

ECG 720

Advanced Analog IC Design

MARCH 17, 2016

Lecture 17

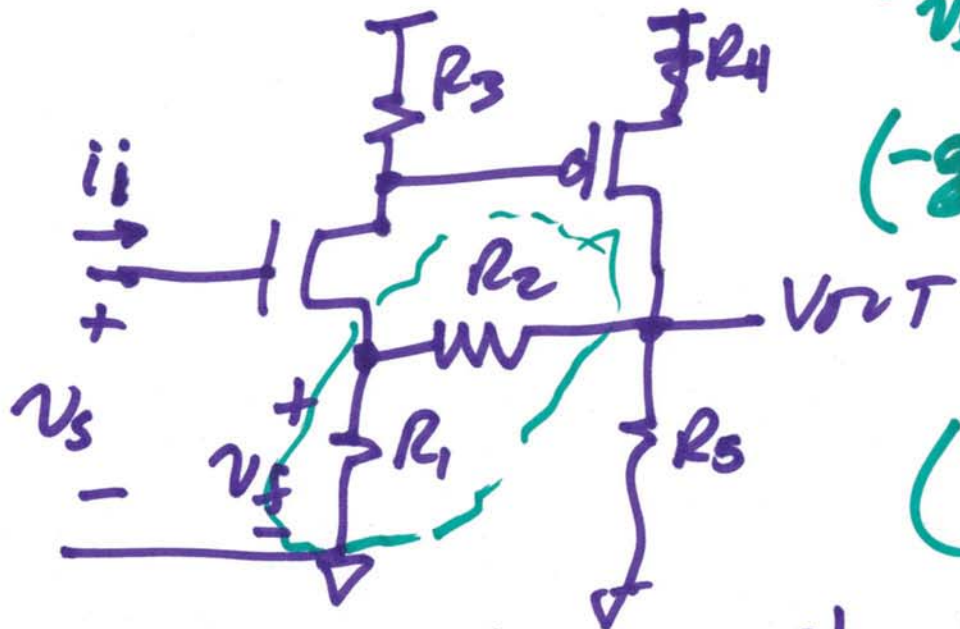


$$1 + \frac{R_2}{R_1}$$

$$\frac{v_{out}}{v_s} = A_{OL} =$$

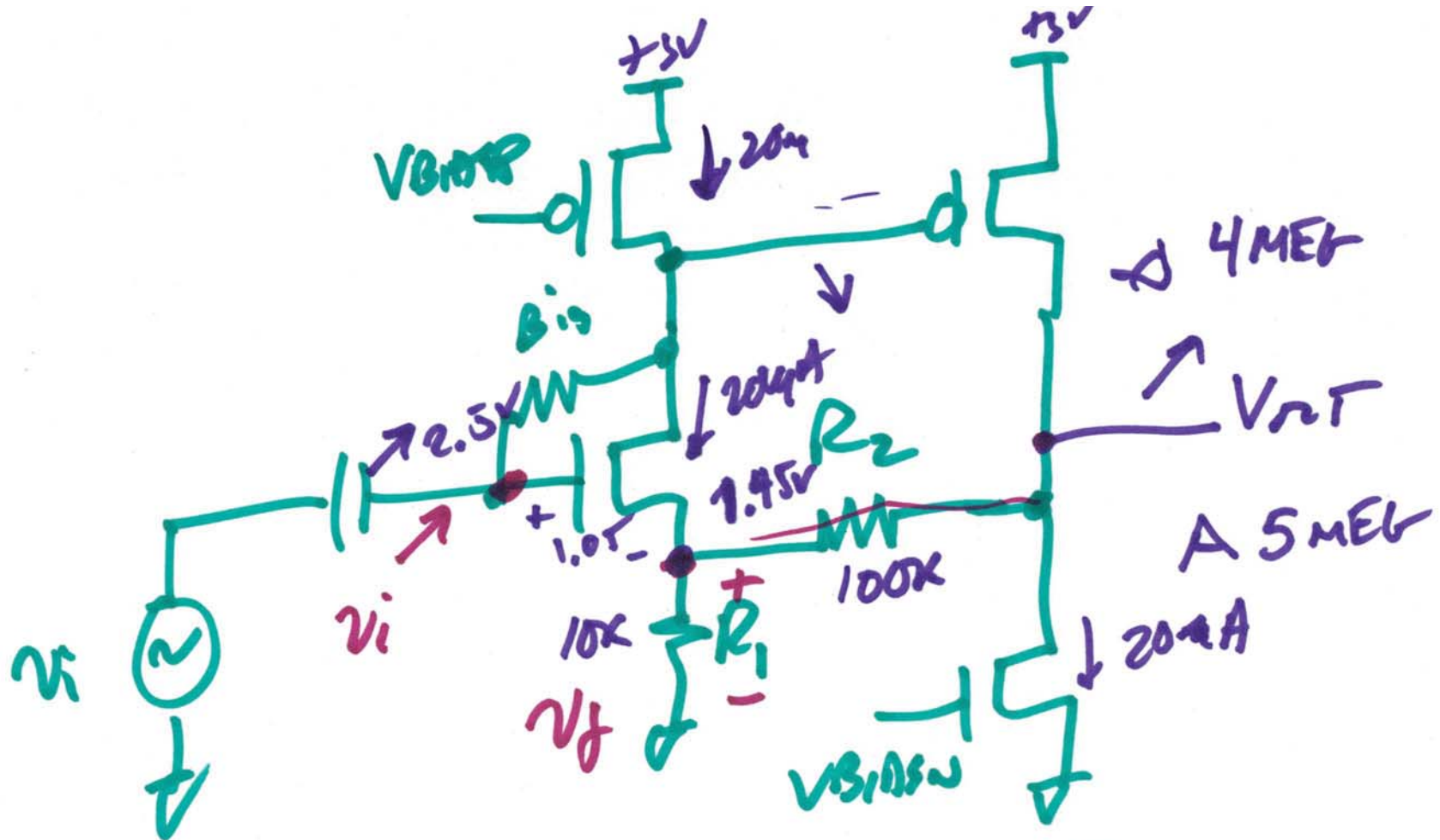
