

EE 420 / ECG 620

Analog IC Design

April 1, 2019

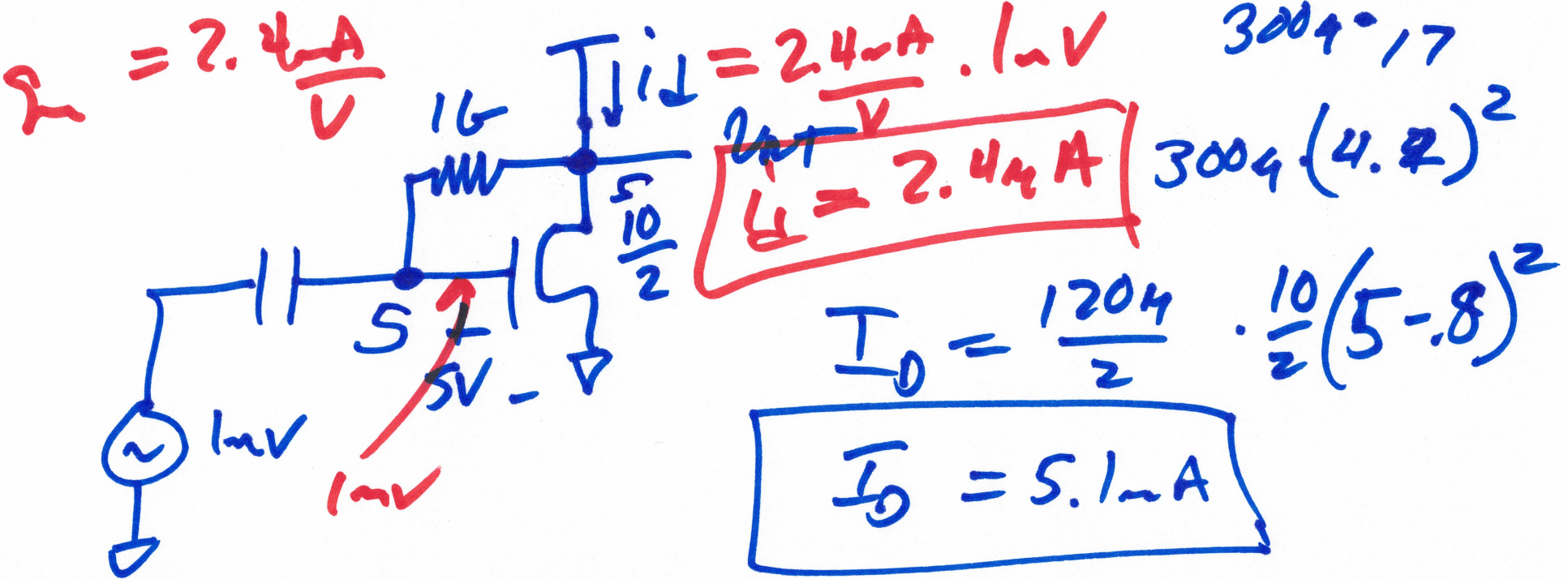
$I_D = 120\mu \cdot \frac{10}{2} (5 - 0.8)^2$ Lecture 16

