Please make sure to include section number, not the day and time, on the cover page.

The self-graded report is due at 7 PM Monday, Feb. 22nd. Put yours (with the optional revision) in your section envelop in the black basket in BE 150.

When you submit the lab #3 report, make sure to pick up your lab #2 report from the basket. The lab #2 report unclaimed by the deadline will be penalized with -5 pt.s.

There are 25 items in the list. Make a mark your lab report with the item number where you have it in your report. Each item is 1 point. Add them up and write it on the cover page next to your name.

Introduction

1. Description of the “ideal” operational amp model
2. Description and analysis of the inverting amplifier circuit.
3. Description and analysis of the integrator circuit.
4. Description and analysis of the differentiator circuit.

Part 1

5. The name of the circuit.
6. The circuit diagram (including the measurement of the resistor).
7. The gain value and calculation.
8. (extra) The derivation of the gain formula.
9. The Vin vs. Vout table for Vin from -5 V to 5 V.
10. The graph from #9, and the best fit line.
11. The slope from #10, and the analysis of the slope.
12. The analysis of Vin vs. Vout for Vin from -10 V to 10 V (including a graph).
13. The input resistance measurement procedure and the value.
14. The output resistance measurement procedure and the value.

Part 2

15. The phase difference and the reasoning from the circuit with 1 V, 100 Hz sinusoidal Vin.
16. The observation and reasoning of the circuit behavior when Vin is increased to 5 V.
17. The name and the circuit diagram (including resistance measurement).
18. The observation of the circuit behavior with input from 100 Hz to 10 kHz, and back down, and the role of 10 MΩ resistor.

19. The plot of $20 \log(G)$ vs. $\log(f)$ for $f = 100, 200, \ldots, 1000, 2000, \ldots, 10000$, and the comparison with theory.

20. The screen shot for the frequency mentioned in the manual, and the reason why it is integrator.

21. The name and the circuit diagram (including resistance measurement).

22. Repeat #19 with new circuit.

23. Repeat #20 with new circuit.

Conclusion

24. The summary of the topics you learned in this lab demonstrated with the result of your lab activity.

25. Your personal appreciation of the lab. (What you like/hate, the difficulties/inspirations while you working on the lab. Any suggestion on how to improve the future lab #3)