$$\left(-\frac{R_3}{\frac{1}{g_{m1}} + R_1} \right)$$

$$\left(\frac{-R_5}{\frac{1}{g_{m2}} + R_4} \right)$$



Series voltage - Shunt voltage

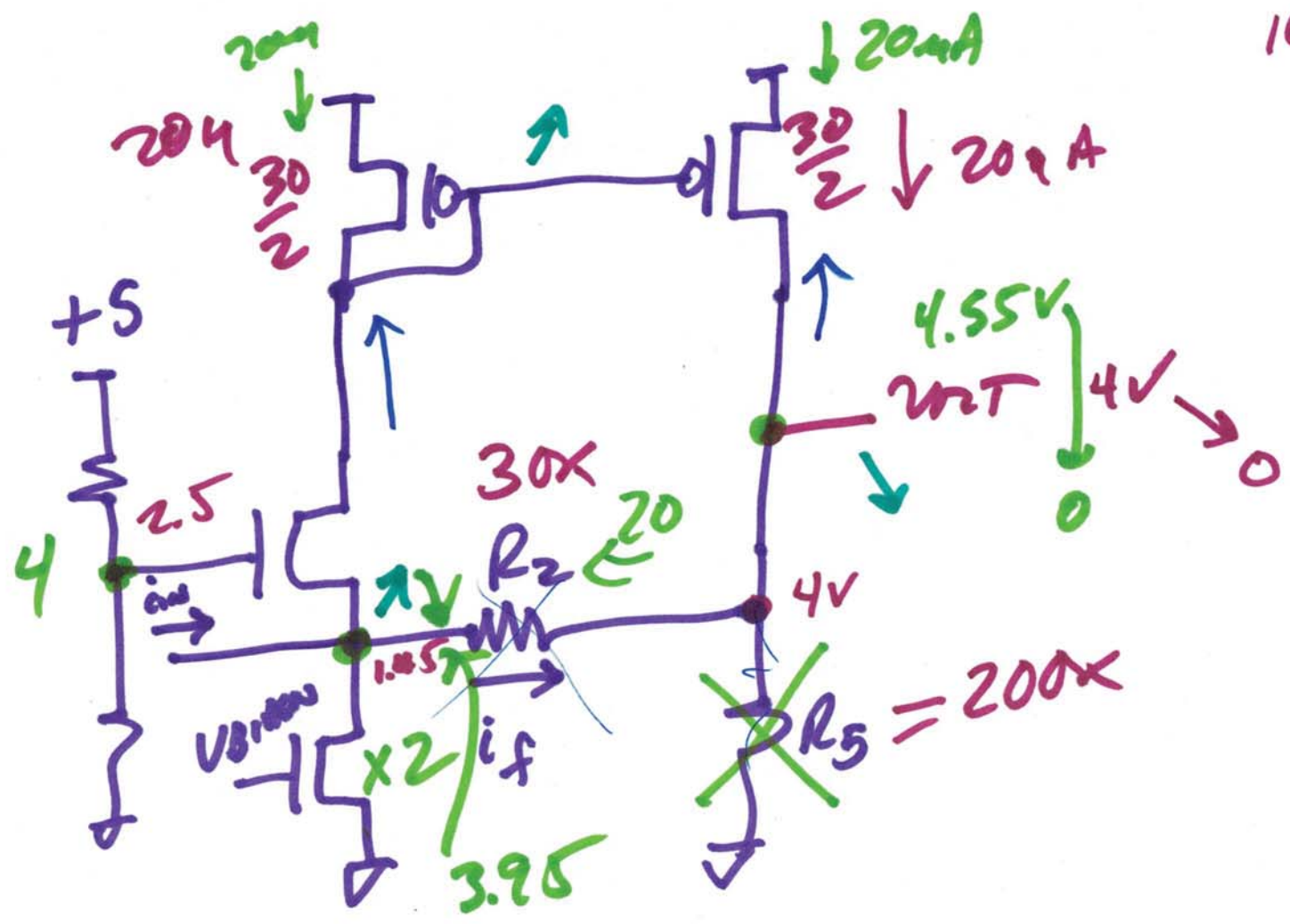
1)



