

Basic Elec. Engr. Lab

ECS 204

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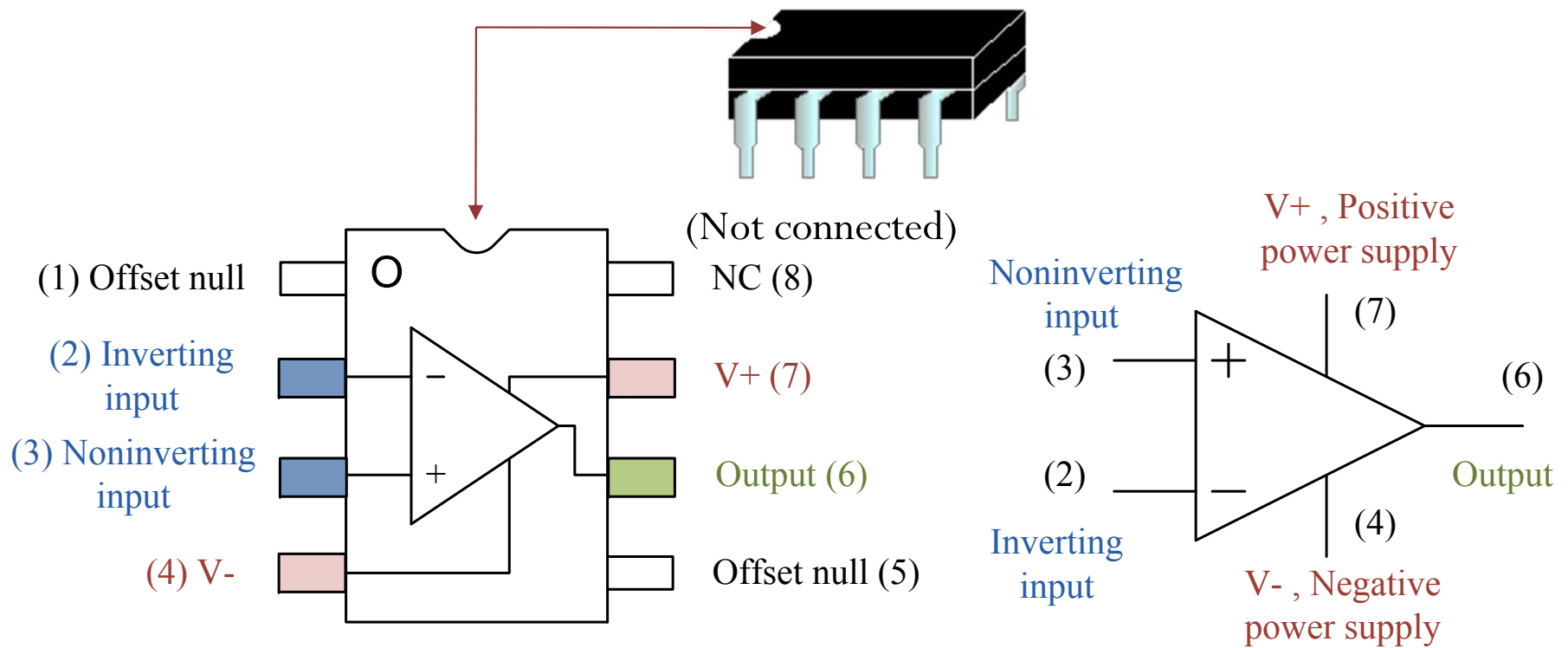


Lab 7

- Operational amplifier
- Inverting amplifier
- Summing Amplifier

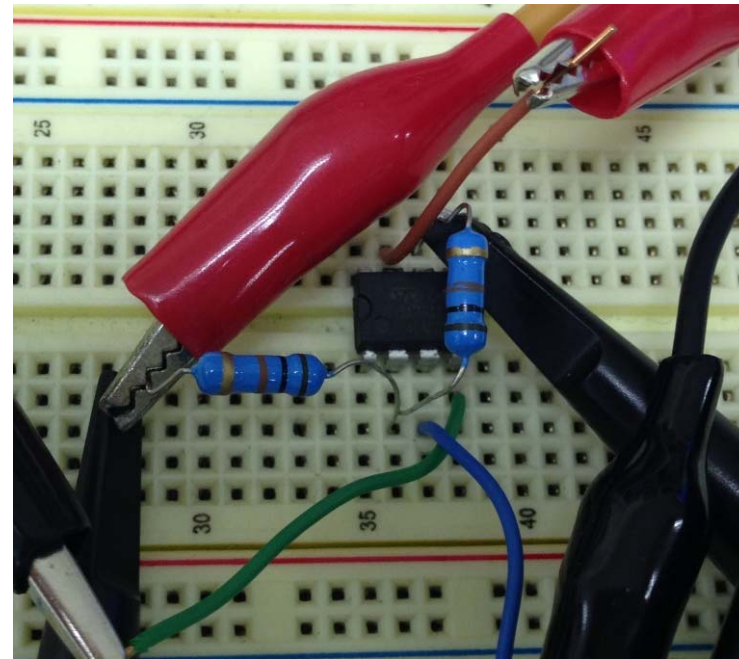
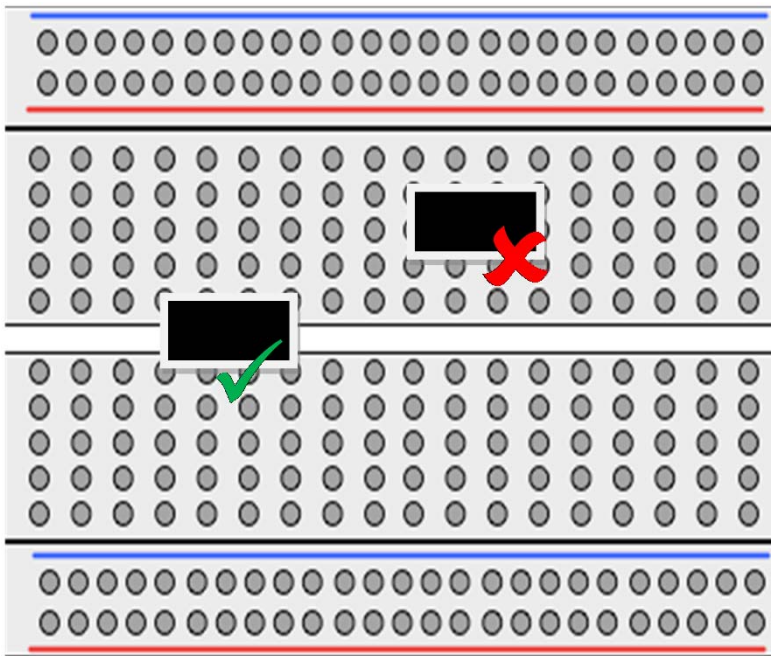
Op-Amp 741

