

PROBLEMS

*Note: Asterisks indicate more difficult problems.

5 Practical Op-Amp Circuits

- What is the output voltage in the circuit of Fig. 62?

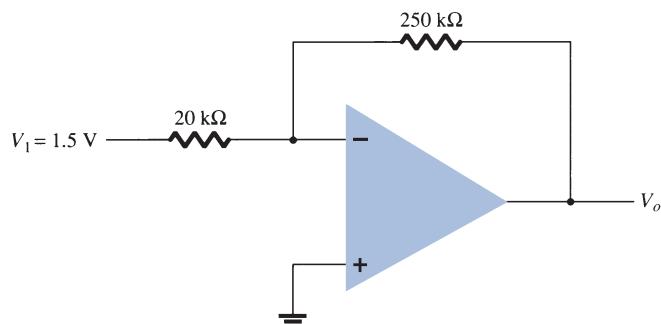


FIG. 62
Problems 1 and 25.

- What is the range of the voltage-gain adjustment in the circuit of Fig. 63?

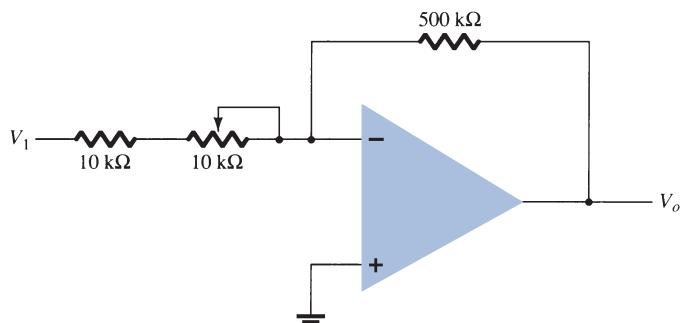


FIG. 63
Problem 2.

- What input voltage results in an output of 2 V in the circuit of Fig. 64?
- What is the range of the output voltage in the circuit of Fig. 65 if the input can vary from 0.1 to 0.5 V?

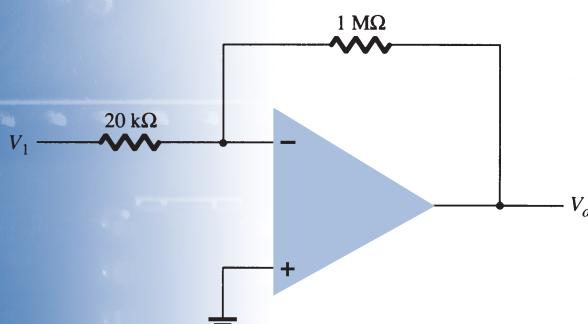


FIG. 64
Problem 3.

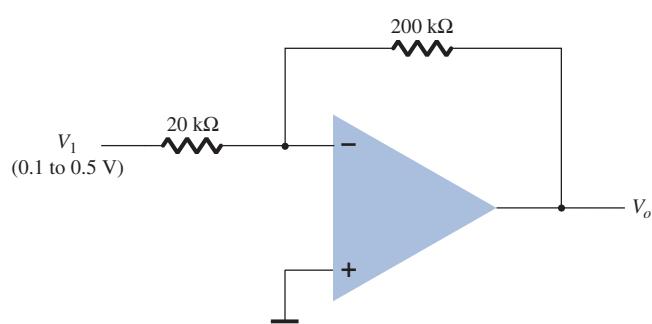


FIG. 65
Problem 4.

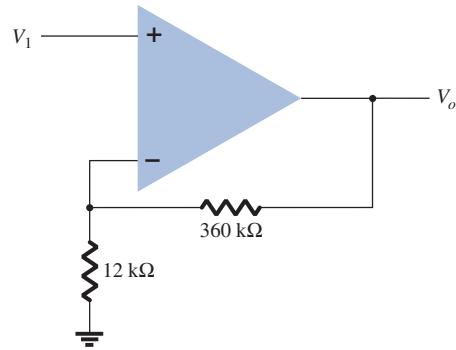


FIG. 66
Problems 5, 6, and 26.

5. What output voltage results in the circuit of Fig. 66 for an input of $V_1 = -0.3 \text{ V}$?
6. What input must be applied to the input of Fig. 66 to result in an output of 2.4 V ?
7. What range of output voltage is developed in the circuit of Fig. 67?
8. Calculate the output voltage developed by the circuit of Fig. 68 for $R_f = 330 \text{ k}\Omega$.

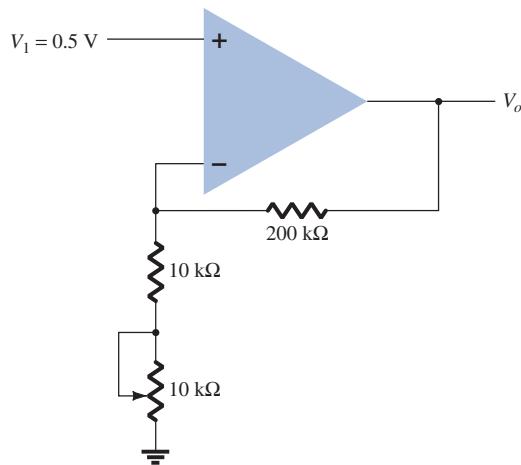


FIG. 67
Problem 7.

