

EE 420/ECG 620

Analog IC Design

April 28, 2016

Lecture 27

meet Saturday 4:30 pm

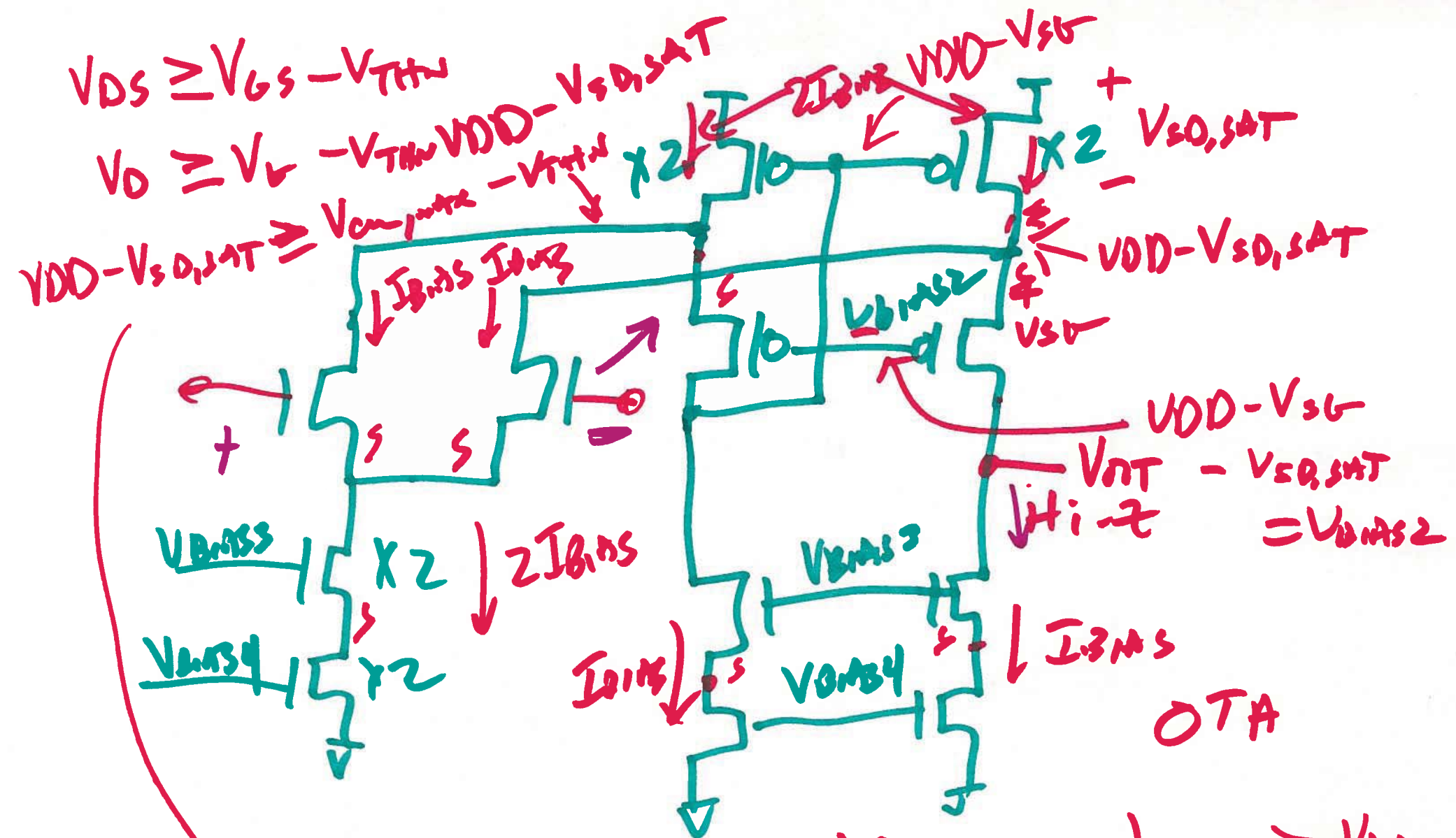