- **OP**erational **AMPL**ifier



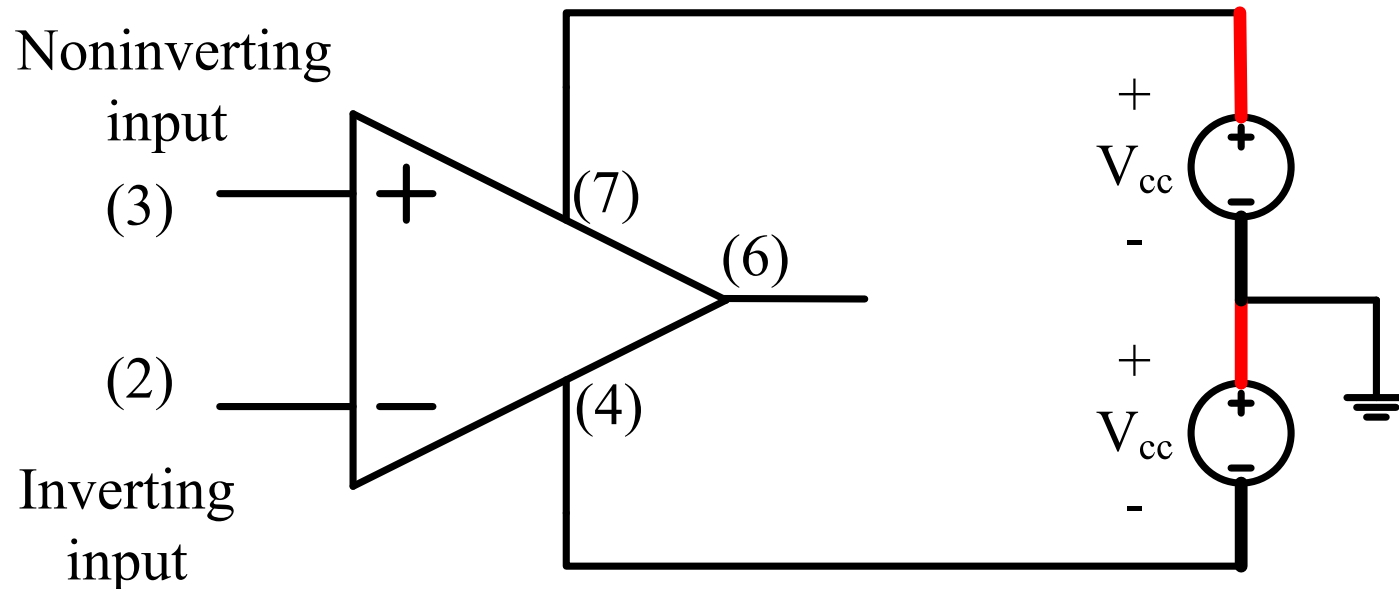
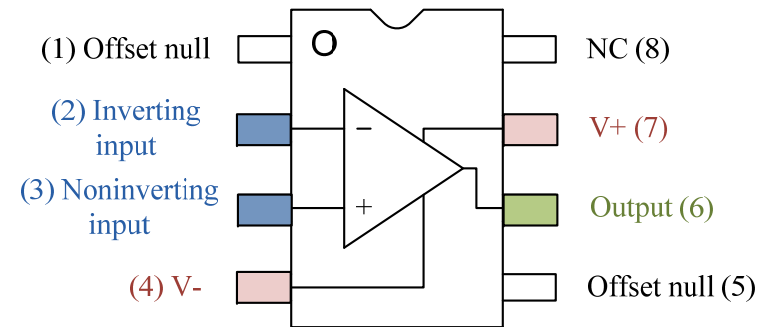
Placing op amps on the proto-board

- Plug in op amp chips so that they straddle the troughs on the proto board.
- In this way, each pin is connected to a different hole set.

