

EE 206 Simulation 6

Operational Amplifiers

Part I. Noninverting Amplifier

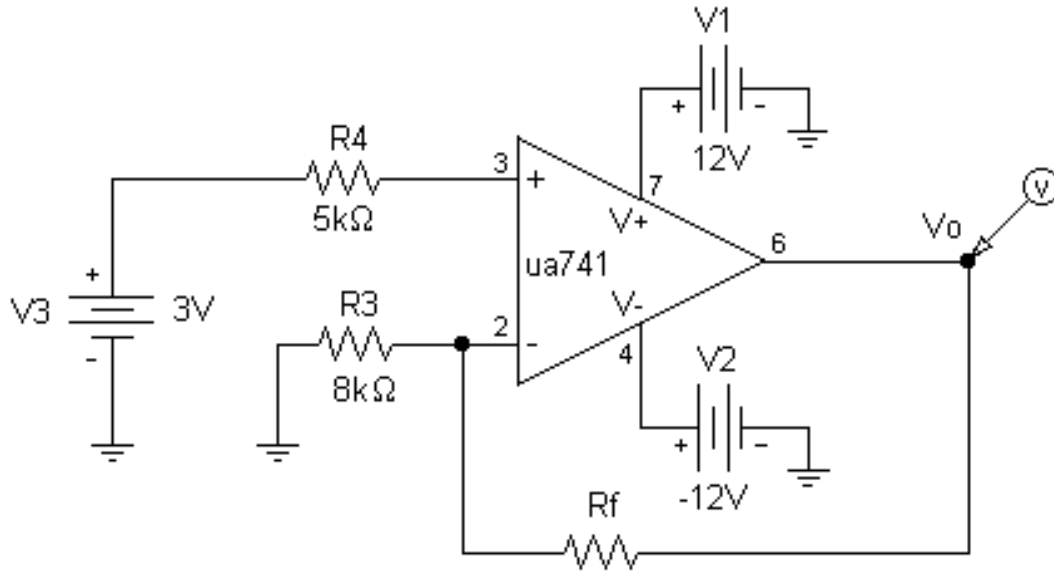


Figure 1. Noninverting Amplifier Circuit

- Construct the circuit shown in Fig. 1 using PSpice Schematics.
- Use PARAM (as used in Simulation 5) to vary R_f from 5 k Ω to 20 k Ω with a step size = 1.0 k Ω . “Measure” the output voltage V_o of the circuit (16 measurements total). Show that the following relationship holds for each measurement:

$$V_o = V_3 \times \left(\frac{R_3 + R_f}{R_3} \right)$$

Part II. Inverting Amplifier / Summer

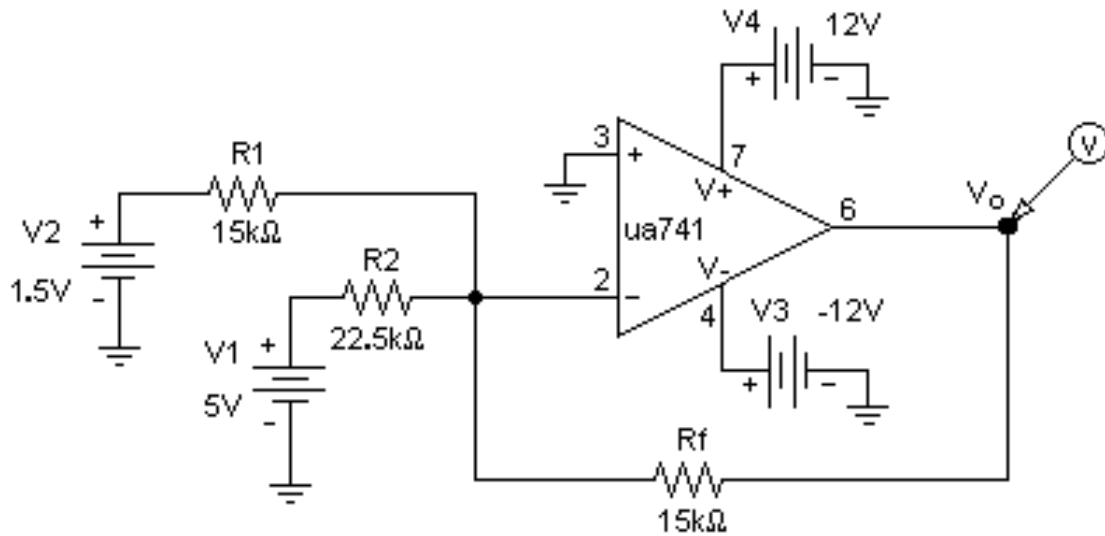


Figure 2. Inverting Amplifier / Summer

- Construct the circuit shown in Fig. 2 using PSpice Schematics.
- Use DC SWEEP to vary V2 from 1.5 V to 5 V (with a step of 0.5 V). “Measure” the output voltage Vo of the circuit (8 measurements total). Show that the following relationship holds for each measurement:

$$V_o = -\left(\frac{R_f}{R_1}\right) \times V_2 - \left(\frac{R_f}{R_2}\right) \times V_1$$

Simulation Report: Print the outputs from Part I and II. Put your data of the “measurements” and calculations into table form for easy comparisons. Your report is due at the beginning of the next lab period.