

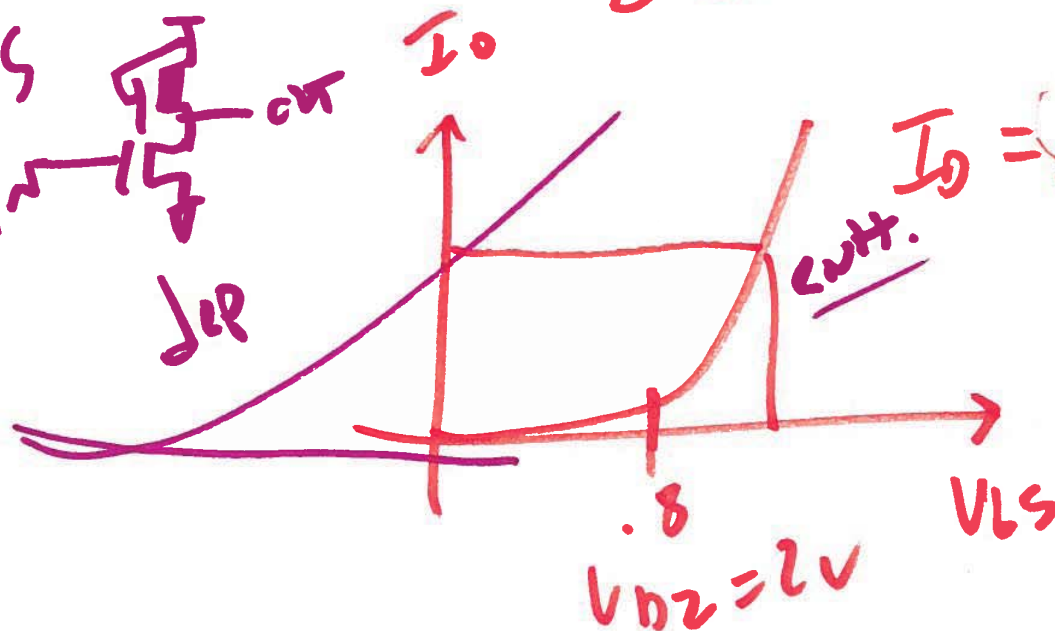
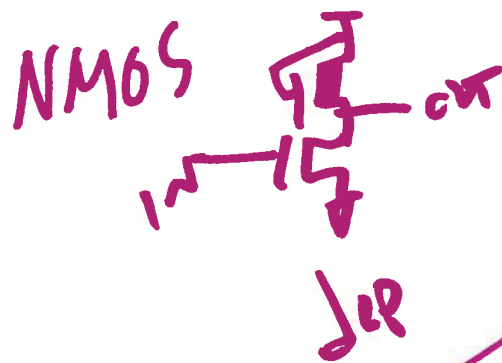
EE 420 / ECG 620