TBE-A311

Decide Saturday if
we need to meet Sunday



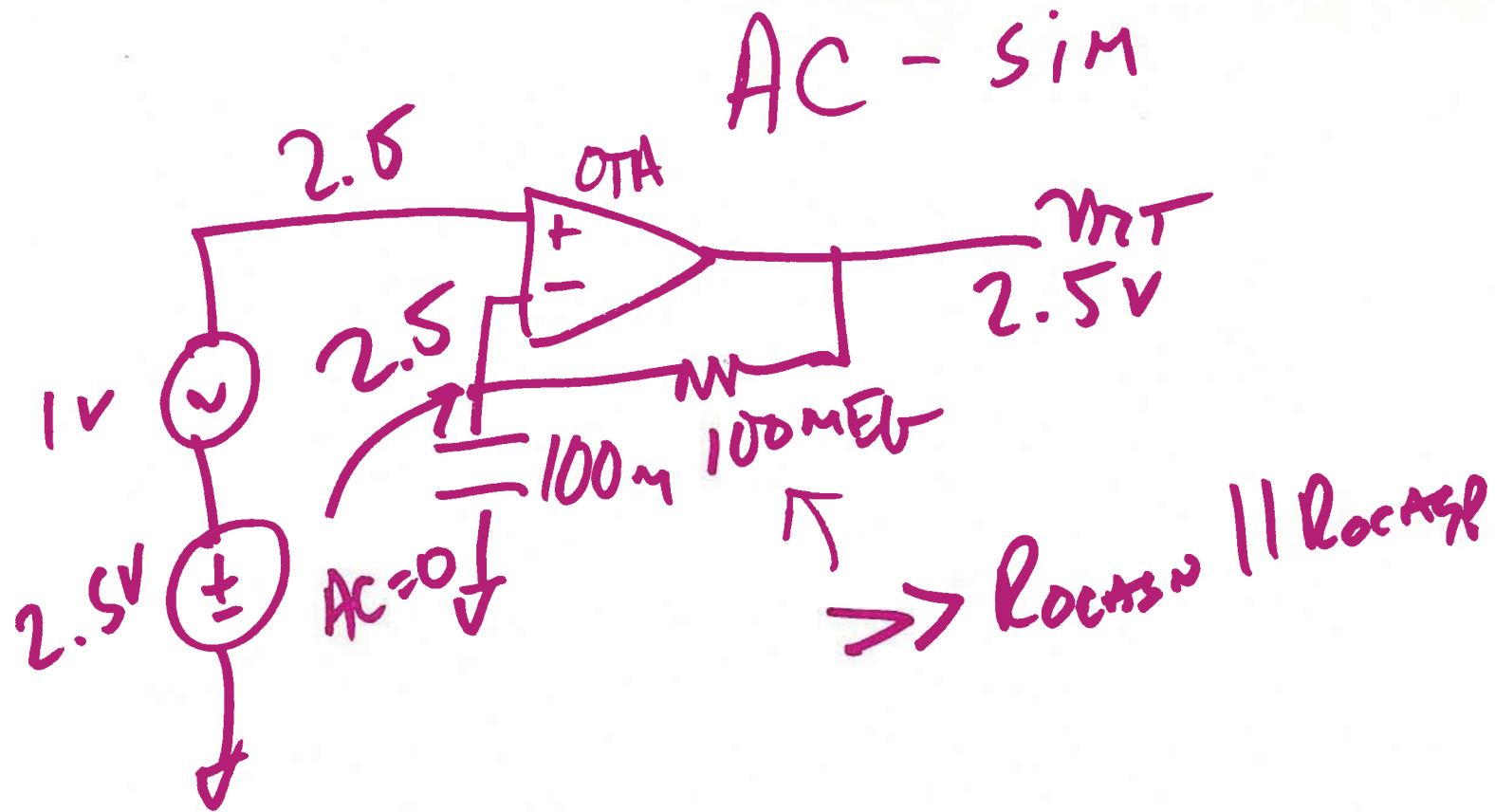
$$V_{DS} \geq V_{GS} - V_{THN}$$