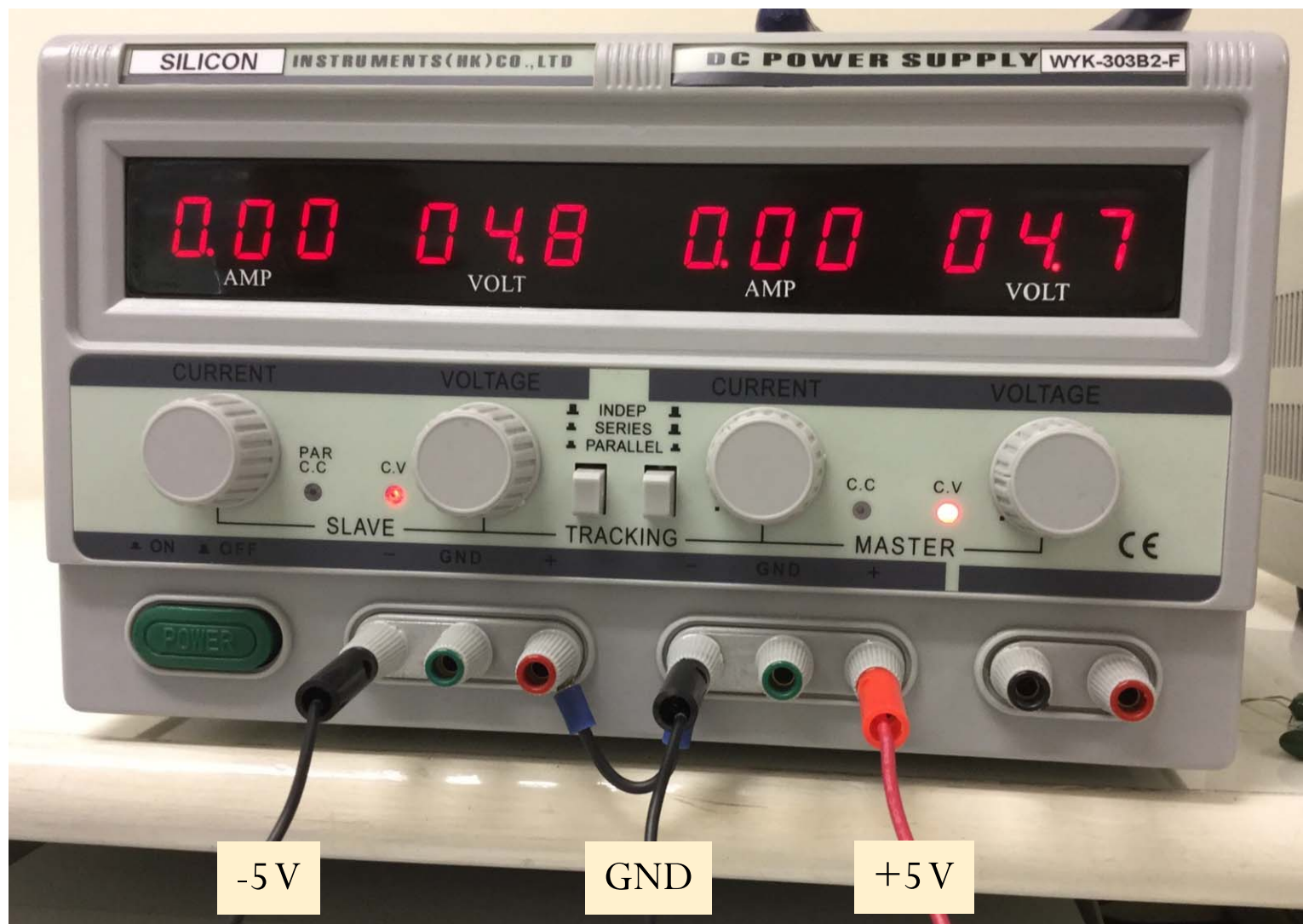


Powering the op amp

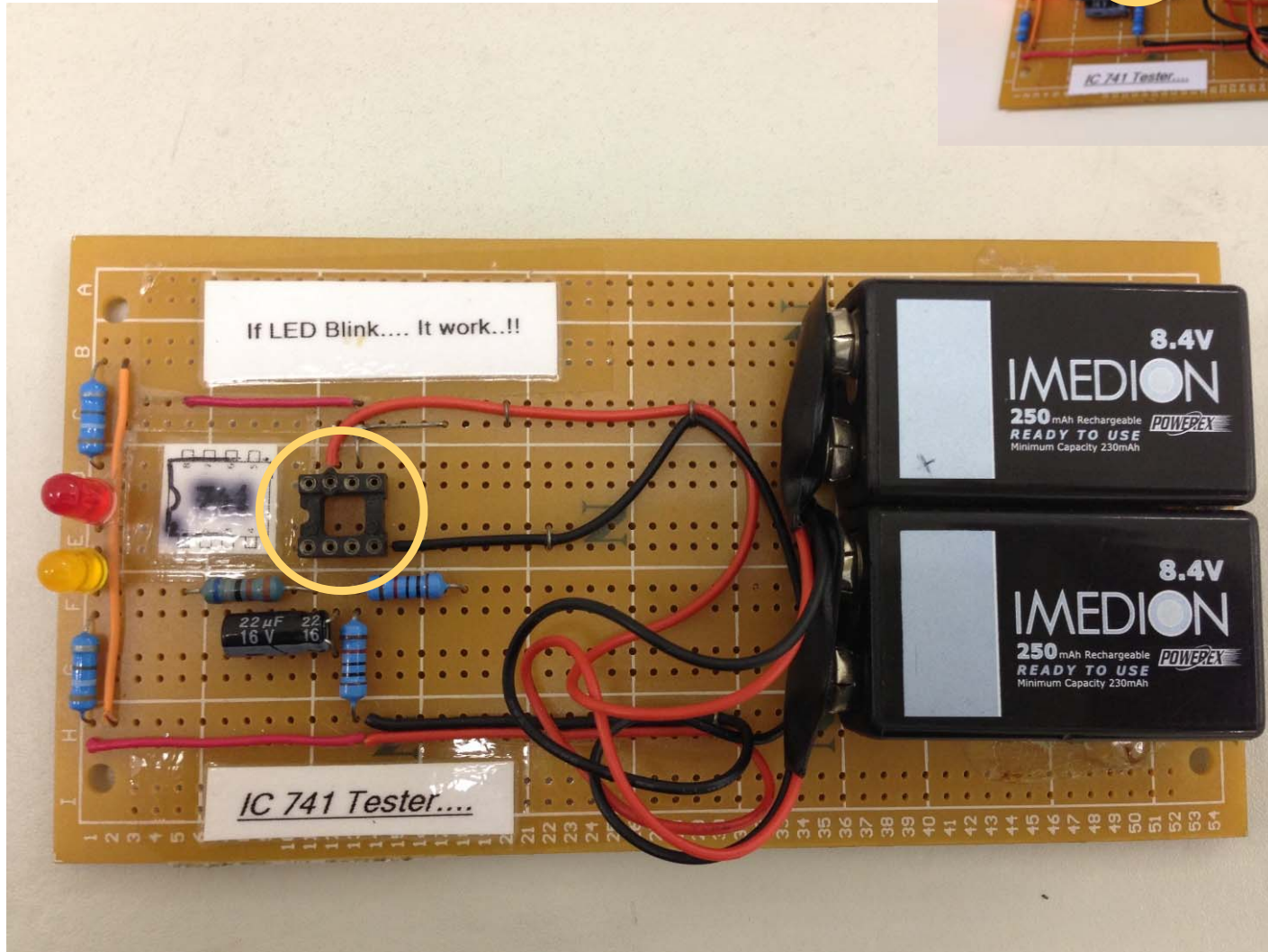
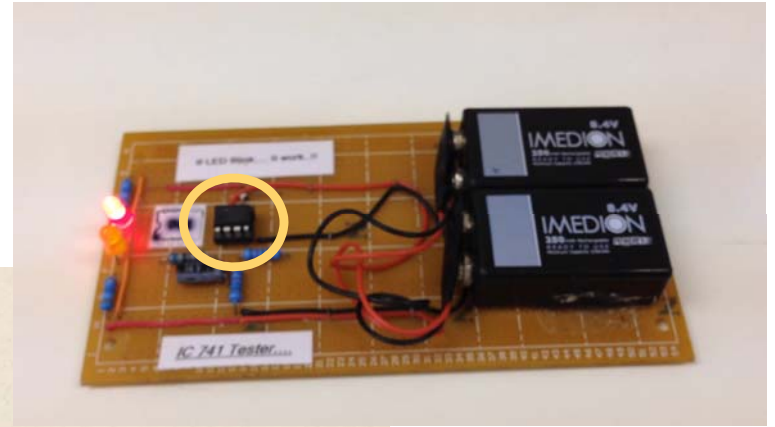
- The op amp must be powered by voltage supplies.
- These supplies are often ignored in op amp circuit diagrams for the sake of simplicity.



