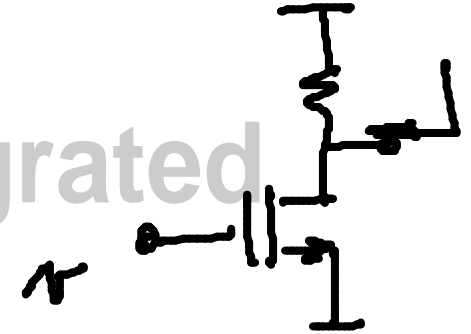


$$\frac{v_o^+ - v_o^-}{v_i^+ - v_i^-}$$



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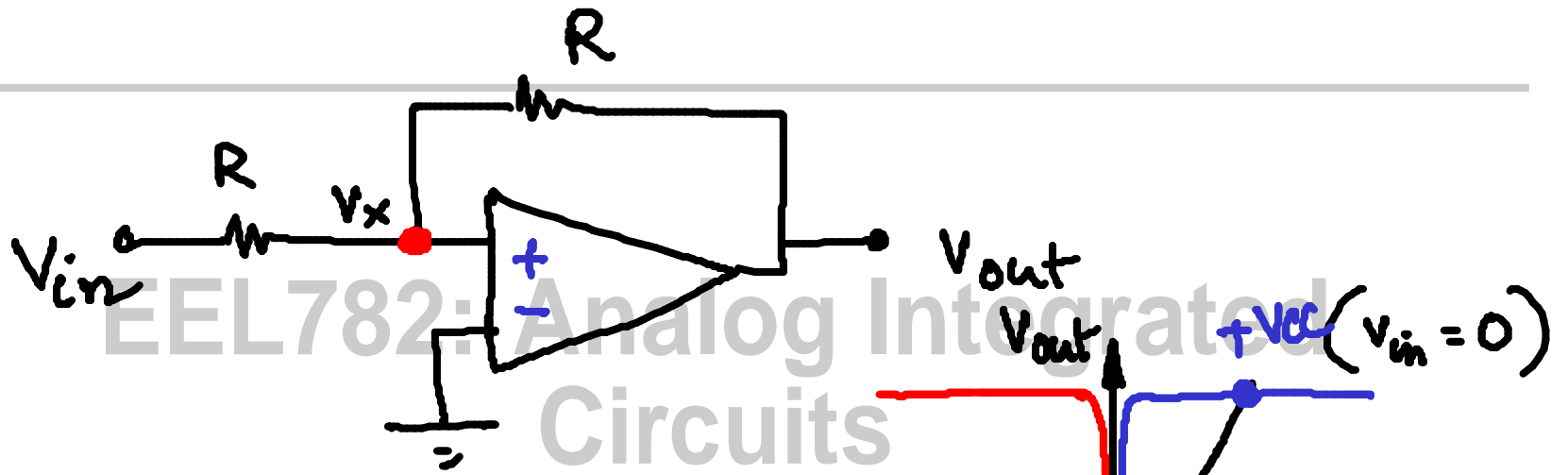
$$I_N = g_m v$$

$$R_N = R \parallel r_{ds}$$

$$\text{Gain} = -g_m (R \parallel r_{ds})$$

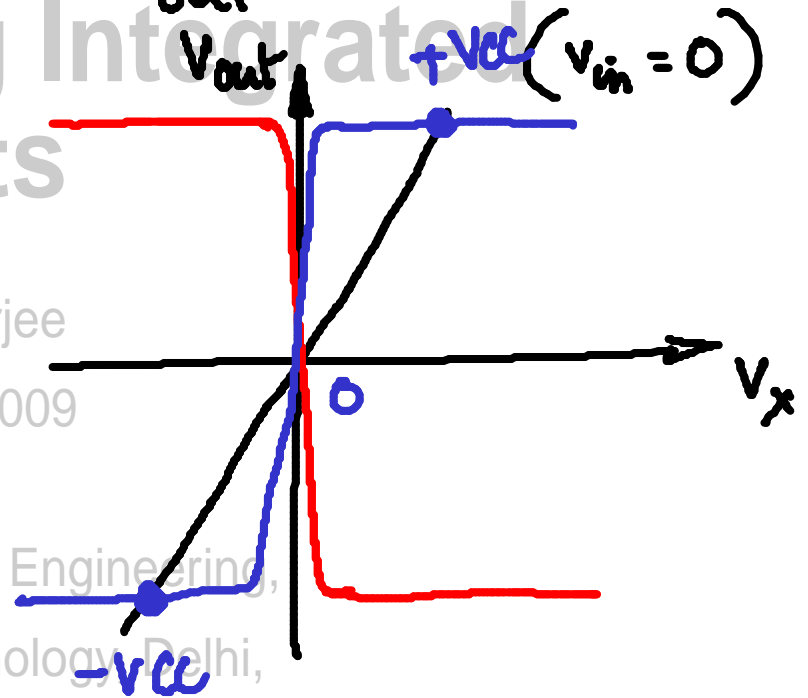
$$\text{CM gain} = -\frac{R}{2r_{dsN}}$$



