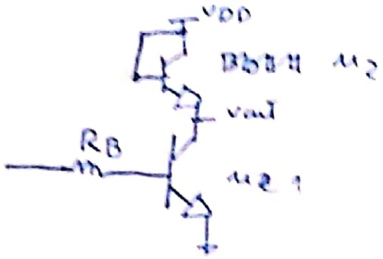
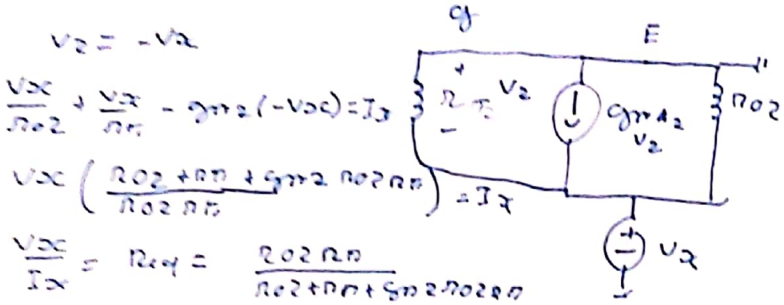
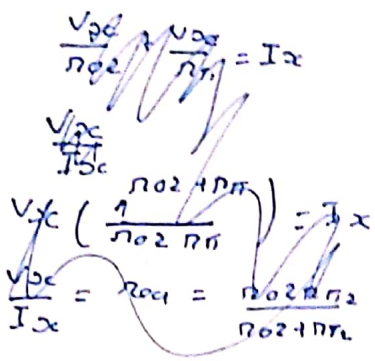
Diode connected CB stage

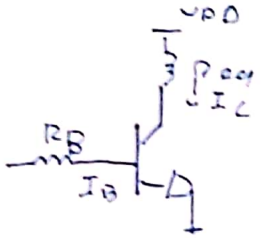


since There is no Body effect I BJTs

Since VDD is constant
The Impedance of M2 can Be seen as







The resistors are equivalent To a resistive Emitter common emmiter

$$AV = \frac{-g_m r_{\pi 1} R_{eq} r_{o1}}{(R_B + r_{\pi 1})(R_{eq} + r_{o1})}$$

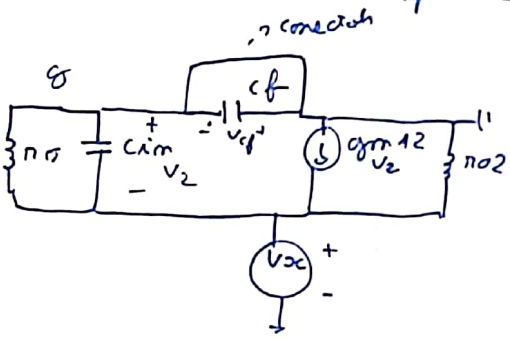
Input Impedance = $R_B + r_{\pi 2}$

$$g_m = g_m \frac{r_{\pi 2}}{R_B + r_{\pi 2}}$$

$$R_{out} = r_{o2} // R_{eq2}$$

Now with frequency

again Zeq com



$$\frac{V_x}{I_x} = \frac{1}{g_{m2}}$$

$$V_{DC}\left(\frac{1}{r_{\pi 1} \,||\, \frac{1}{C_{in\Delta}} \,||\, r_{o2}} + g_{m2}\right) = I_{DC}$$

$$\frac{V_{DC}}{I_{DC}} = R_D \; Z_{eq} = \frac{1}{\frac{1}{r_{\pi 1} \,||\, \frac{1}{C_{in\Delta}} \,||\, r_{o2}} + g_{m2}} = \frac{1}{\frac{1}{r_{\pi 1}} + \frac{1}{r_{o2}} + C_{in\Delta} + g_{m2}}$$

Rest is Equal to as with CE But Zeq as R_D