$$V_O \geq V_{GS} - V_{THN}$$



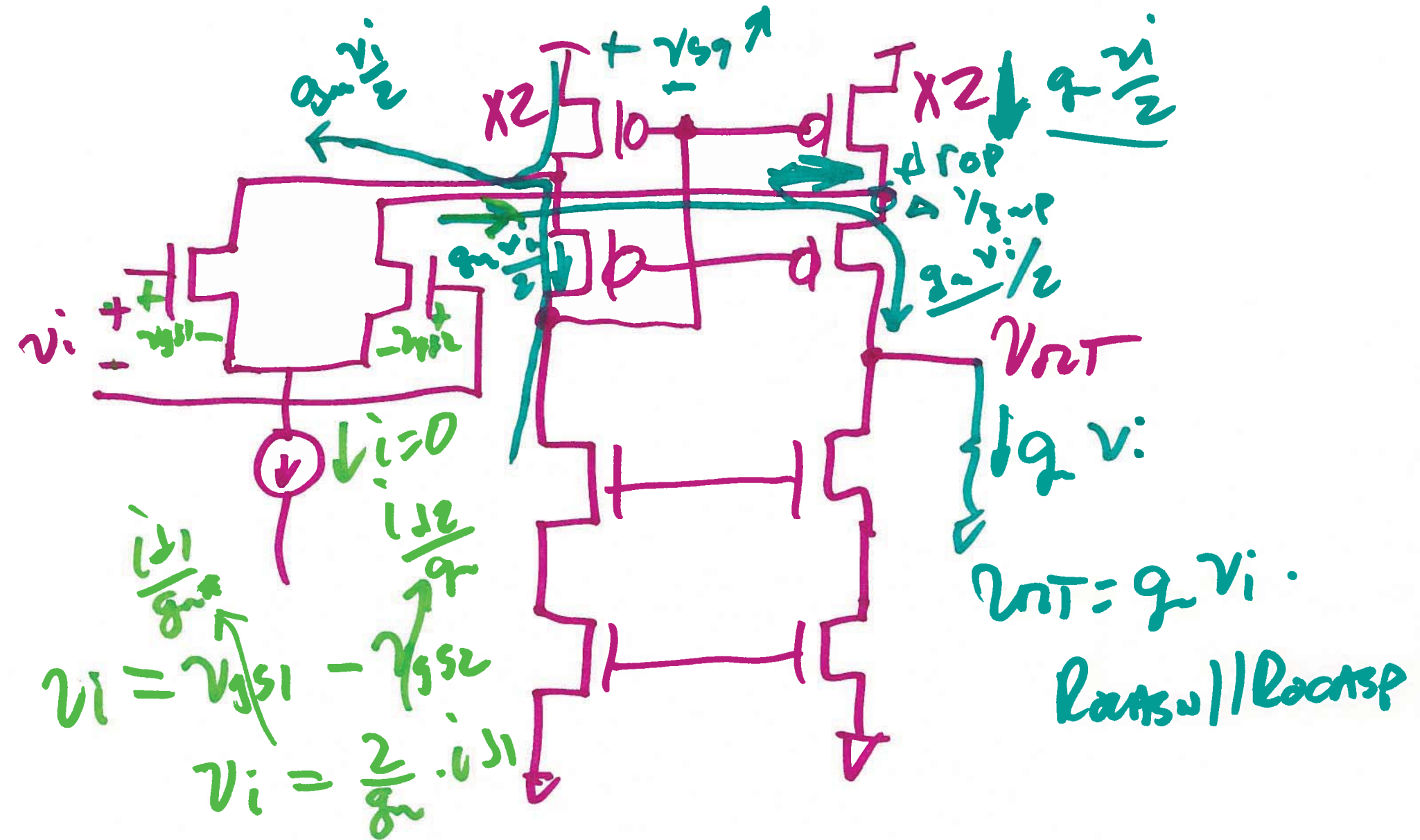
$$V_{O_{max}, max} = V_{DD} - V_{SD, SAT} + V_{THN} > V_{DD}$$