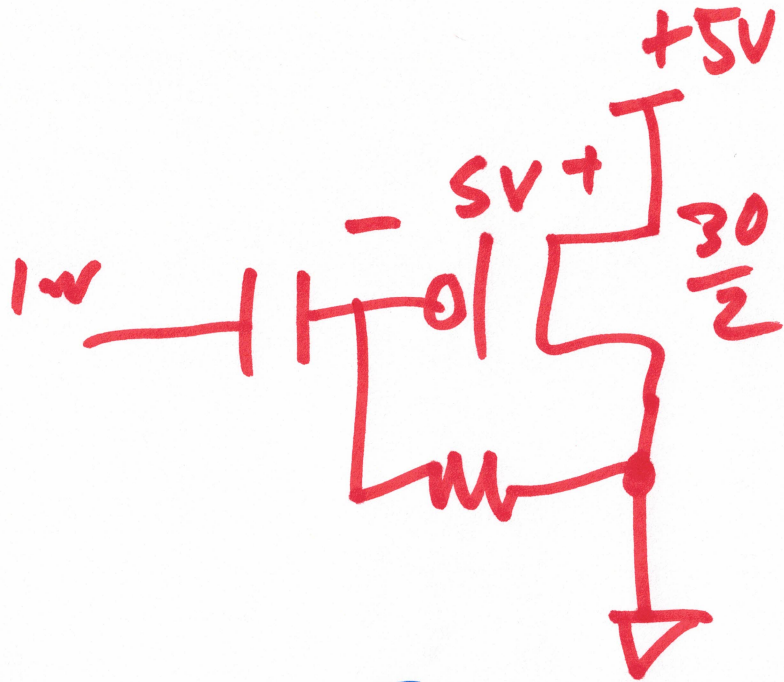
5100 μ A

$I_D = 2.4 \frac{\mu\text{A}}{\text{V}}$

$I_{id} = 2.4 \mu\text{A} \cdot 1 \text{mV}$

300 μ · 17

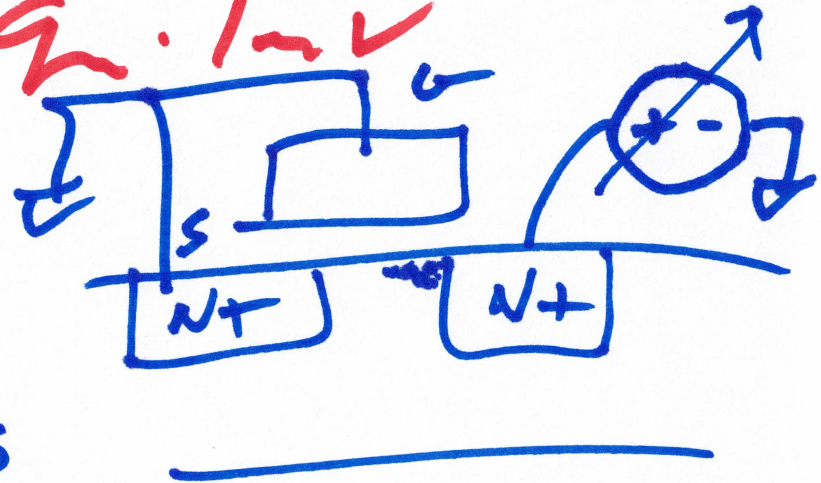
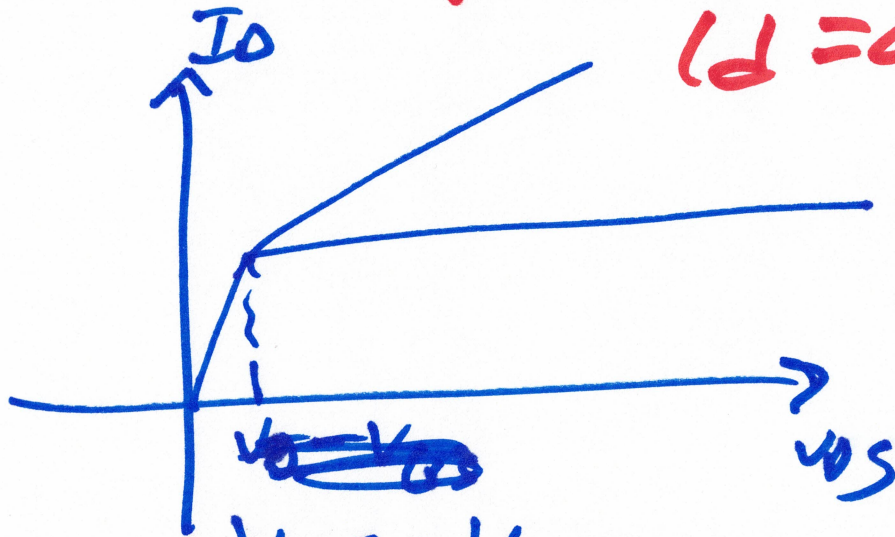