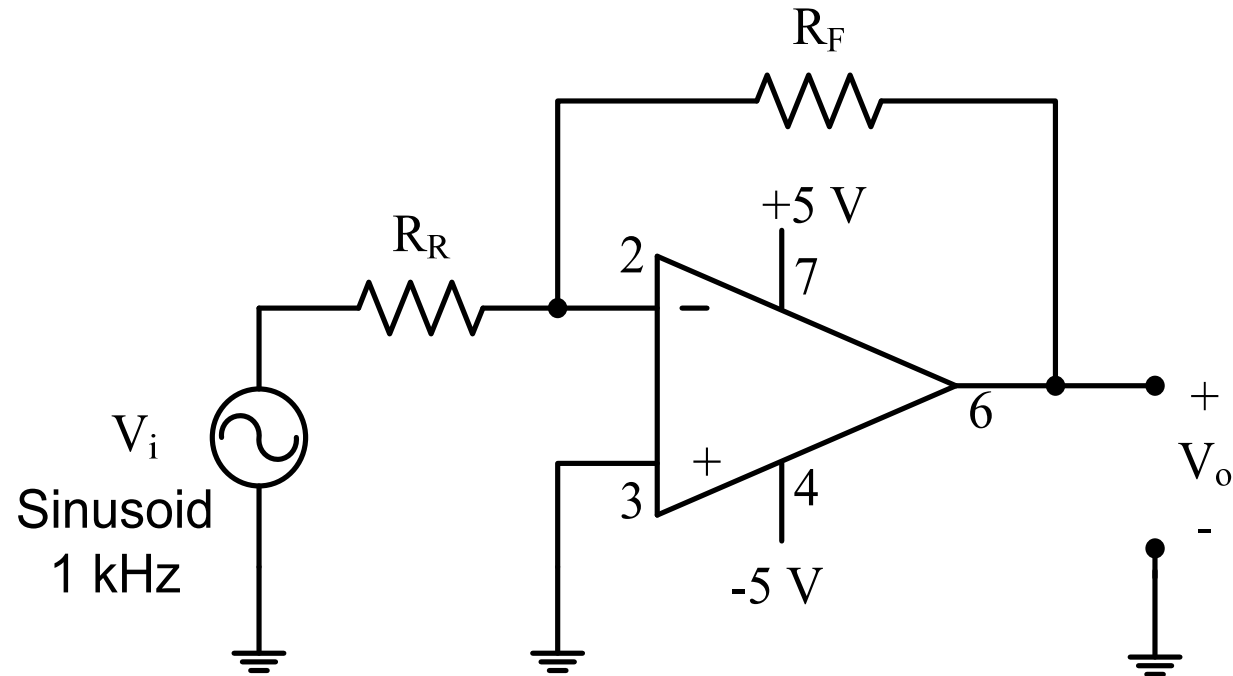
Powering the op amp



Op amp tester

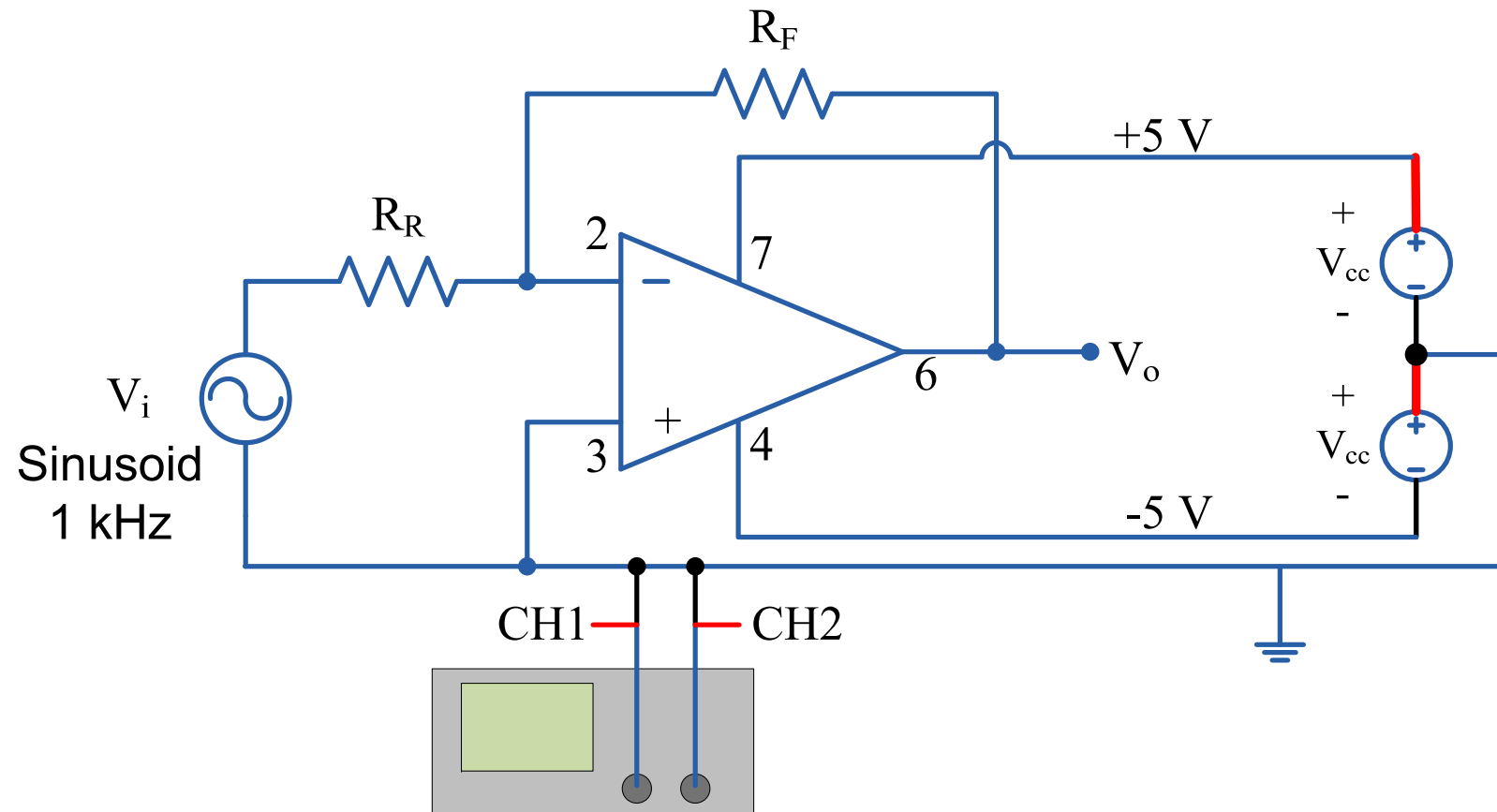


Part A: Inverting Amplifier