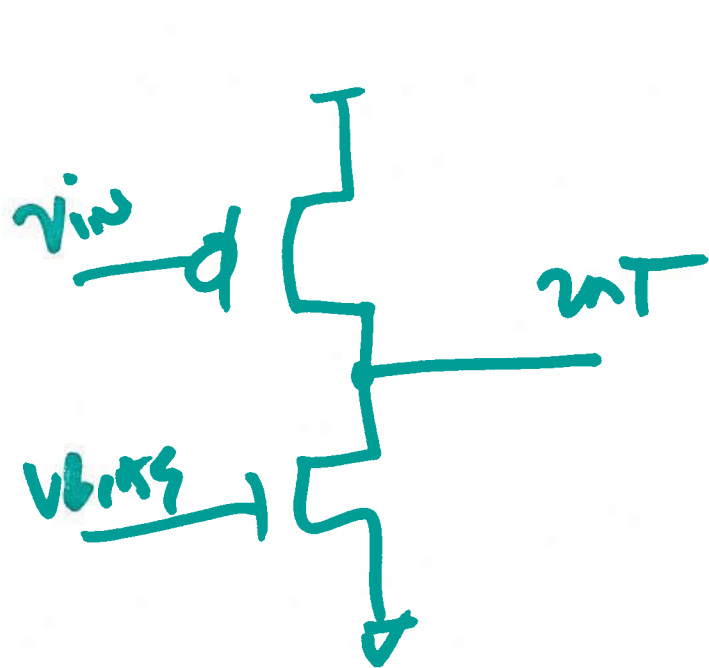
$$V_{O_{min}, min} = V_{OS} + 2V_{OS, SAT}$$



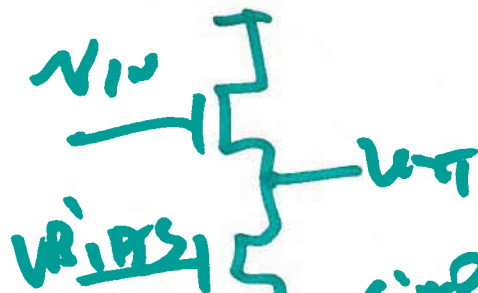
3)

