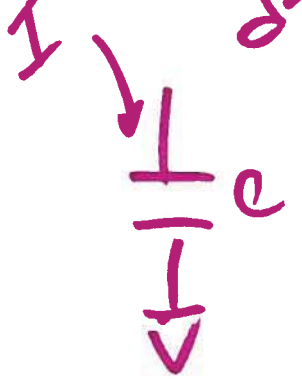
EE 420 / ECE 620

Analog IC Design

May 5, 2016

Lecture 29

$\frac{dv}{dt} = \frac{I}{C}$



Ch. 9
- IV curves
  - CMOS
  - f_T, overdrive, widths
  - g_m, r_o
  - AC & DC calculations

Ex. 9.5

study
- ID
- Quizzes
- &
- H.W.

study
- EOC
- problems

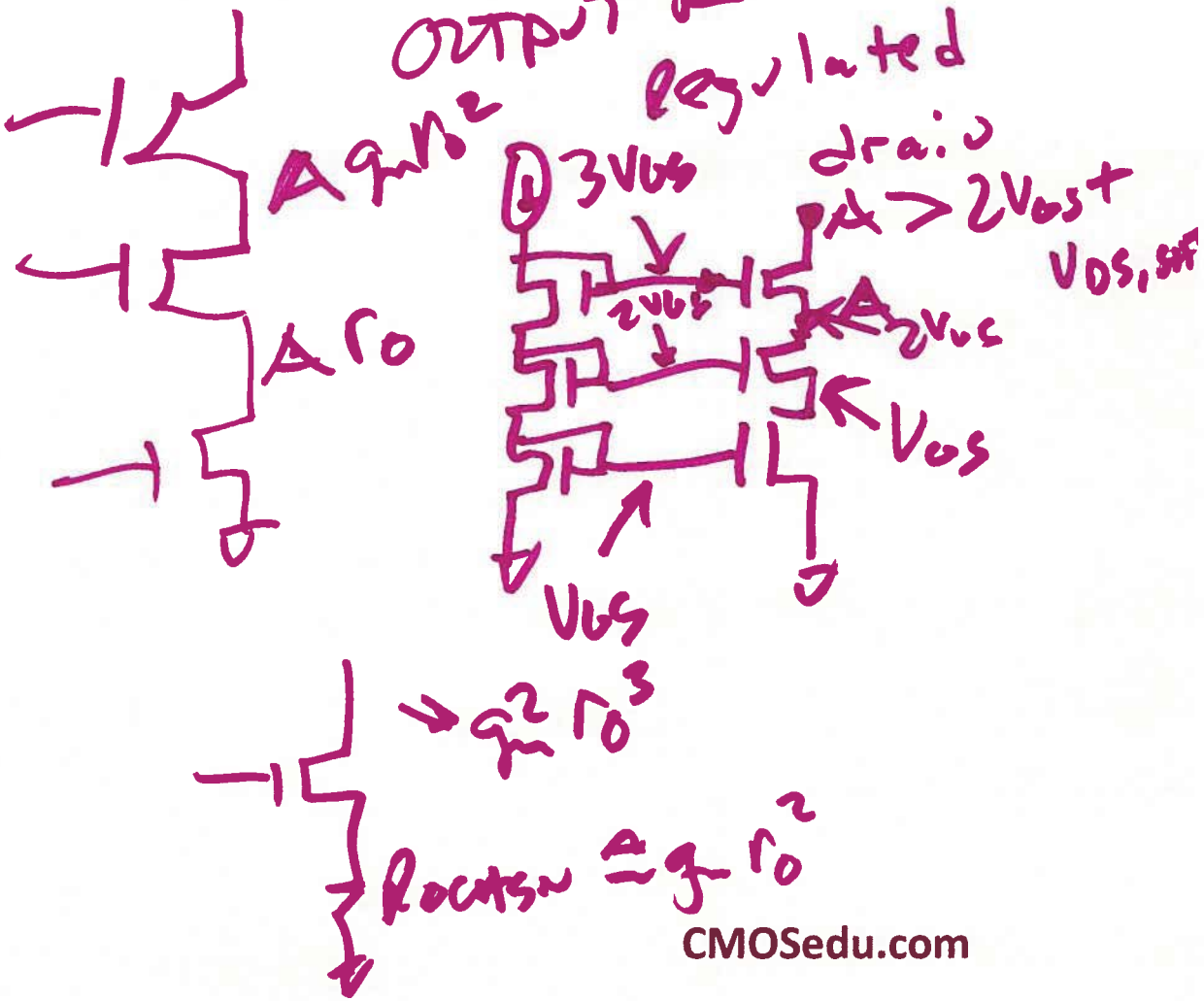
Ch. 20

CURRENT MIRRORS

$g_m^2 r_o^3$ DC operation

BMR

OUTPUT Resistance

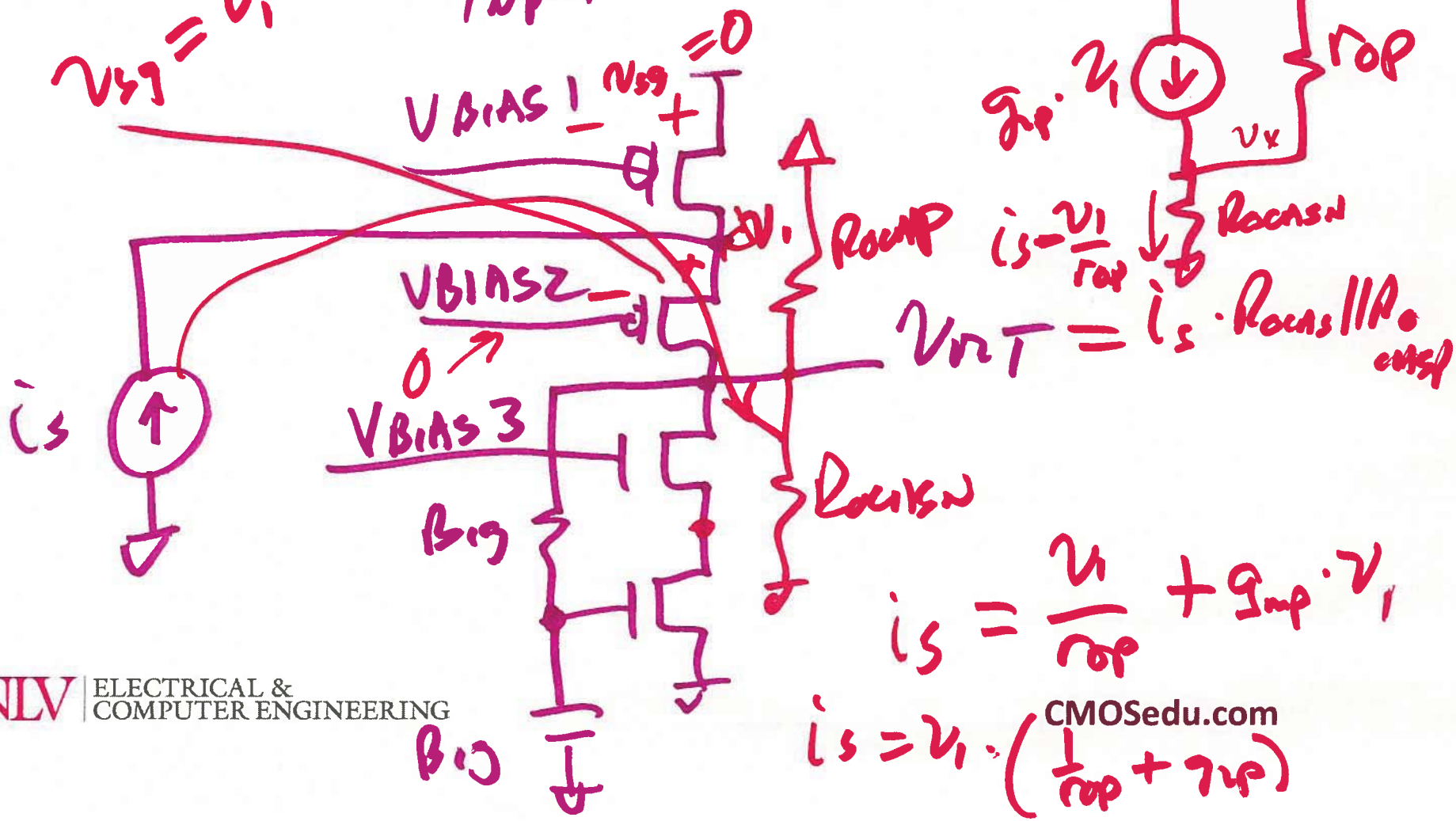


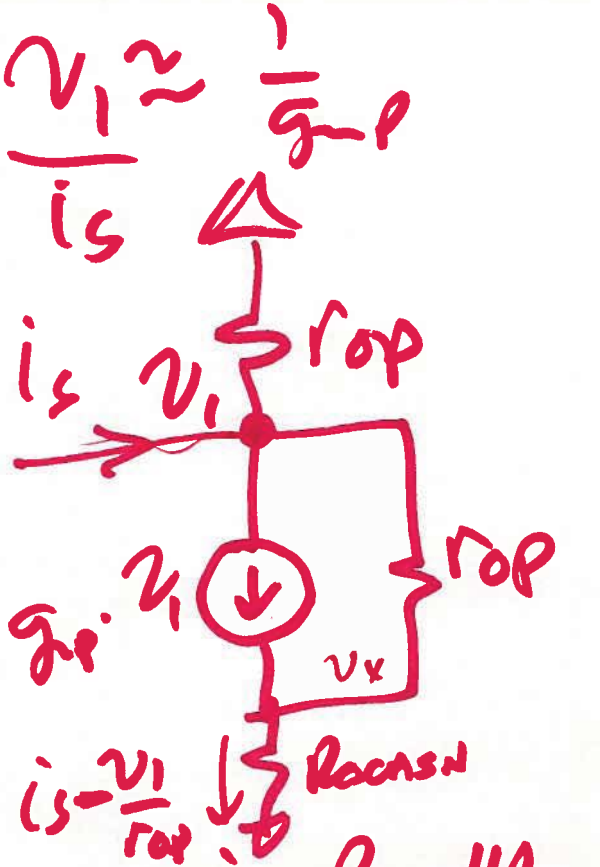
Ch. 2 1/2 Amplifiers

topologies

gains

INPUT CmR





$$i_s = \frac{v_1}{r_{op}} + g_{mp} \cdot v_1$$

