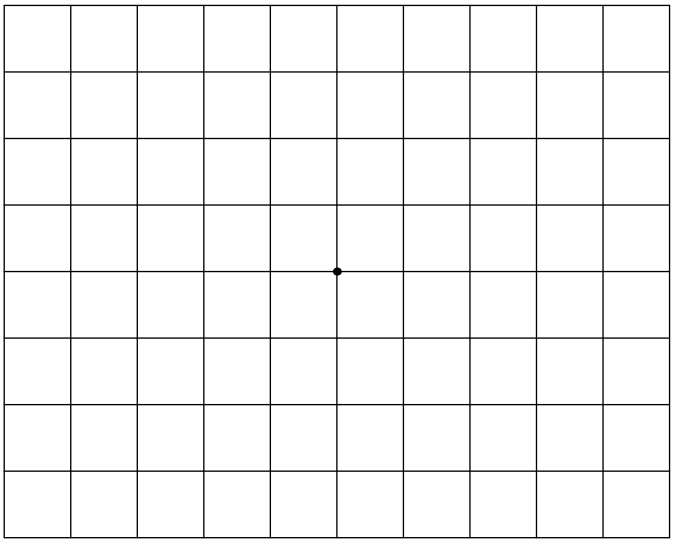
$A_{DM} =$

3.2.7 What do you see at the output? Why?

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

$A_{DM} =$

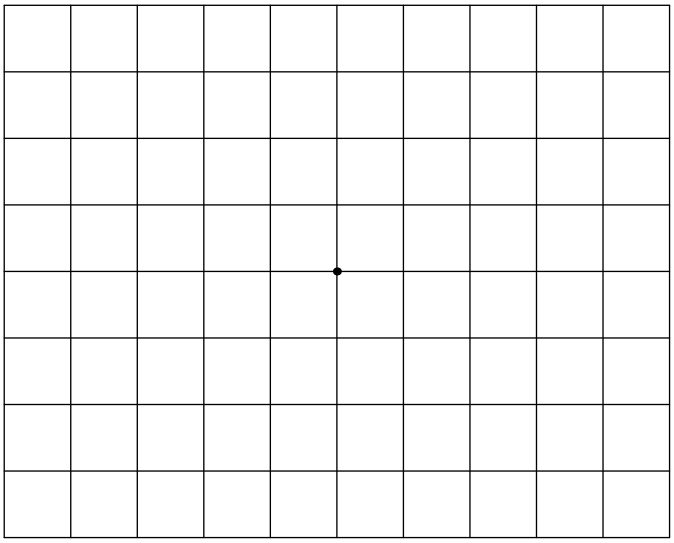
3.3.2 Sketch the output waveform. Why isn't it sinusoidal?



3.3.4 Calculate the differential gain of the amplifier with the added load.

$A_{DM} =$

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 match your measurements?

$A_{DM} =$