$$I_D = \frac{404}{2} \cdot \frac{30}{2} (5 - .9)^2$$

$$g_m = 404 \cdot \frac{30}{2} (5 - .9)$$

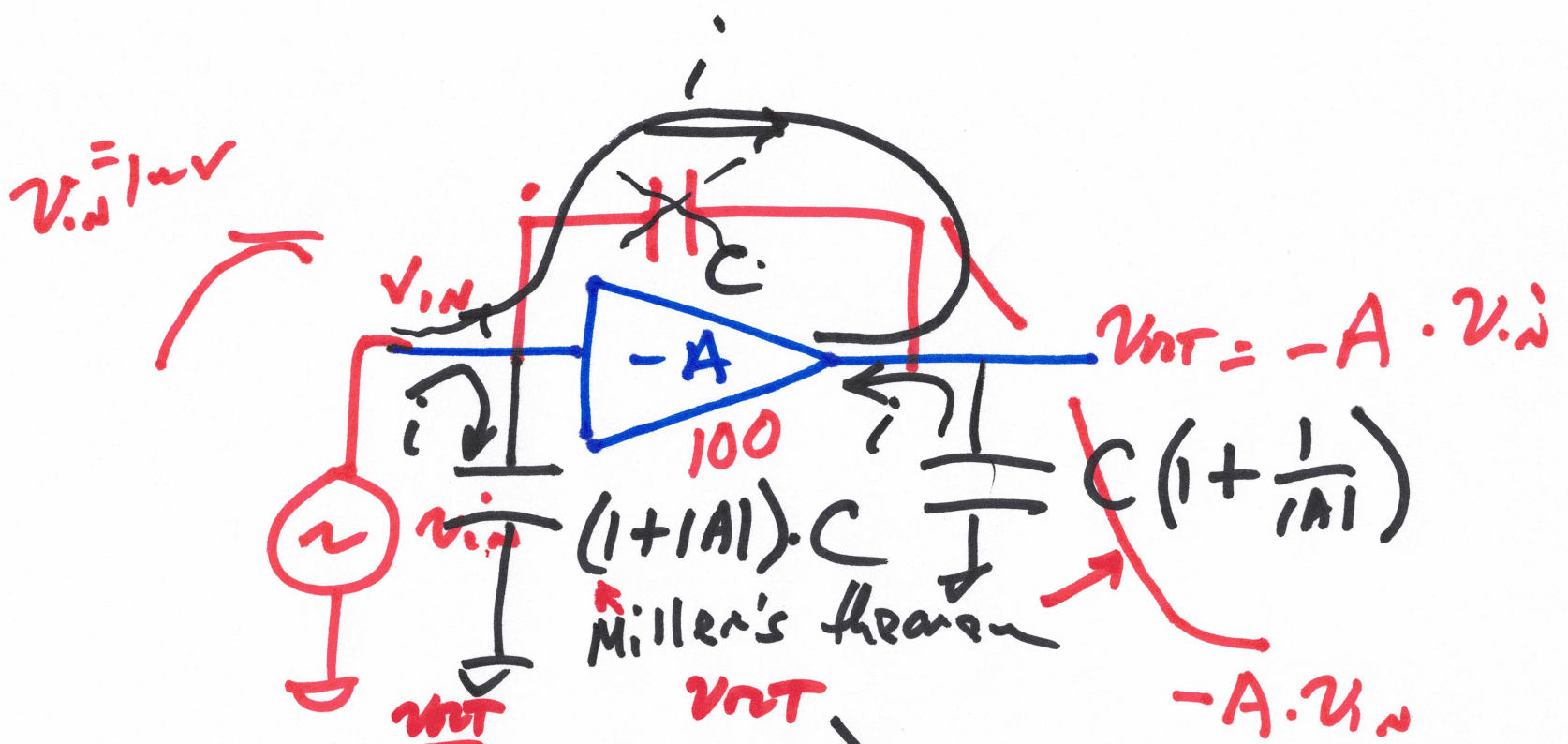
