

Amplificadores Operacionales

Sumador y Restador

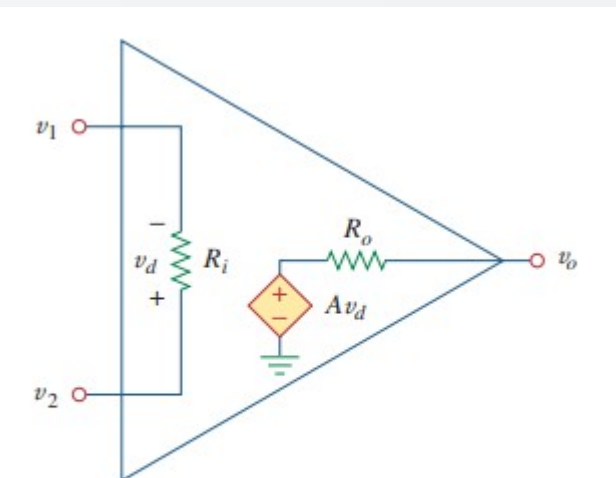
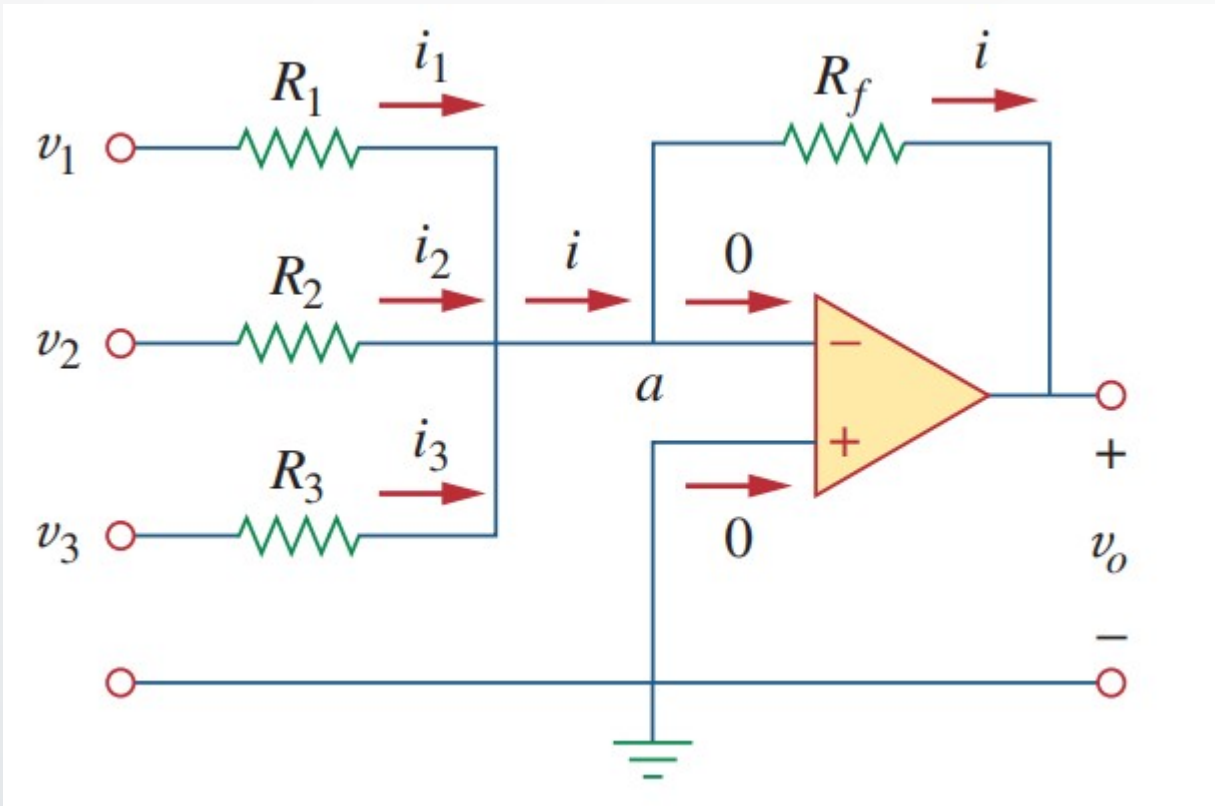


Figure 5.4

The equivalent circuit of the nonideal op amp.

