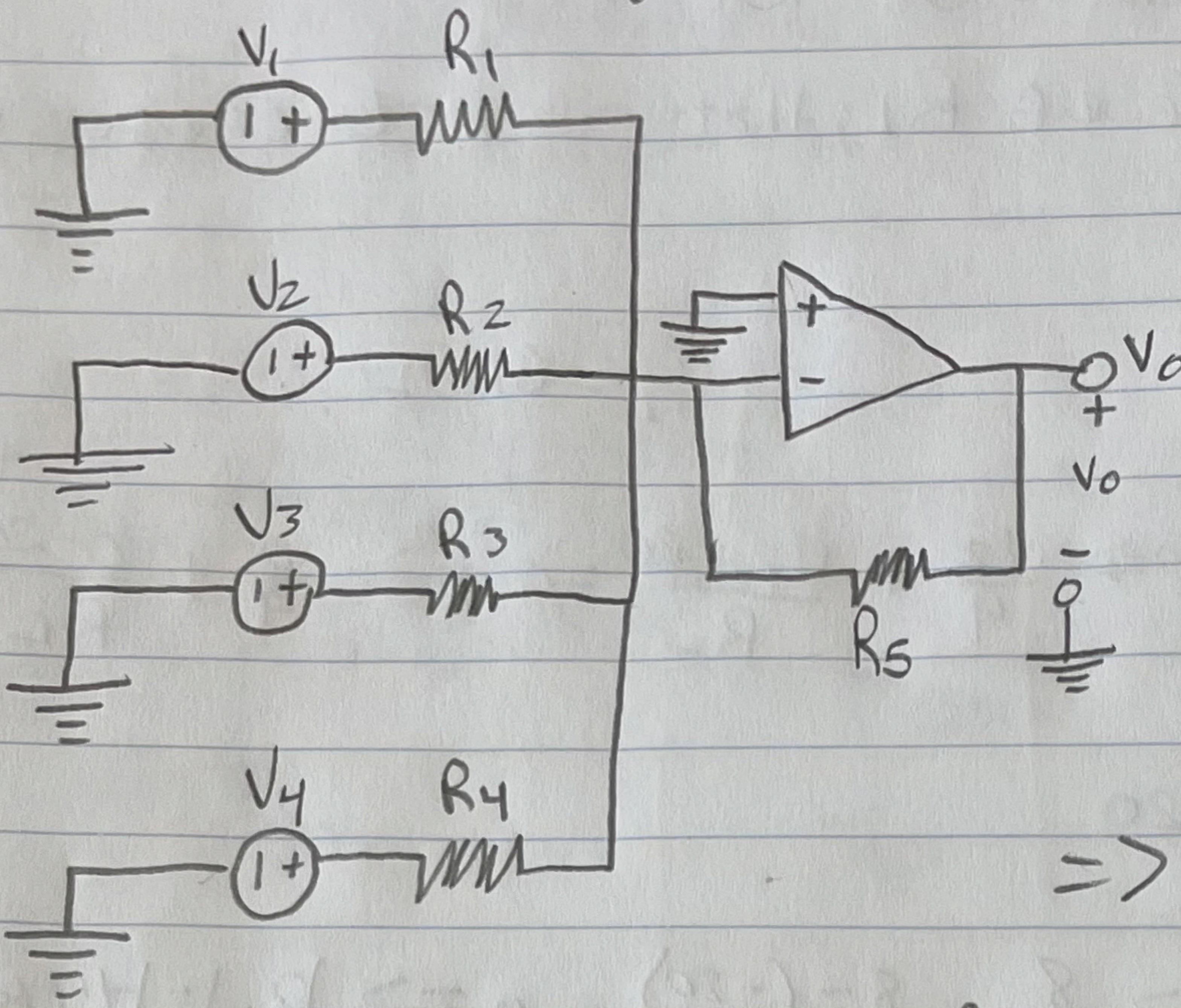


# Homework #6 - 3

5-



a) Determine  $V_0$  in terms of  $V_1, V_2, V_3, V_4$ .

$$V' = 0$$

$$\frac{V' - V_1}{R_1} + \frac{V' - V_2}{R_2} + \frac{V' - V_3}{R_3} + \frac{V' - V_4}{R_4} + \frac{V' - 0}{R_S} = 0$$

$$\Rightarrow - \left[ \frac{V_1}{R_1} + \frac{V_2}{R_2} + \frac{V_3}{R_3} + \frac{V_4}{R_4} \right] = \frac{V_0}{R_S}$$

$$V_0 = - \frac{R_S}{1} \left[ \frac{V_1}{R_1} + \frac{V_2}{R_2} + \frac{V_3}{R_3} + \frac{V_4}{R_4} \right]$$

$$V_0 = - \left[ \frac{V_1}{R_1} + \frac{V_2}{R_2} + \frac{V_3}{R_3} + \frac{V_4}{R_4} \right]$$

b) To get

$$V_0 = - \frac{1}{4} [V_1 + V_2 + V_3 + V_4] \Rightarrow V_0 = - \left[ \frac{V_1}{4} + \frac{V_2}{4} + \frac{V_3}{4} + \frac{V_4}{4} \right]$$

$$R_1 = R_2 = R_3 = R_4 = 4 \Omega$$