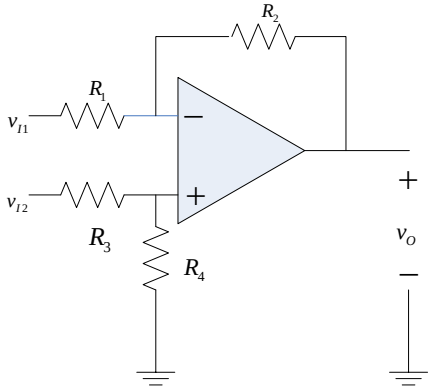
DGD2- Difference Amplifier Design (Ref Sedra/Smith Microelectronic Circuits Six Edition)



Q1.(D2.16) Find values for resistance in above circuit, so that the circuit behaves as a difference amplifier with an input resistance of 20 $k\Omega$ and a gain of 10.

Solution. $R_1 = R_3 = 10k\Omega; R_2 = R_4 = 100k\Omega$

Q2. (Analog Electronics Example 9.7) Please derive the common mode gain $A_{cm} = \frac{v_o}{v_{Icm}} = (\frac{R_4}{R_4 + R_3})(1 - \frac{R_2}{R_1}\frac{R_3}{R_4})$ first. And then consider the difference amplifier shown in above figure, Let $\frac{R_2}{R_1} = 10, \frac{R_4}{R_3} = 11$. Determine CMRR(dB).

Reference formula: $A_d = \frac{R_2}{R_1}$, $CMRR(dB) = 20\log\frac{|A_d|}{|A_{cm}|}$

Solution: 41.6dB