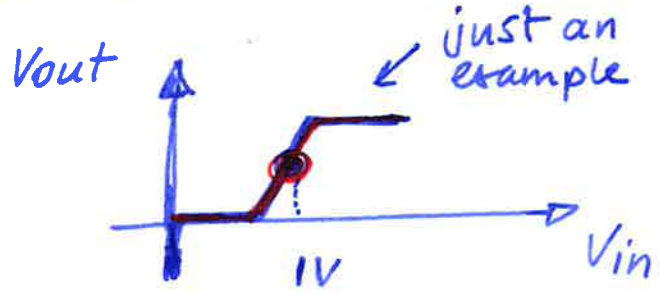
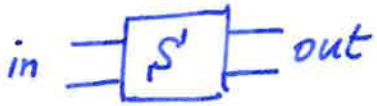
Example #6 - .TF simulation command

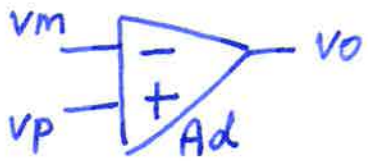
DC Transfer function



assumming input is voltage
and output is voltage



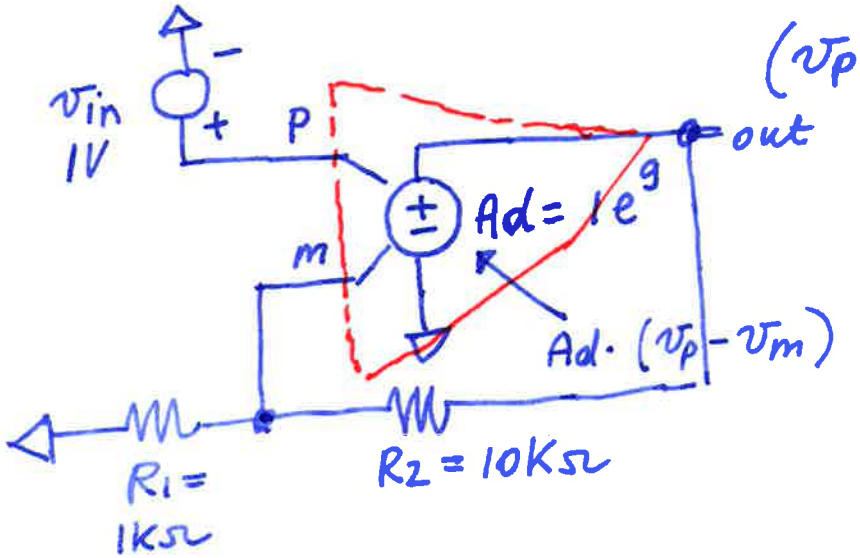
op. amp based non-inverting ampl.