series-shunt
f. b. A_v

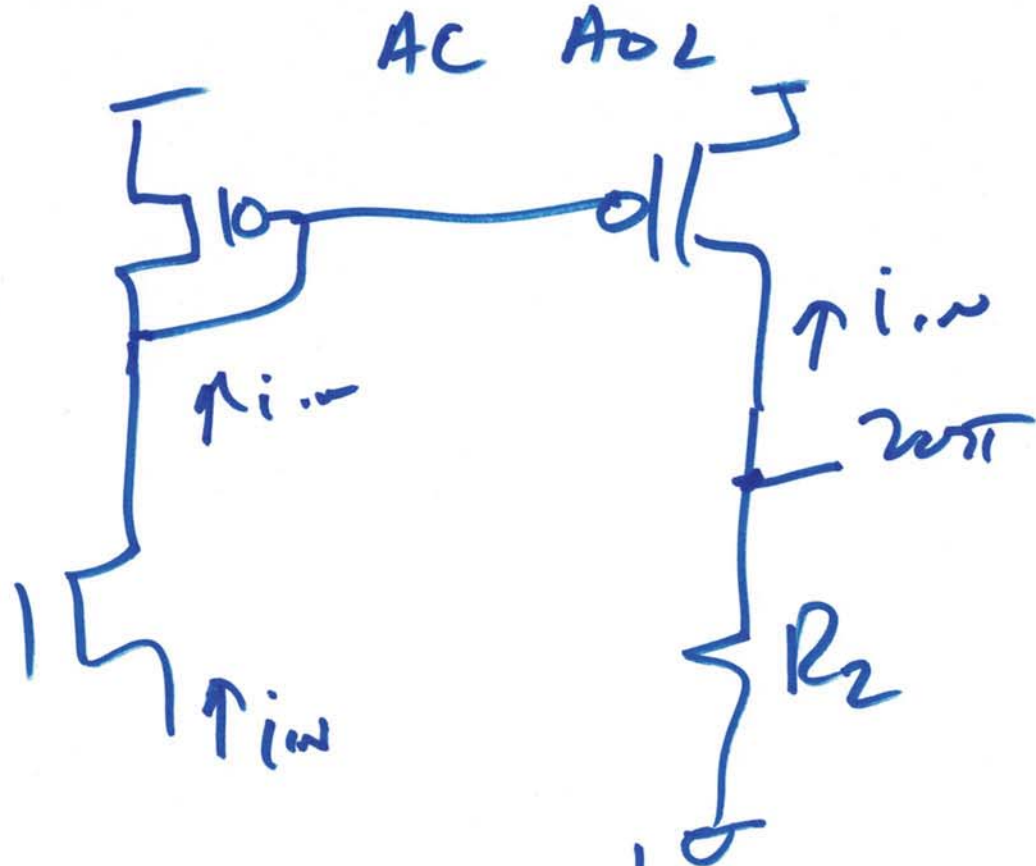
2)