Tomado Fundamentals of Electric Circuits Pag 177

Sumador

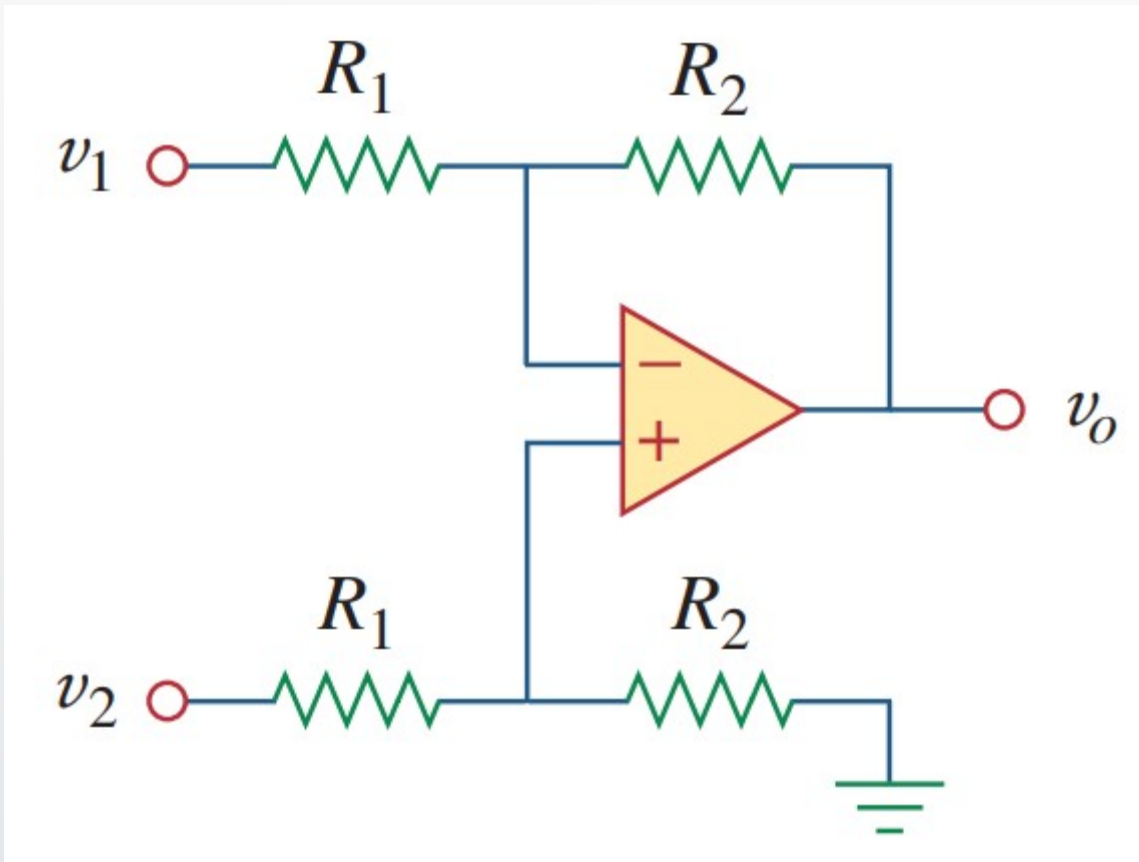


Tomado Fundamentals of Electric Circuits Pag 185

$$v_o = - \left(v_1 \frac{R_f}{R_1} + v_2 \frac{R_f}{R_2} + v_3 \frac{R_f}{R_3} \right)$$

$$v_o = - \left(v_1 \frac{R_f}{R_1} + v_2 \frac{R_f}{R_2} + v_3 \frac{R_f}{R_3} + \dots + v_n \frac{R_f}{R_n} \right)$$

