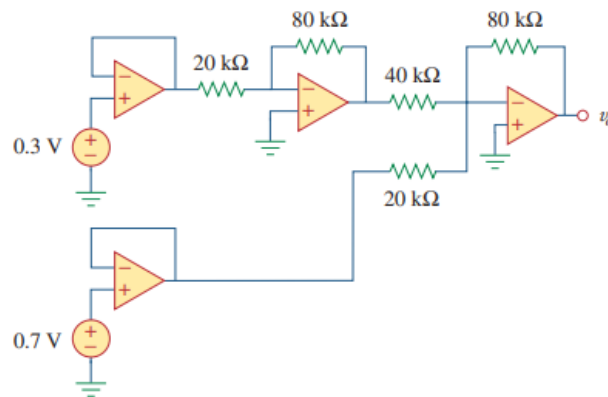EJERCICIO CLASE DEL MIERCOLES

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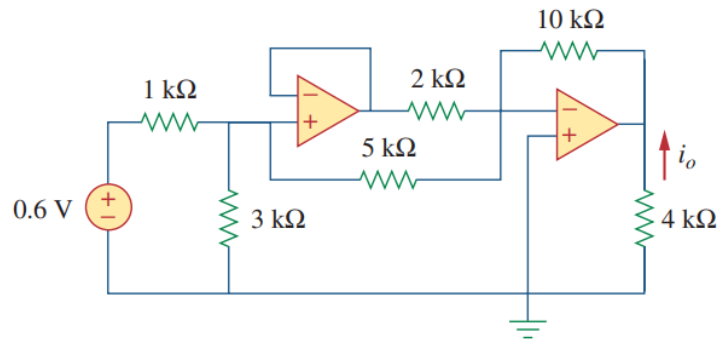

Figure 5.94
For Prob. 5.67.

$V_1 = 0.3 \text{ v} \qquad V_3 = 0.7 \text{ v}$

$V_2 = -0.3 \cdot \dfrac{80K}{20K} = -1.2 \text{ v}.$

$N_o = -\left(V_2 \cdot \dfrac{80K}{40K} + V_3 \cdot \dfrac{80K}{20K} \right)$

$N_o = -(-1.2 \cdot 2 + 0.7 \cdot 4)$

$N_o = -(-2.4 + 2.8)$

$\boxed{N_o = -0.4 \text{ v. R/}}$

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

Figure 5.85
For Prob. 5.58.

$$i_o = \frac{-V_o}{4K}$$

① $\dfrac{V_1}{2K} + \dfrac{V_1}{5K} = \dfrac{-V_o}{10K}$ Resolviendo

② $\dfrac{0.6 - V_1}{1K} = \dfrac{V_1}{3K} + \dfrac{V_1}{5K}$ $V_1 = 9/23$ V

                                  $V_o = -63/23$ V

$$i_o = \frac{-(-63/23)}{4K} = \frac{63}{92000}$$
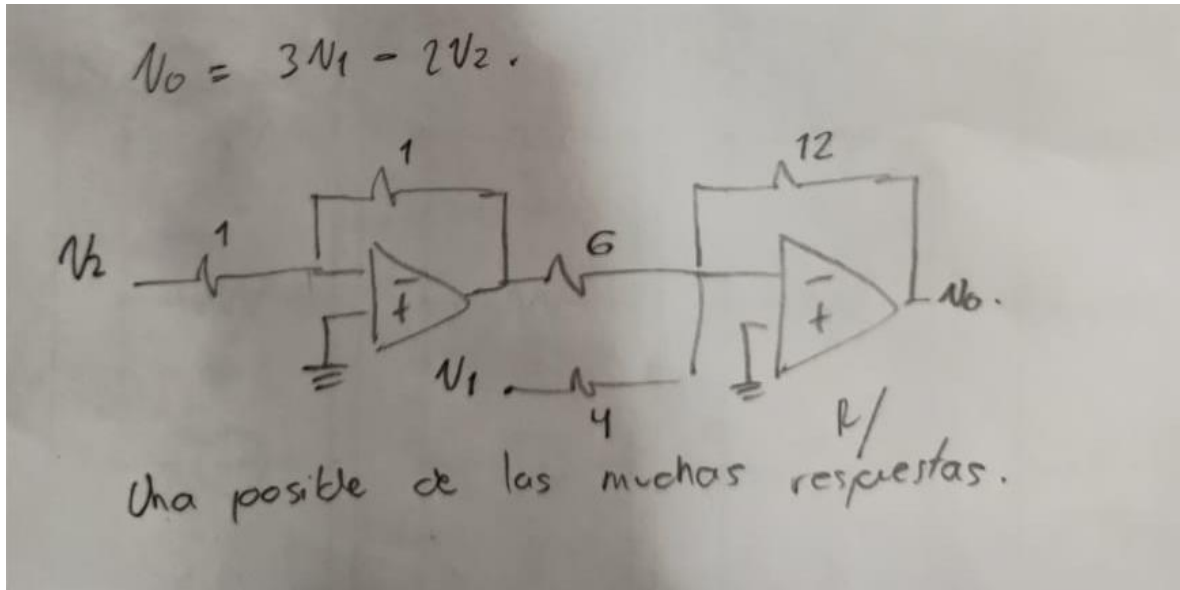
$$i_o = 684.8 \ \mu A \quad ✓$$

EJERCICIO CLASE DEL MIERCOLES

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

$$v_o = 3v_1 - 2v_2$$
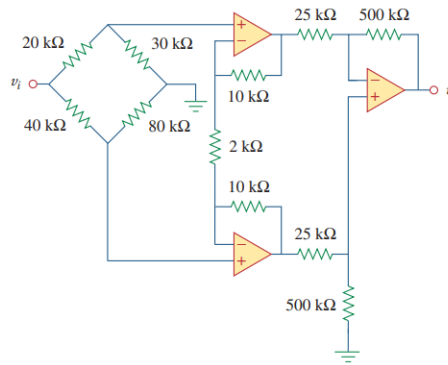
All resistances must be $\leq 100 \text{ k}\Omega$.

$v_o = 3v_1 - 2v_2$.

Una posible de las muchas respuestas.

EJERCICIO CLASE DEL VIERNES

*5.88 Figure 5.106 shows an instrumentation amplifier driven by a bridge. Obtain the gain v_o/v_i of the amplifier.

$$N_1 = N_i \cdot \frac{30K}{50K} = \frac{3}{5} V_i$$

$$N_2 = V_i \cdot \frac{80K}{120K} = \frac{2}{3} V_i$$

$$\frac{V_3 - N_1}{10K} = \frac{V_1 - V_2}{2K} \rightarrow \begin{array}{l} V_3 = 6V_1 - 5 \cdot V_2 \\ V_3 = \frac{4}{15} \cdot N_i \end{array}$$

$$\frac{N_1 - N_2}{2K} = \frac{N_2 - N_4}{10K} \rightarrow \begin{array}{l} V_4 = 6V_2 - 5 \cdot N_1 \\ N_4 = N_i \end{array}$$

$$V_5 = N_4 \cdot \frac{500K}{525K} = \frac{20}{21} V_i$$

$$\frac{N_3 - N_5}{25K} = \frac{V_5 - V_0}{500K} \rightarrow \begin{array}{l} N_o = 21 N_5 - 20 V_3 \\ N_o = 21 \cdot \frac{20 V_i}{21} - 20 \cdot \frac{4 V_i}{15} \end{array}$$

$$N_o = 20 V_i - 16/3 \ V_i$$

$$N_o = 44/3 \ V_i$$

$$\boxed{N_o / N_i = 44/3 \quad R/}$$