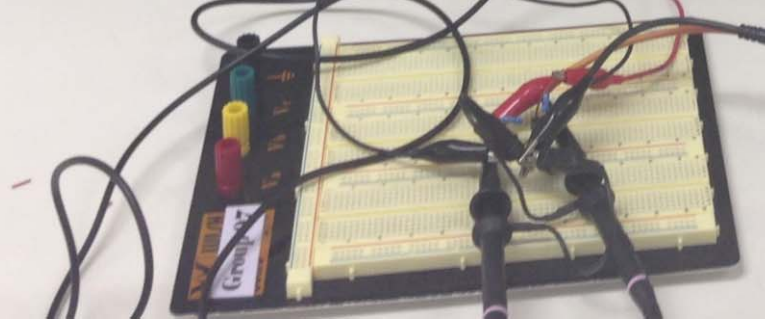
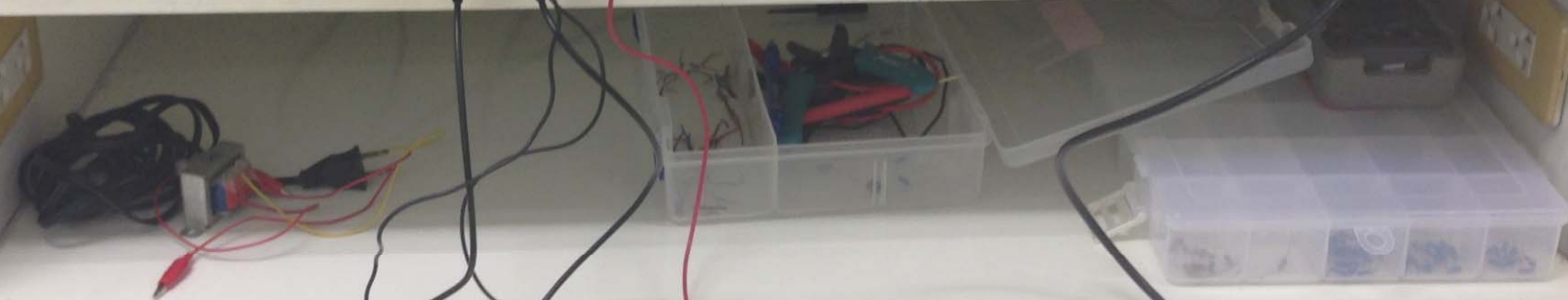
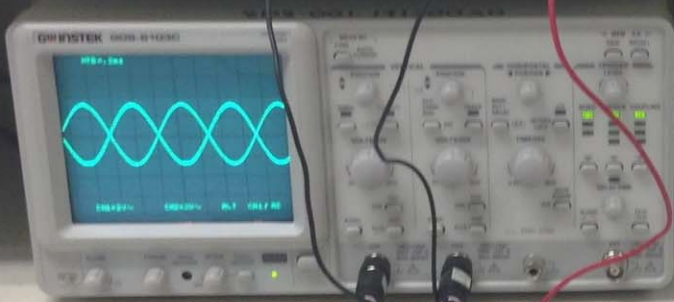