Restador o Amplificador diferencial



$$v_o = \frac{R_2}{R_1} (v_2 - v_1)$$

Tomado Fundamentals of Electric Circuits Pag 200

Ejemplo 1

5.39 For the op amp circuit in Fig. 5.76, determine the value of v_2 in order to make $v_o = -16.5$ V.

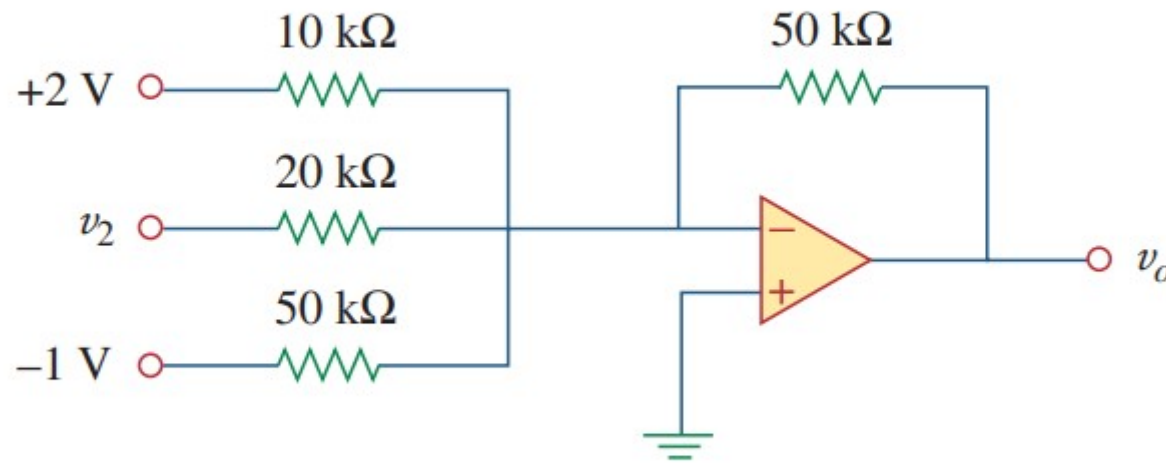


Figure 5.76

For Prob. 5.39.

Tomado Fundamentals of Electric Circuits Pag 206

Ejemplo 2

5.48 The circuit in Fig. 5.80 is a differential amplifier driven by a bridge. Find v_o .

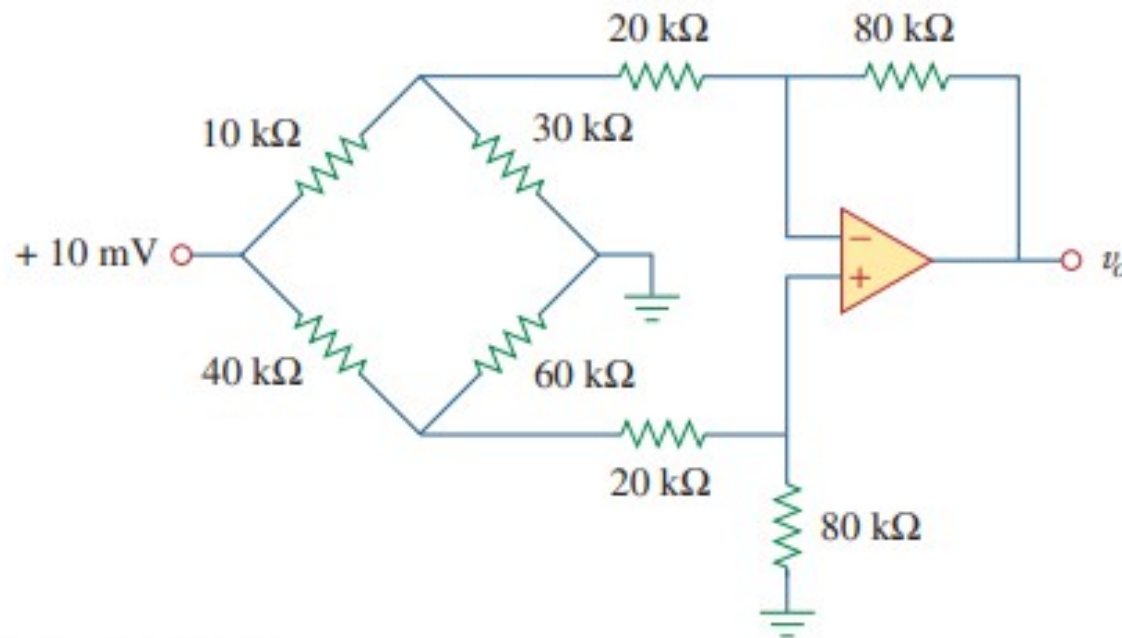


Figure 5.80

For Prob. 5.48.

