یا لطیف

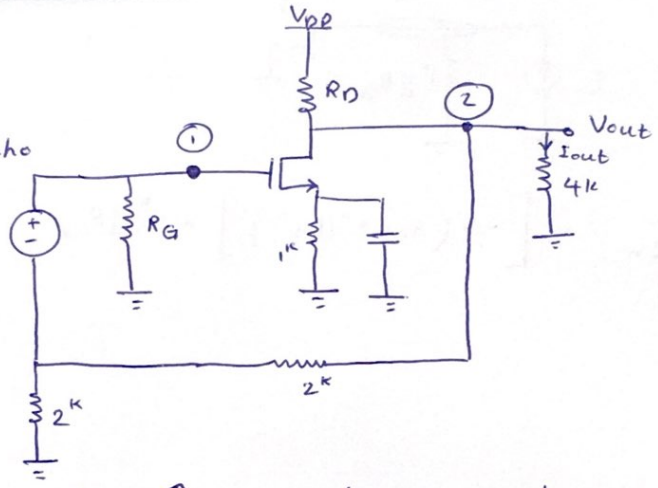
رضا ادینه پور
۹۸۱۴۳۰۳
پایانترم اک 2

#1

$\frac{I_{out}}{V_S} = -0.25 \frac{mA}{V}$

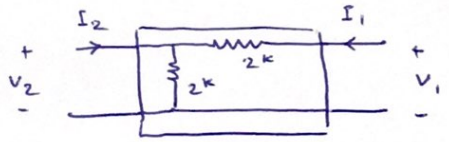
$I_D = 1\,mA \rightarrow g_m = \frac{2}{0.5} = 4$ mmho

$\lambda = 0 \rightarrow r_{ds} = \infty$



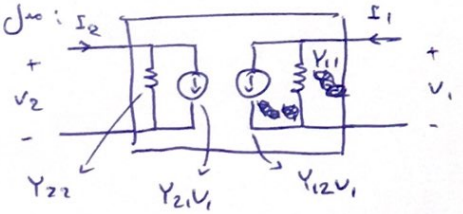
sign of feedback: if ① ↗ => ② ↙ => ① ↙ => negative feedback

feed back network:



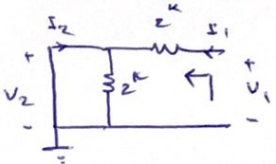
input — output
shunt — shunt
(I) — (-V)

مدل دوقطبی:

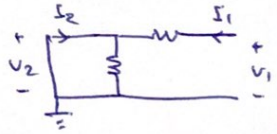


$$\begin{cases} I_1 = Y_{11}V_1 + Y_{12}V_2 \\ I_2 = Y_{21}V_1 + Y_{22}V_2 \end{cases}$$

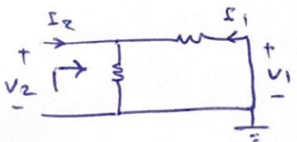
$Y_{11} = \frac{I_1}{V_1}\Big|_{V_2=0} = \frac{1}{2^k}$



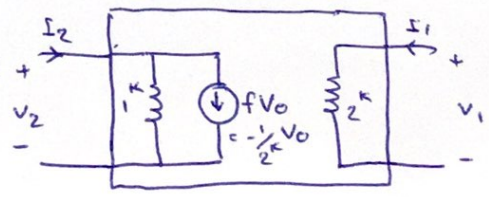
$Y_{21} = f = \frac{I_2}{V_1}\Big|_{V_2=0} = \frac{-1}{2^k}$



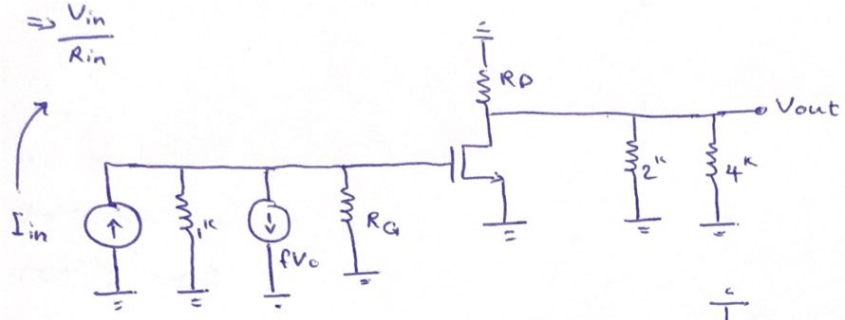
$Y_{22} = \frac{I_2}{V_2}\Big|_{V_1=0} = \frac{1}{1^k}$



=>



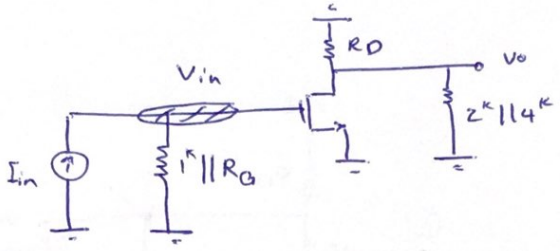
$\Rightarrow \frac{V_{in}}{R_{in}}$



open loop gain

$\uparrow$

$A = \left.\frac{V_{out}}{I_{in}}\right|_{f=0}$:



$$\frac{V_{out}}{I_{in}} = \frac{V_{out}}{V_{in}} \times \frac{V_{in}}{I_{in}} = \left[-4\left(R_D \| 2^K \| 4^K\right)\right] \times 1^K \| R_G$$