$$i_s = v_1 \cdot \left(\frac{1}{r_{op}} + g_{mp} \right)$$

Ch. 24

$|A_{OL}\beta| = 1$

$\angle A_{OL}\beta = 180$

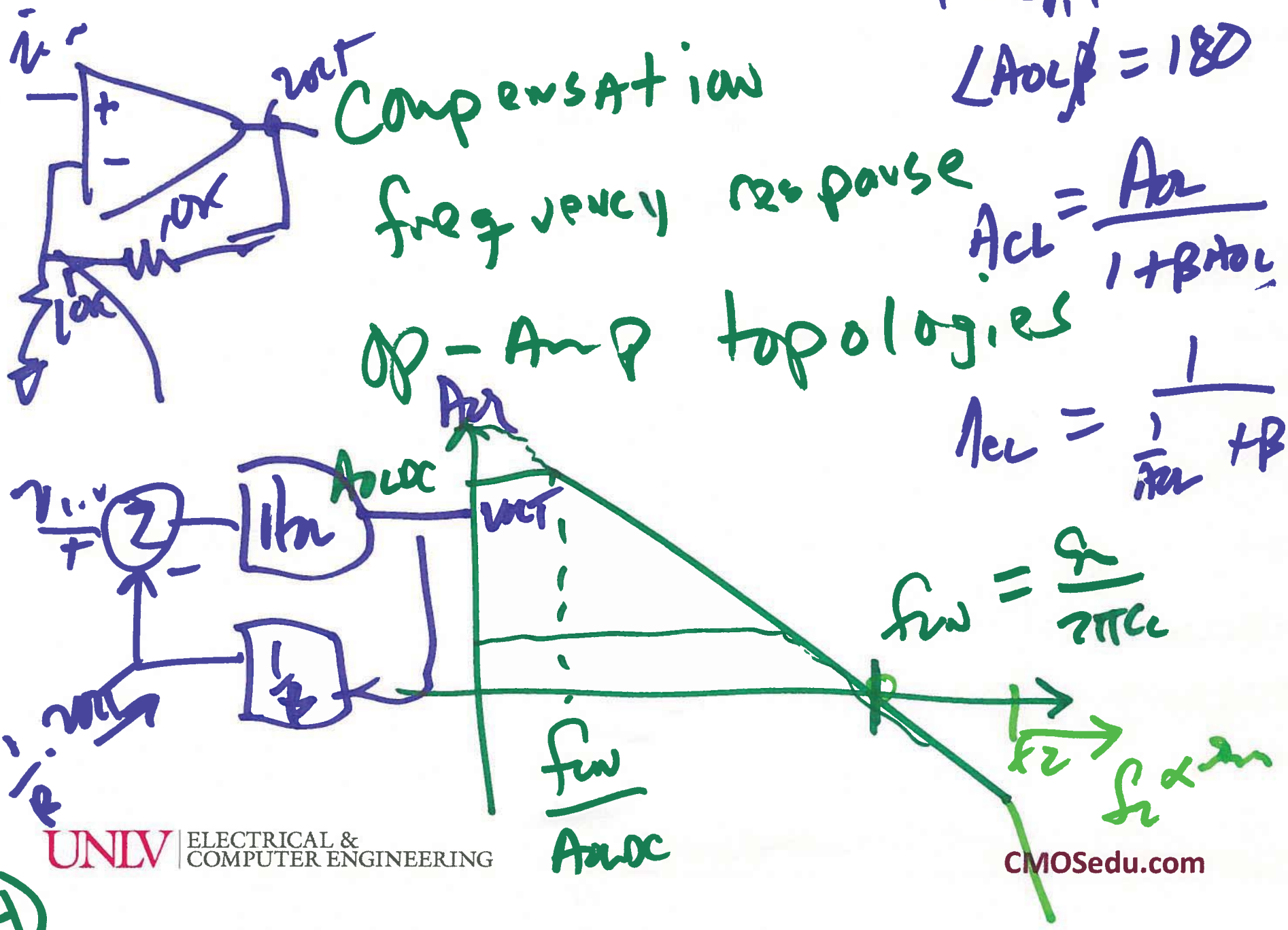
Compensation

frequency response

$A_{CL} = \frac{A_{OL}}{1+\beta A_{OL}}$

op-Amp topologies

$A_{CL} = \frac{1}{\frac{1}{A_{OL}} + \beta}$



$f_{3dB} = \frac{\omega_p}{2\pi C_L}$