التاريخ: / /

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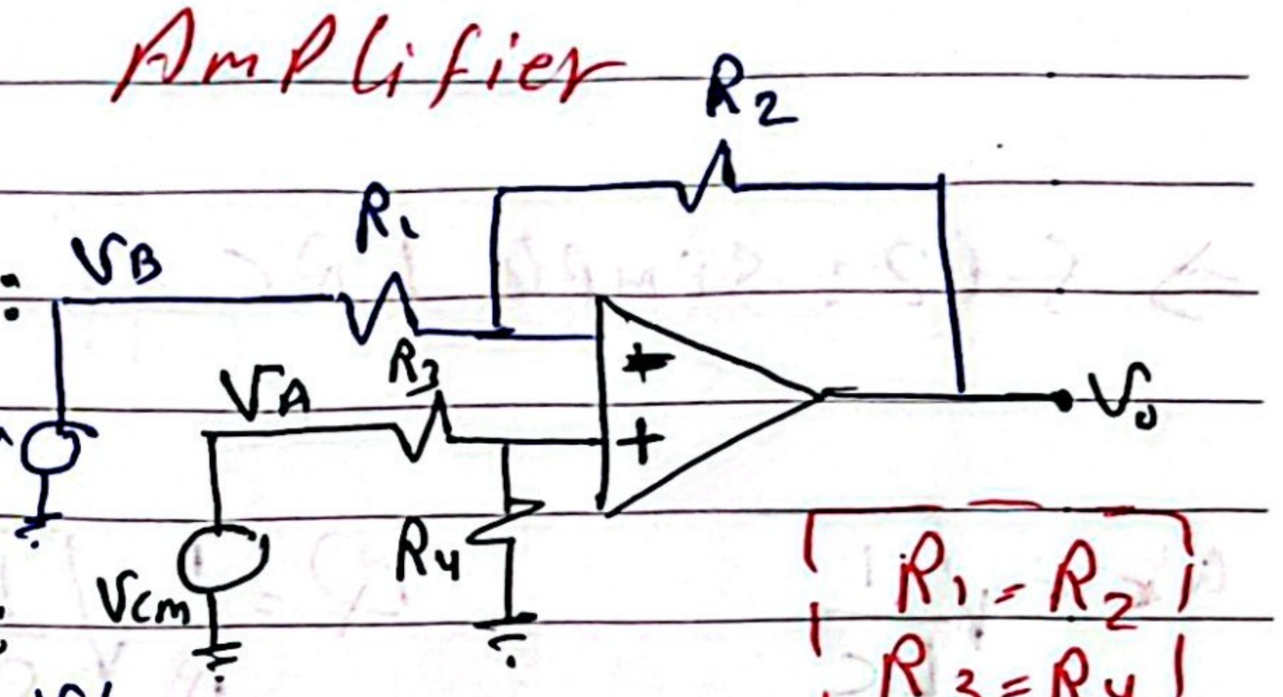
Instrumental Amp

it is simply a differential Amplifier but with very high gain, very high Inp Impedance, very high Common mode rejection ratio

⇒ Differential Amplifier



- No Common-Mode voltage:

$$V_o = \frac{R_2}{R_1}(V_A - V_B)$$

- Common-mode voltage:

- $V_A = V_{cm} + \frac{V_d}{2}$ - $V_B = V_{cm} - \frac{V_d}{2}$

$$V_o = \frac{R_2}{R_1} V_d$$

we can solve the problem resulted from the mismatch between the resistors pairs by using 2 Buffer Circuits to the inputs But then, You cant change the gain of the diff Amp Thus, we can use the # Non-Inverting op-Amps

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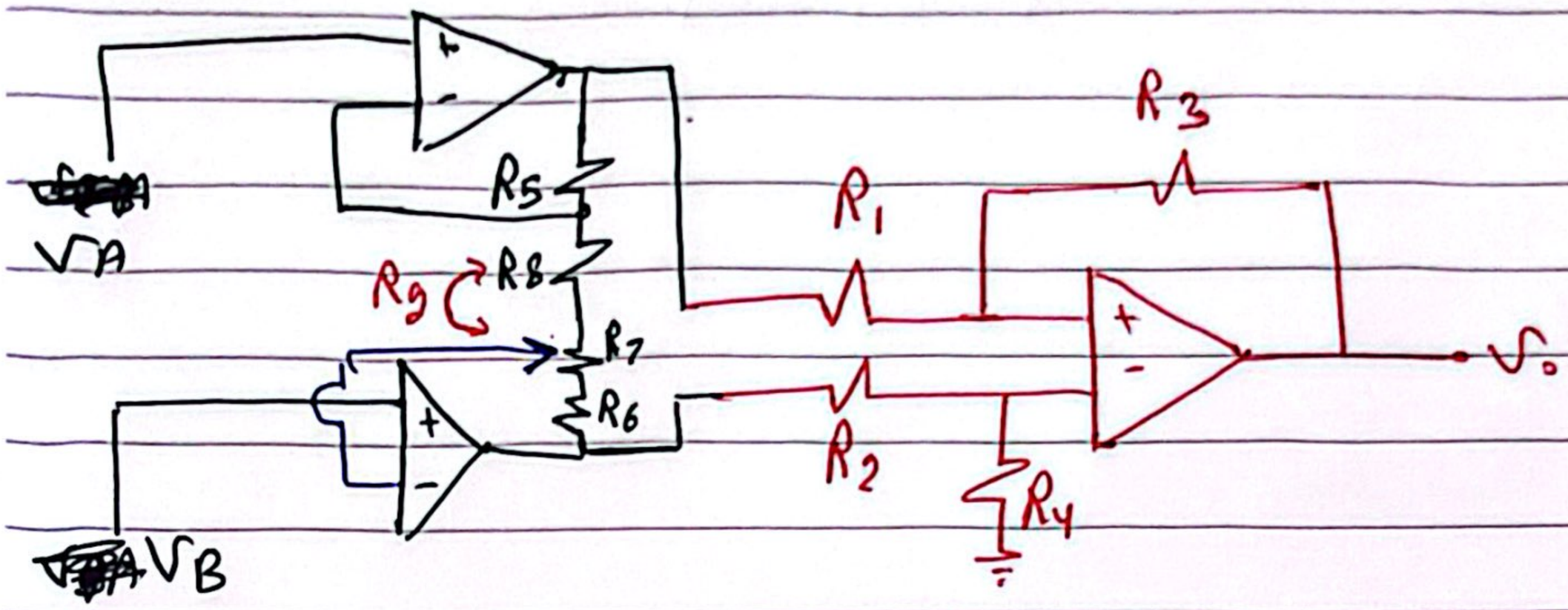

$$V_o = \left(1 + \frac{2R_5}{R_g}\right)\left(\frac{R_3}{R_1}\right) * (V_A - V_B)$$

⇒ for common mode voltage:

$$\boxed{V_o = \frac{R_3}{R_1} V_d} \quad \#$$

⇒ when: $R_5 = 51K\Omega$, $R_3 = R_1 = 10K\Omega$: —

☒ (at $V_A = V_B = 15mV$) ☒ at $V_A = 15mV$, $V_B = 10mV$

$V_o = \frac{R_3}{R_1} V_d = -68\mu V$ $V_o = 9.993\ V$

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