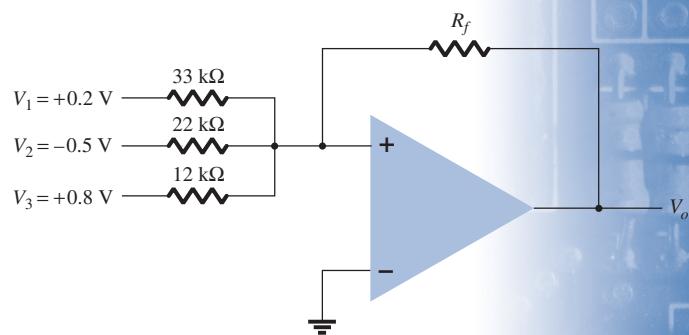


FIG. 68
Problems 8, 9, and 27.

9. Calculate the output voltage of the circuit in Fig. 68 for $R_f = 68 \text{ k}\Omega$.
10. Sketch the output waveform resulting in Fig. 69.

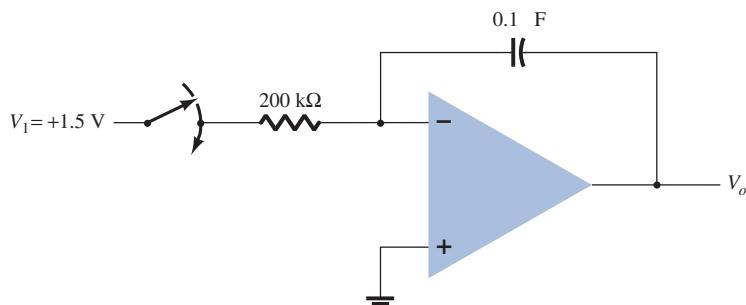


FIG. 69
Problem 10.

11. What output voltage results in the circuit of Fig. 70 for $V_1 = +0.5$ V?

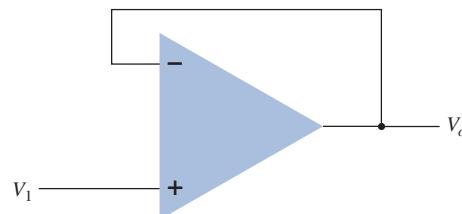


FIG. 70
Problem 11.

12. Calculate the output voltage for the circuit of Fig. 71.

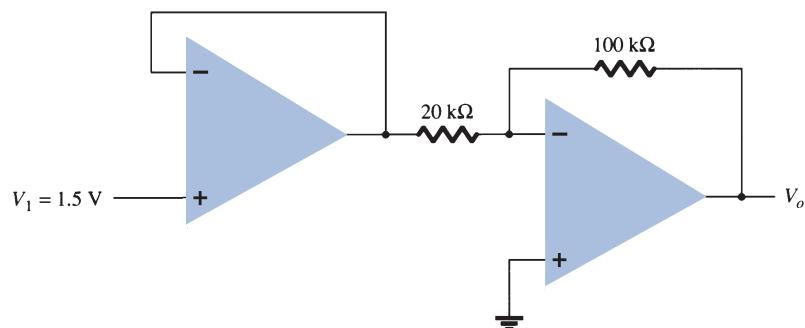


FIG. 71
Problems 12 and 28.

13. Calculate the output voltages V_2 and V_3 in the circuit of Fig. 72.

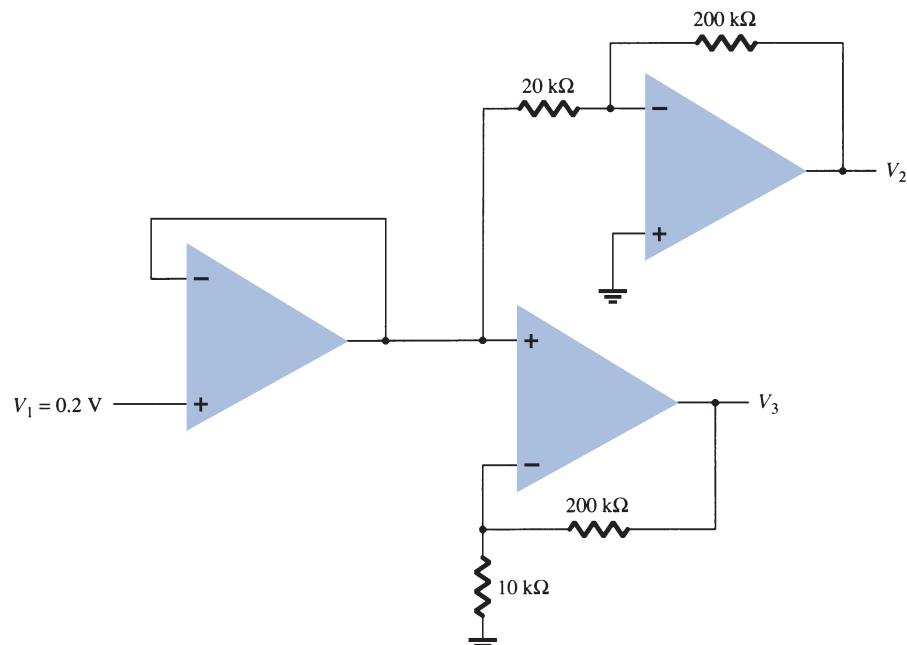


FIG. 72
Problem 13.