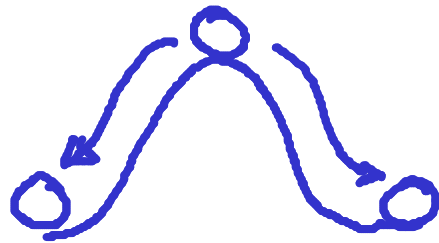


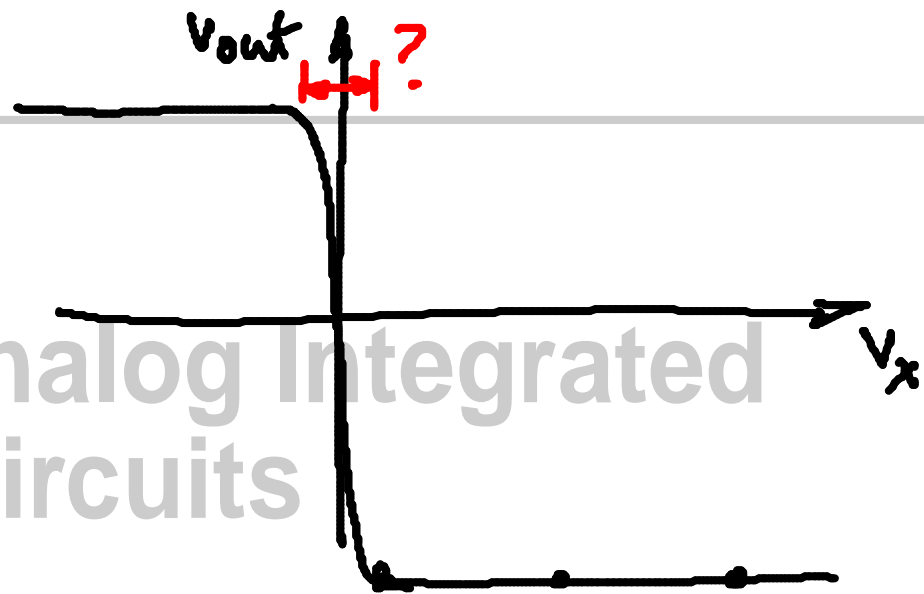
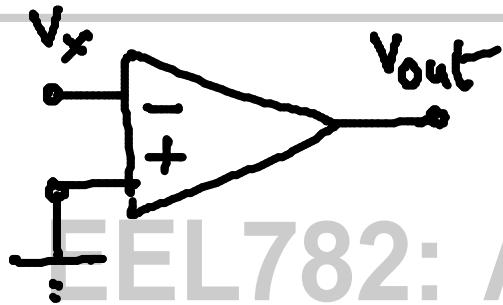
$$\frac{V_x - V_{in}}{R} + \frac{V_x - V_{out}}{R} = 0$$

$$2V_x = V_{in} + V_{out}$$



Department of Electrical Engineering,
 Indian Institute of Technology, Delhi,
 Hauz Khas, New Delhi 110016

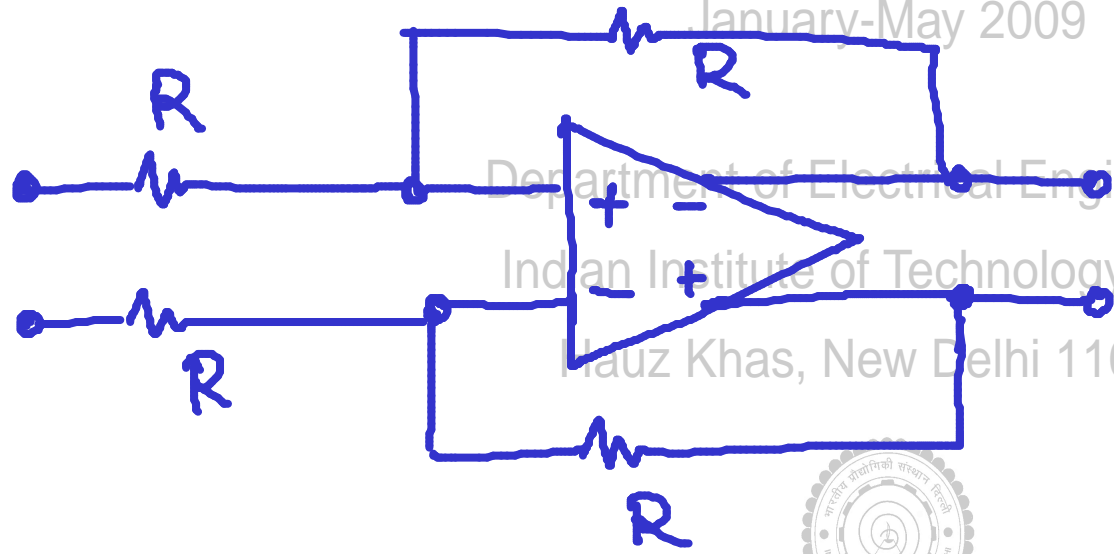




EEL782: Analog Integrated Circuits

Shouri Chatterjee

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Department of Electrical Engineering,
Indian Institute of Technology, Delhi,
Hauz Khas, New Delhi 110016