$v_o = A_d (v_p - v_m)$

$A_d \to \infty$

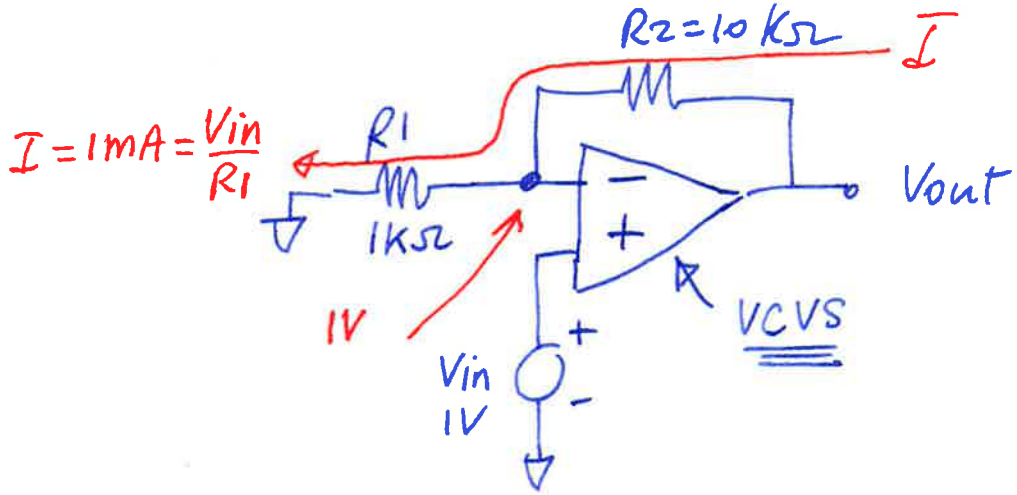
$(v_p - v_m) \to 0$



$v_p - v_m \to 0$

$\updownarrow$

$v_p = v_m$



$$V_{out} - V_m = R_2 \cdot I$$

$$\downarrow$$

$$V_{out} - V_{in} = R_2 \cdot I$$

$$\downarrow$$

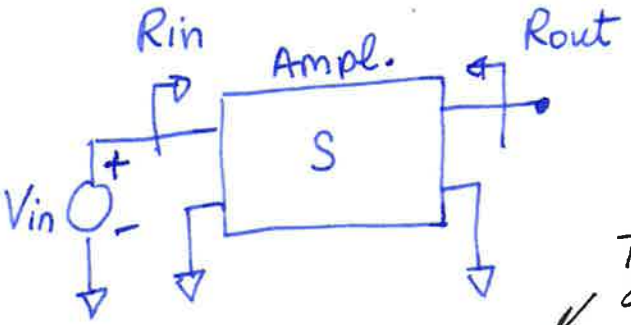
$$V_{out} - V_{in} = R_2 \cdot \frac{V_{in}}{R_1}$$

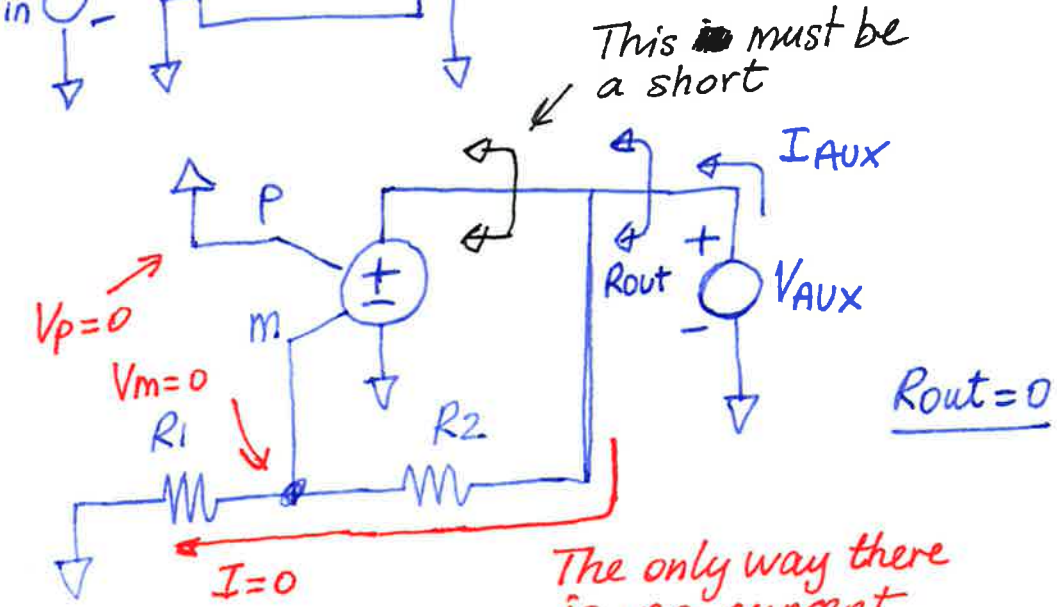
$$\downarrow$$

$$V_{out} = V_{in}\left(1 + \frac{R_2}{R_1}\right)$$

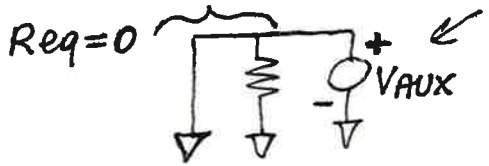
$$\downarrow$$

$$\frac{V_{out}}{V_{in}} = \left(1 + \frac{R_2}{R_1}\right) = 11$$





Rout=0



The only way there is no current flowing through R1 and R2 is if I_{AUX} is "shunted" by a short

$\frac{V_{out}}{V_{in}} = 11 = A_{Vampl.} \neq A_d$

$R_{in} = \infty\,\Omega$

$R_{out} = 0$