Tomado Fundamentals of Electric Circuits Pag 207

Ejemplo 3

5.46 Using only two op amps, design a circuit to solve



$$-v_{\text{out}} = \frac{v_1 - v_2}{3} + \frac{v_3}{2}$$

Tomado Fundamentals of Electric Circuits Pag 207

5.67 Obtain the output v_o in the circuit of Fig. 5.94.

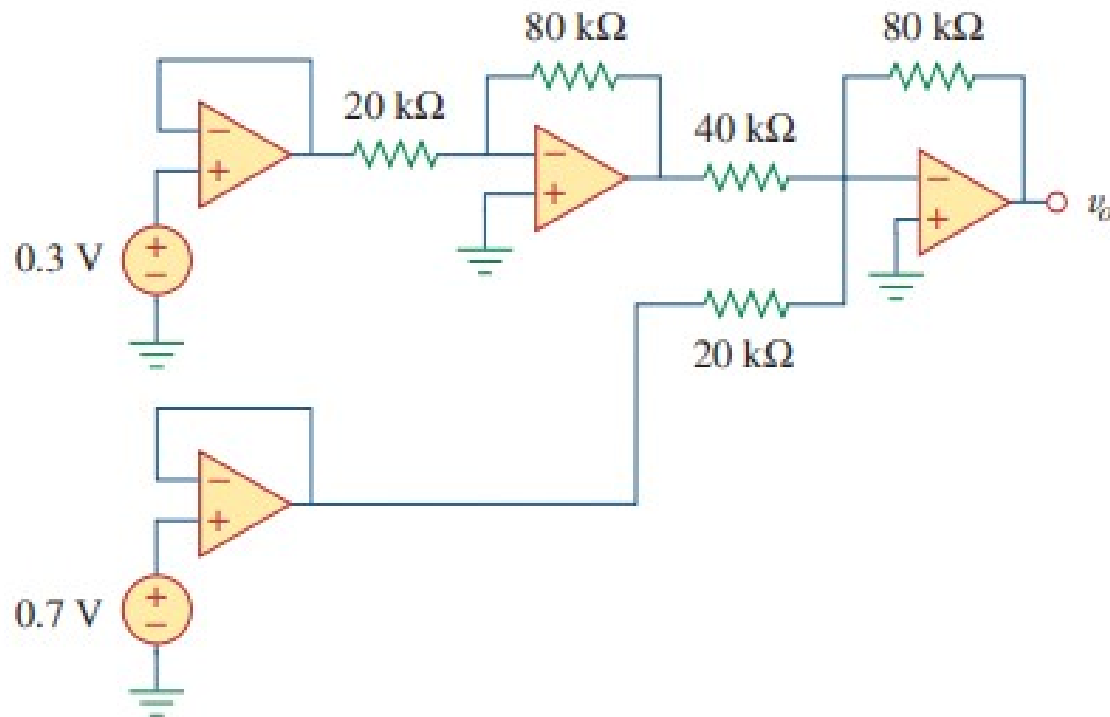


Figure 5.94

For Prob. 5.67.

Tomado Fundamentals of Electric Circuits

5.58 Calculate i_o in the op amp circuit of Fig. 5.85.

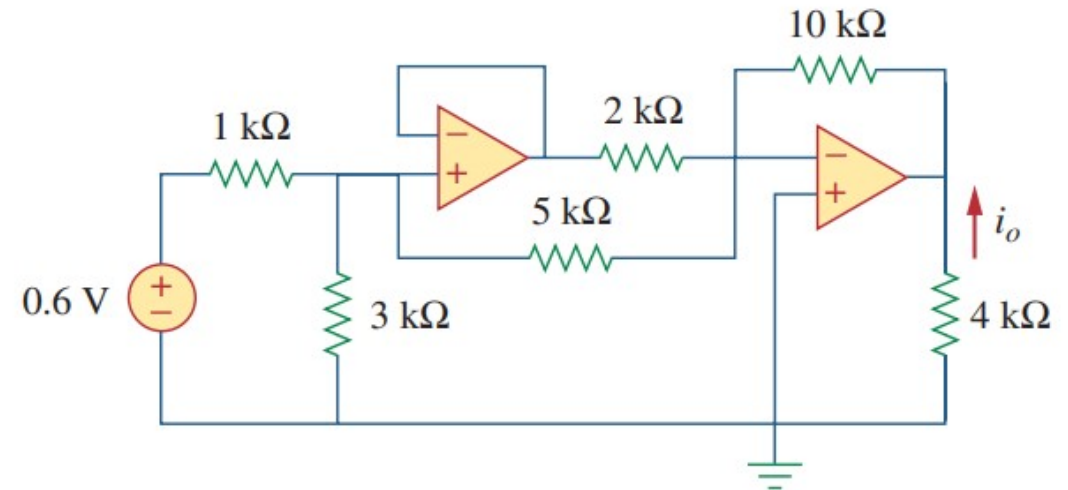


Figure 5.85

For Prob. 5.58.

5.45 Design an op amp circuit to perform the following operation:



$$v_o = 3v_1 - 2v_2$$

All resistances must be $\leq 100 \text{ k}\Omega$.