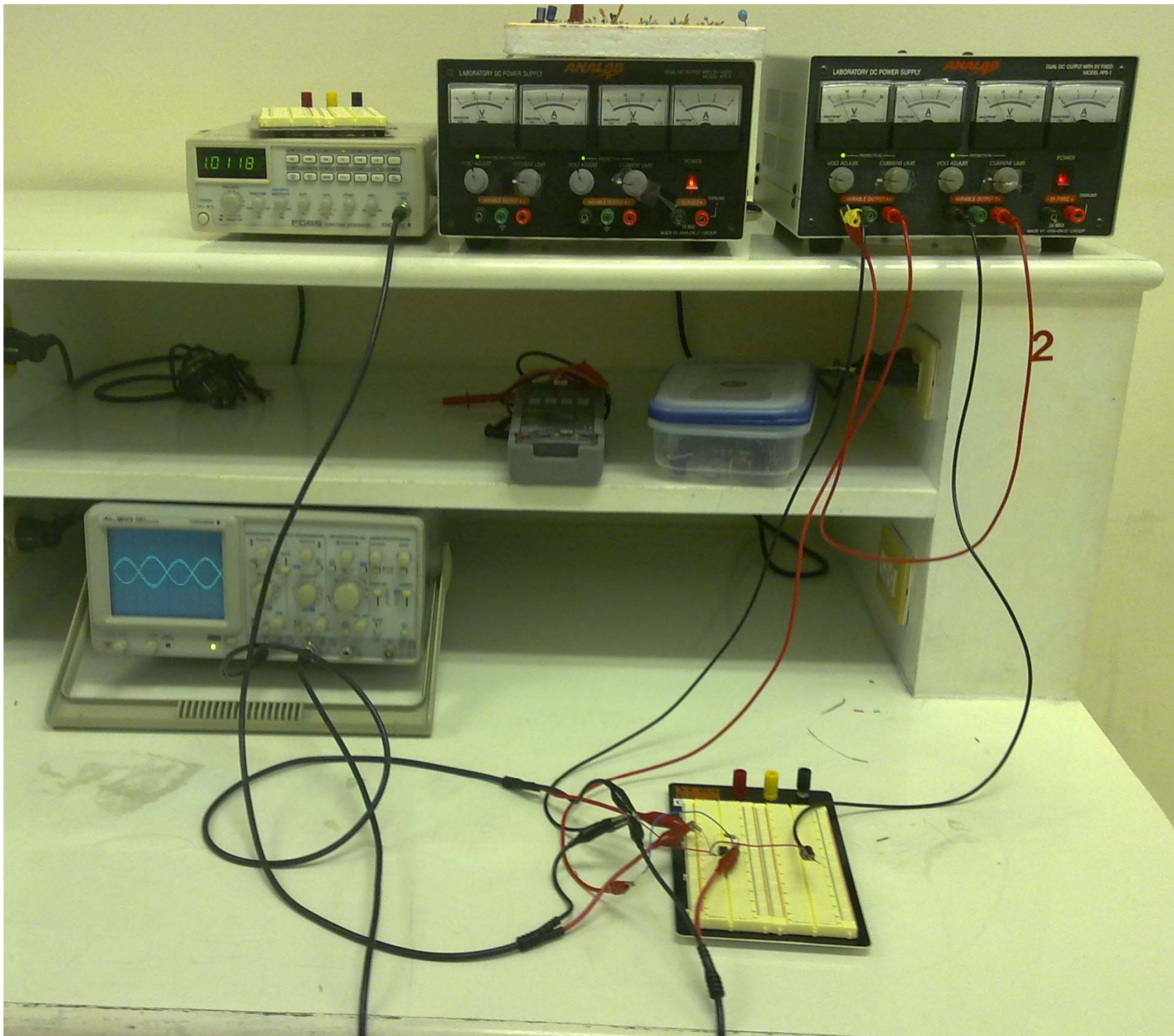
$$V_o = -\frac{R_F}{R_R} V_i.$$

Part A: Inverting Amplifier

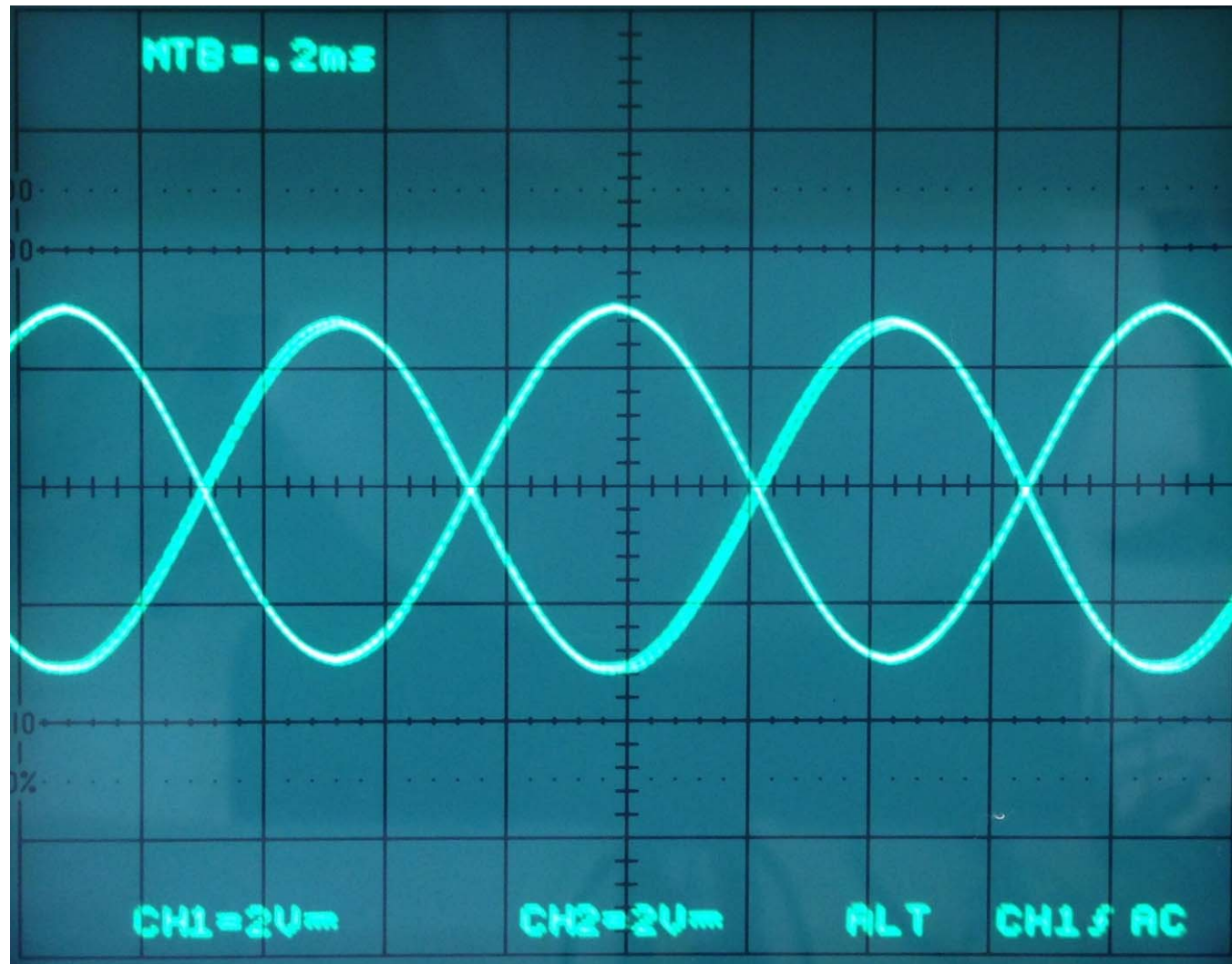