AC Analysis

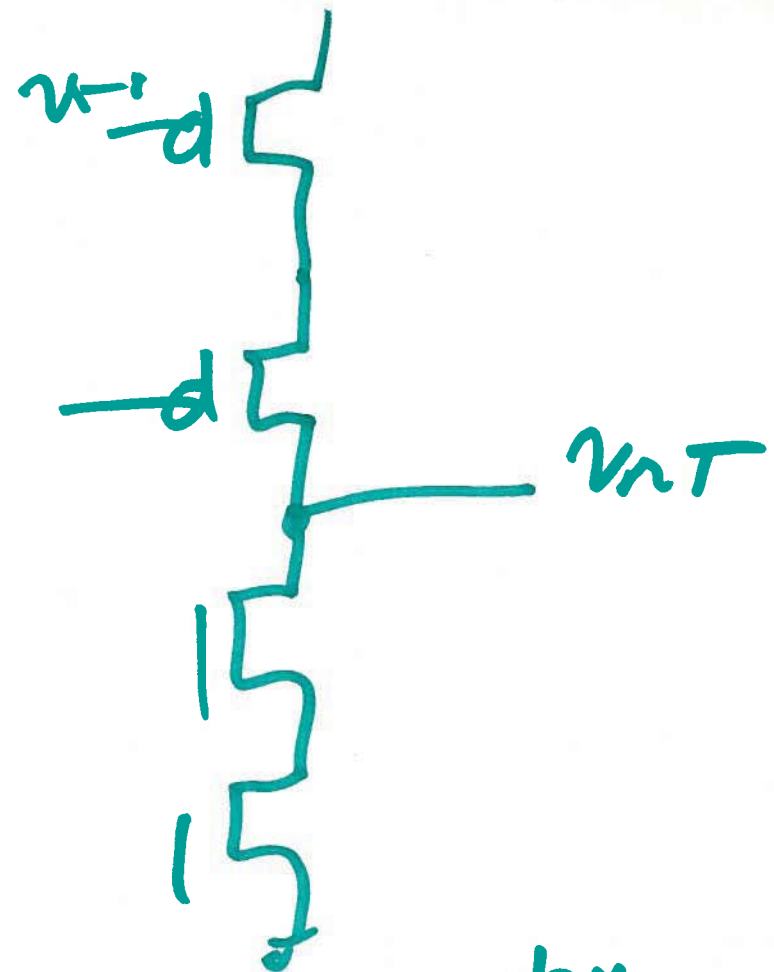




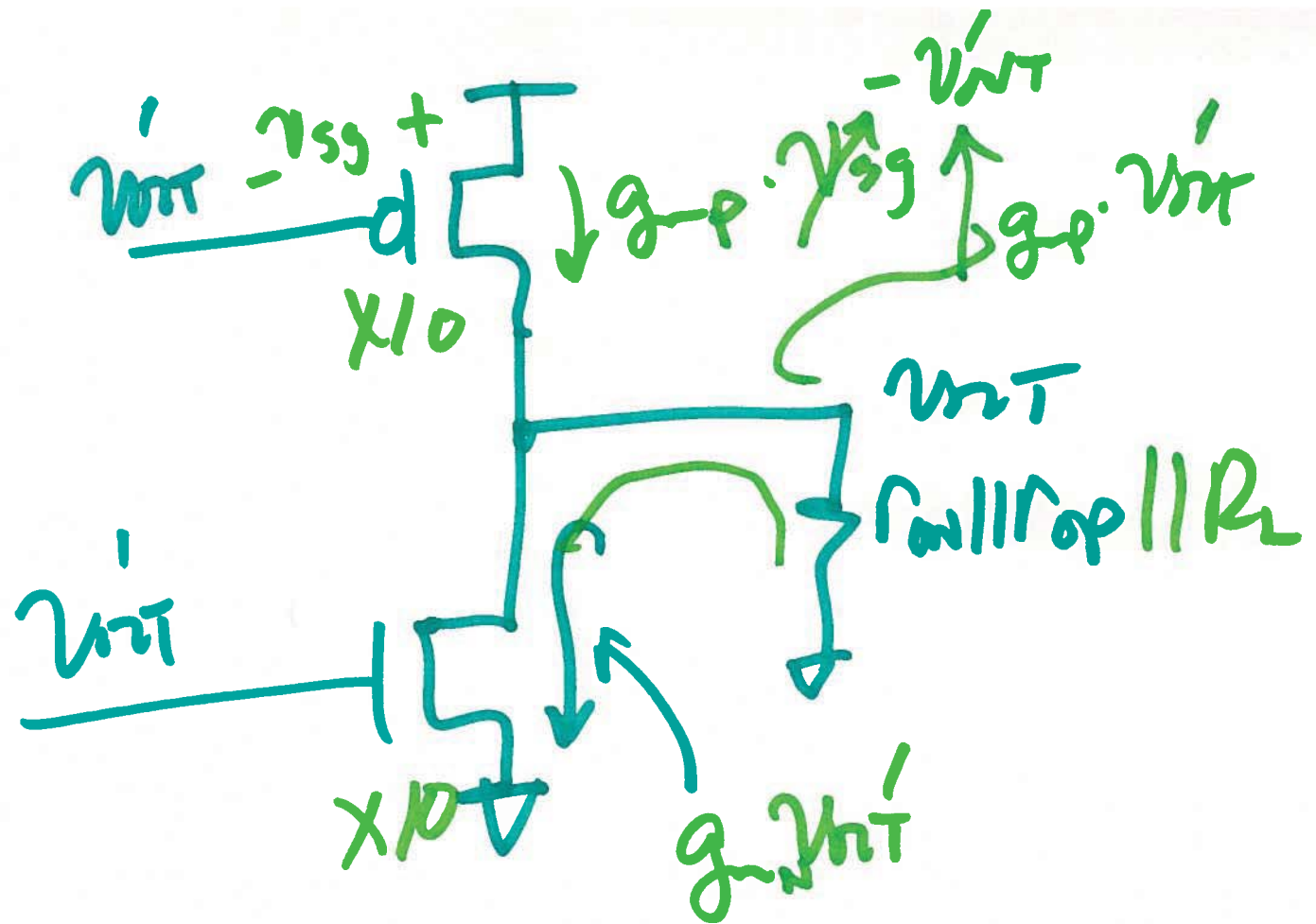
Simple
Lower gain
Can't resistive



Simple
High input
Low output
Poor output swing



More complex
Higher gain
Can't resistive loads



$$\frac{v_{NT}}{v_{in}} = (g_m + g_p) r_{on} || r_{op} \gg 1$$

YAY!