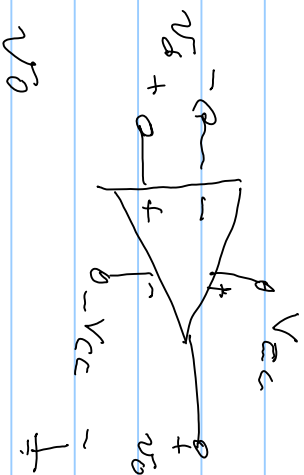
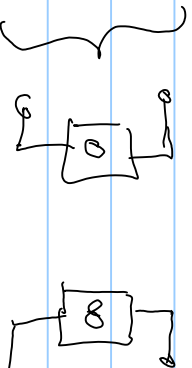


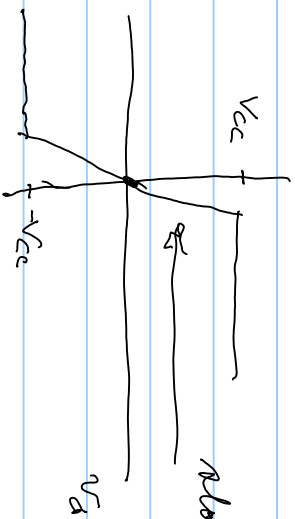
EE307
02/10/16



\Rightarrow open at the input
short at



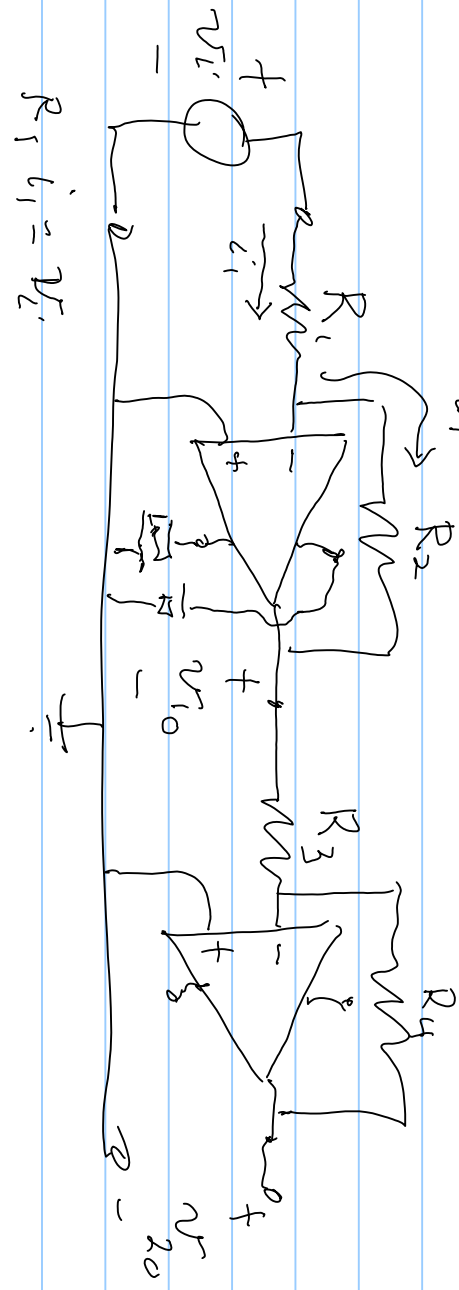
multiplier
resistor



slope = gain

ideal

$$-v_{i0} = -R_2 i_1$$



$$R_1 i_1 = v_1$$

$$\Rightarrow v_{i0} = G_1 v_1 = \frac{1}{R_1} v_1 \quad v_{i0} = -R_2 \cdot i_1 = -R_2 \cdot \frac{1}{R_1} \cdot v_1$$

$$\frac{v_{i0}}{v_1} = -\frac{R_2}{R_1}$$

$$v_{20} = -\frac{R_4}{R_3} v_{i0}$$

$$\frac{v_{20}}{v_1} = \frac{v_{i0}}{v_1} \times \frac{v_{20}}{v_{i0}} = \frac{v_{20}}{v_1} = + \frac{R_2 R_4}{R_1 R_3}$$

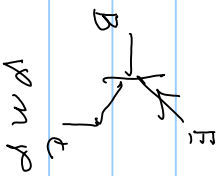
inverts 2nd stage
not loading 1st

BJT Bipolar Junction Transistor

n p n
p n p



n p n



p n p