$$V_o = -\frac{R_F}{R_R} V_i$$

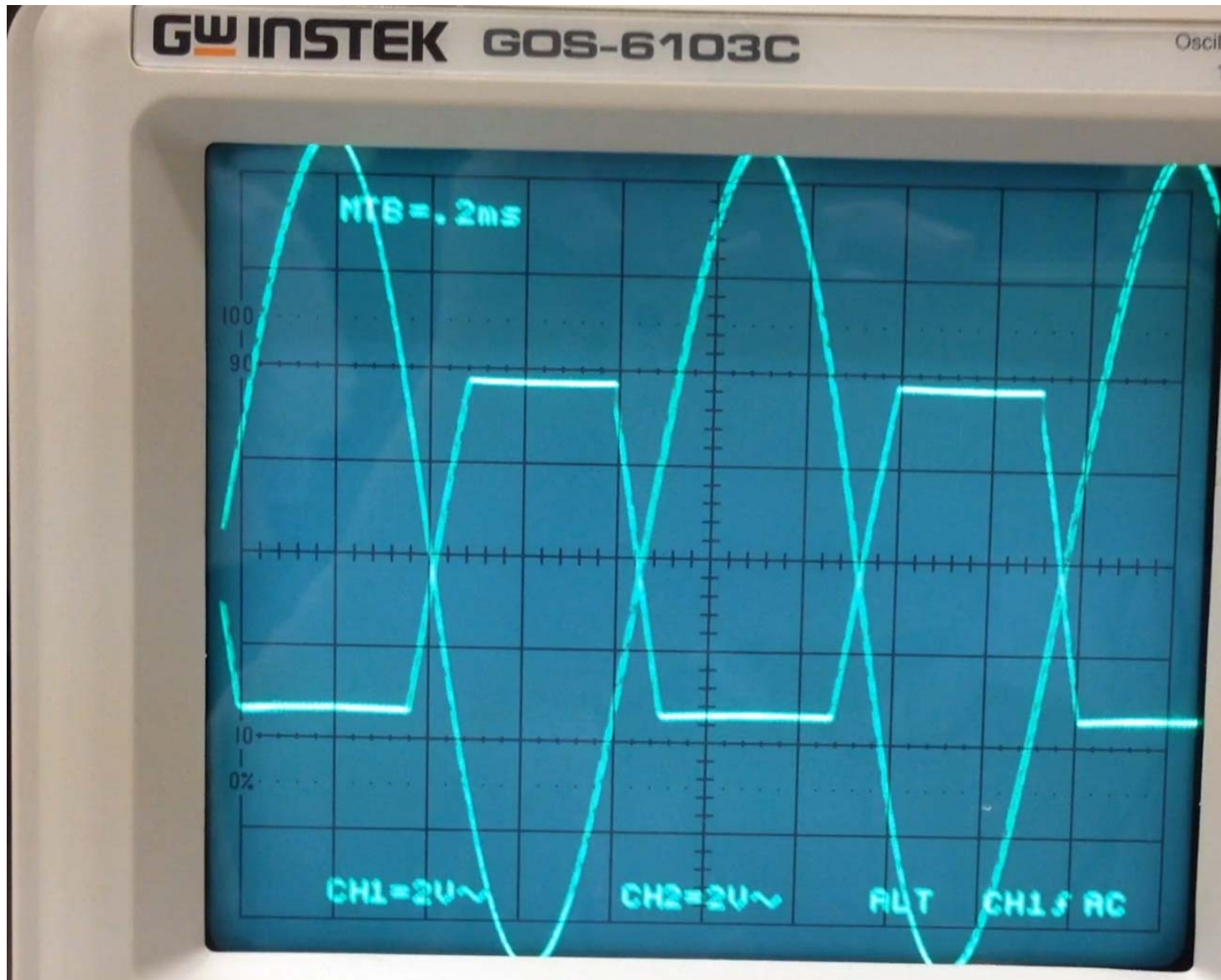




Part A: Inverting Amplifier

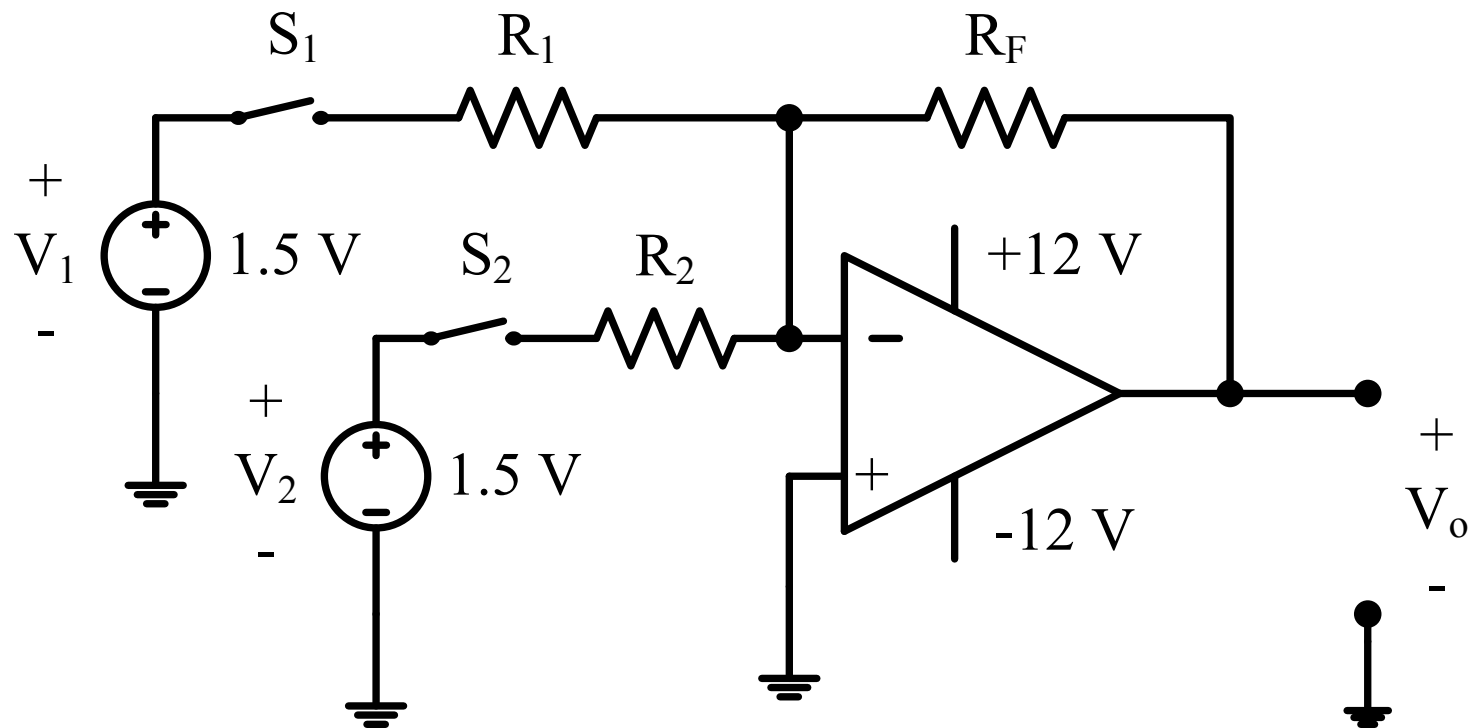


Demo: Clipping



Part B: Summing Amplifier

- Note that you will **need 4 DC Voltage Sources** in this part.



$$V_o = -\left(\frac{R_F}{R_1} V_1 + \frac{R_F}{R_2} V_2\right).$$