$10\mu \cdot 300K = 3000\mu V$



$$\frac{V_{nT}}{i_{in}} = -R_2$$

3)



$$A_{OL} = \frac{v_{out}}{i_{in}}$$

$$\beta = \frac{1}{R_L}$$

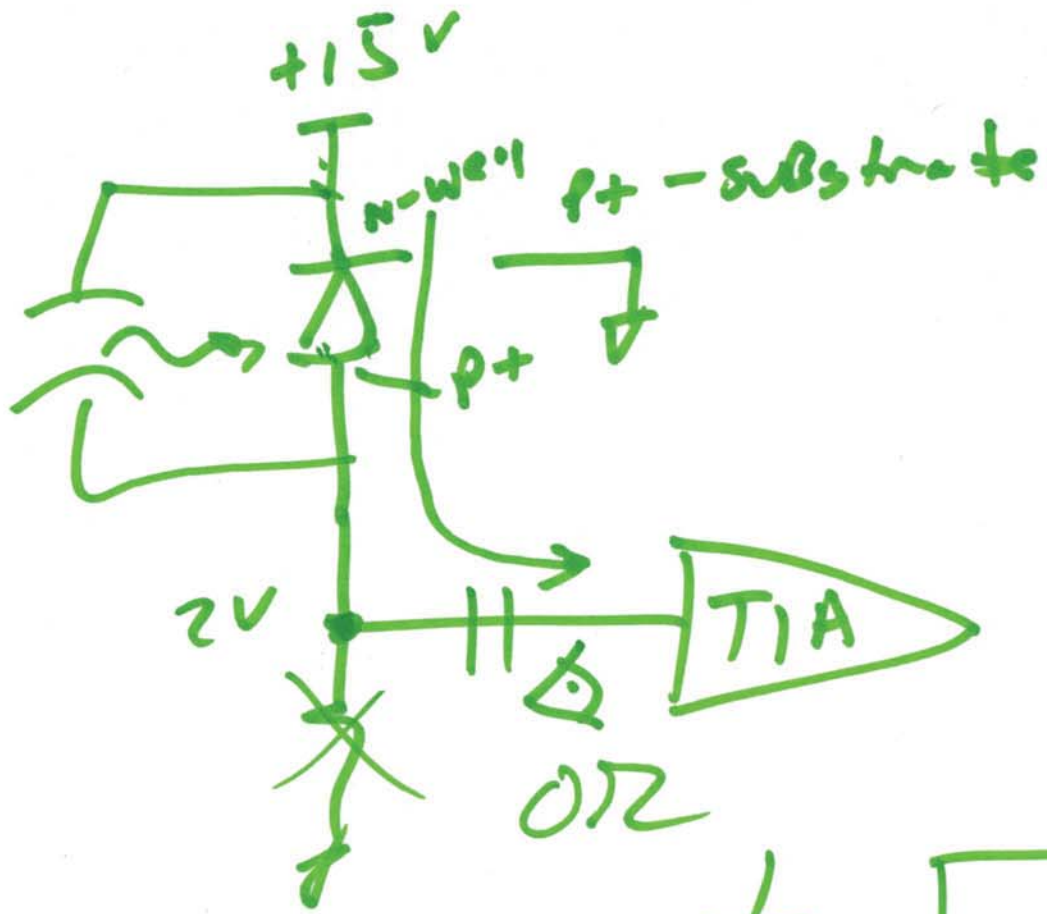
$$v_{out} = -i_{in} R_L$$

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

$$= \frac{-R_L}{1 + \frac{1}{R_L} \cdot (-R_L)} = \frac{-R_L}{2}$$

$$\frac{v_{out}}{i_{in}} = -R_L$$

4)



5)