SS

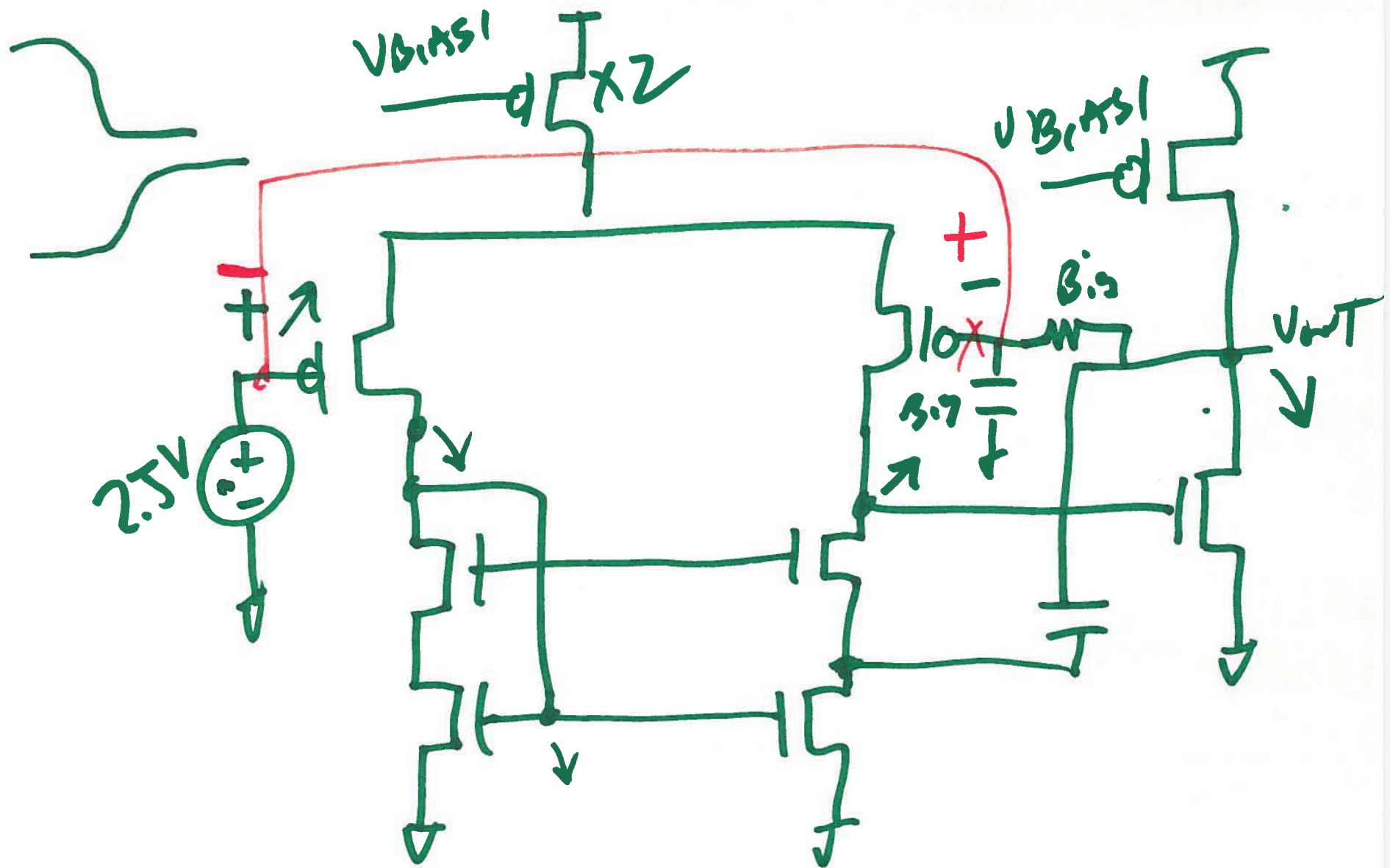
Analog IC Design

April 21, 2016

Lecture 25



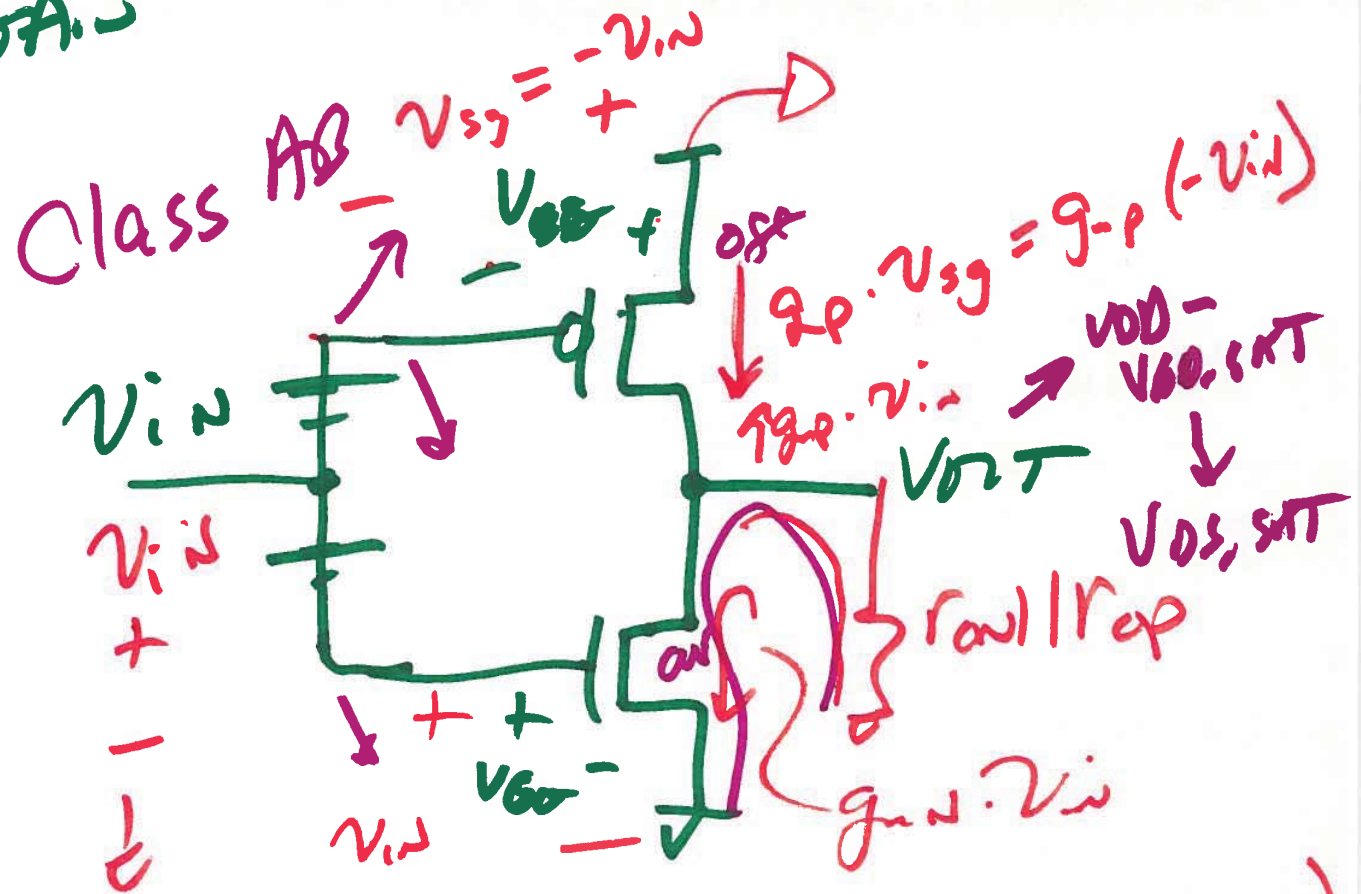
$$I_D = \frac{K_p}{2} \frac{W}{L} (V_{GS} - V_{TH})^2$$





Gain

push-pull
output
stage



$$V_{out} = (r_{on} || r_{op}) (g_{m,n} \cdot V_{in} + g_{m,p} \cdot V_{in})$$

$$\frac{V_{out}}{V_{in}} = (r_{on} || r_{op}) (g_{m,n} + g_{m,p})$$