$$i_d = g_m \cdot 1mV$$



$$V_{GS} - V_{THN}$$

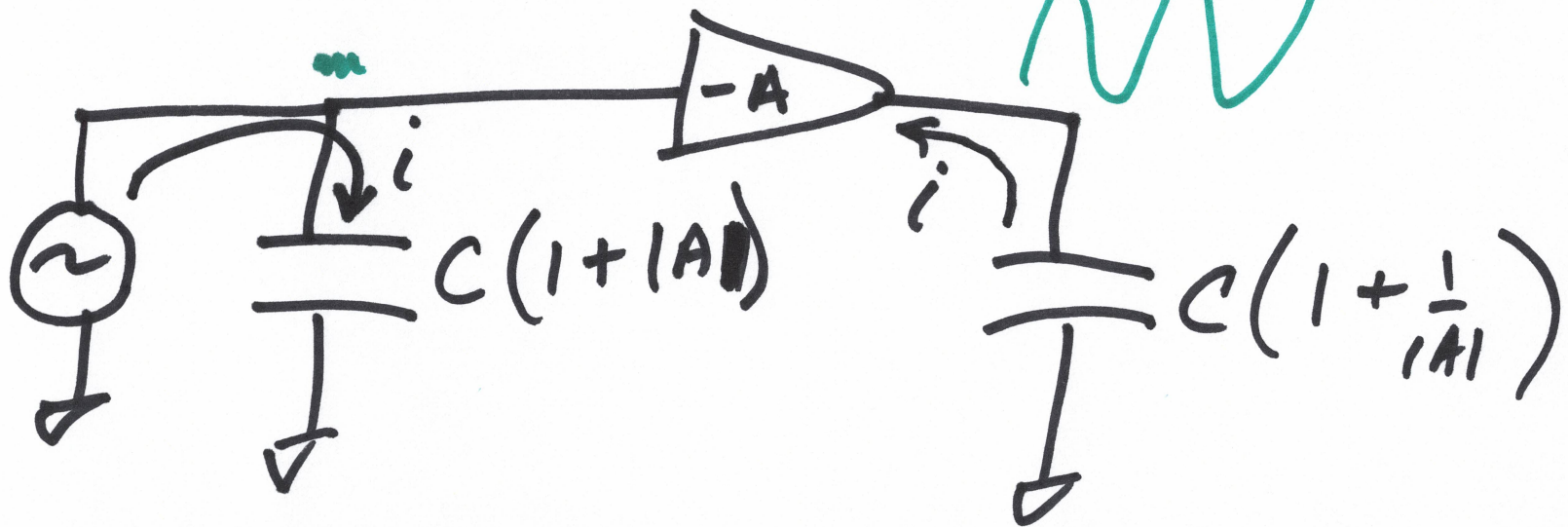
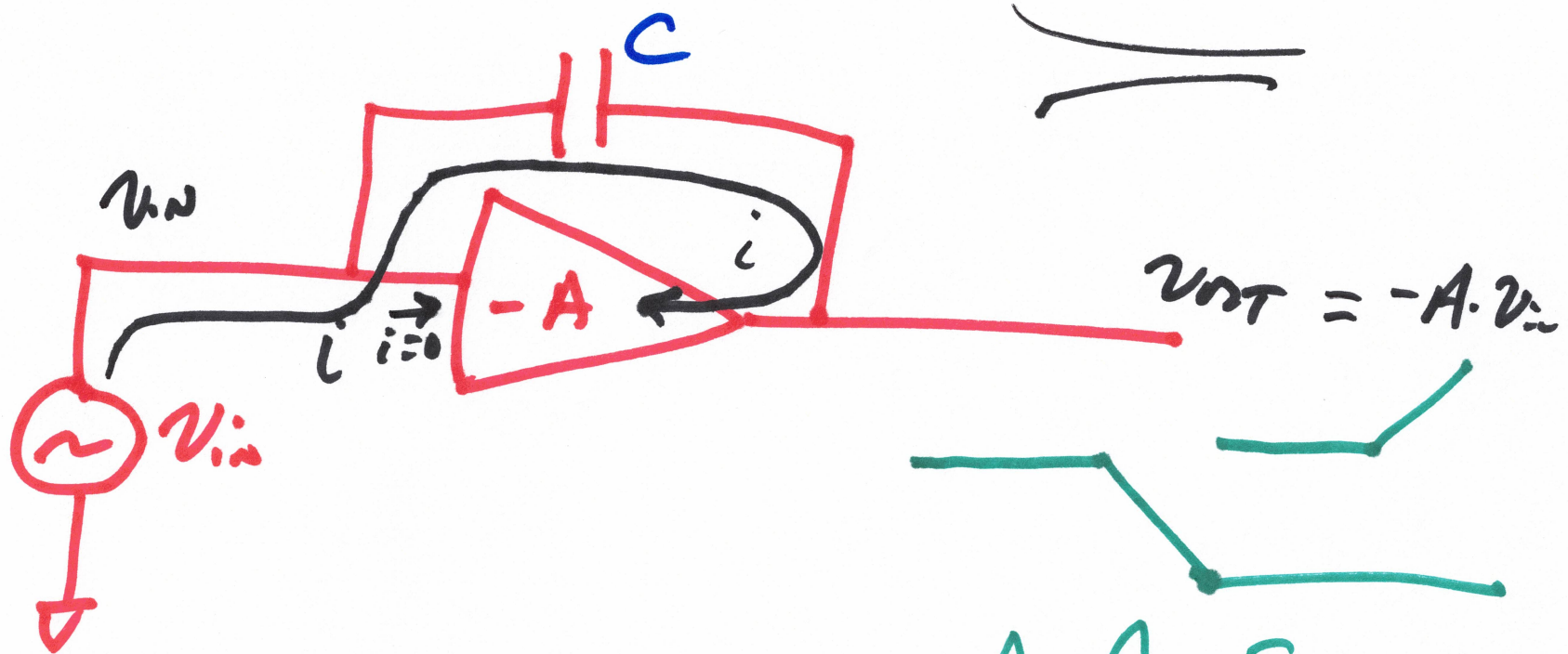
$V_{GS,SAT}$ actually less than

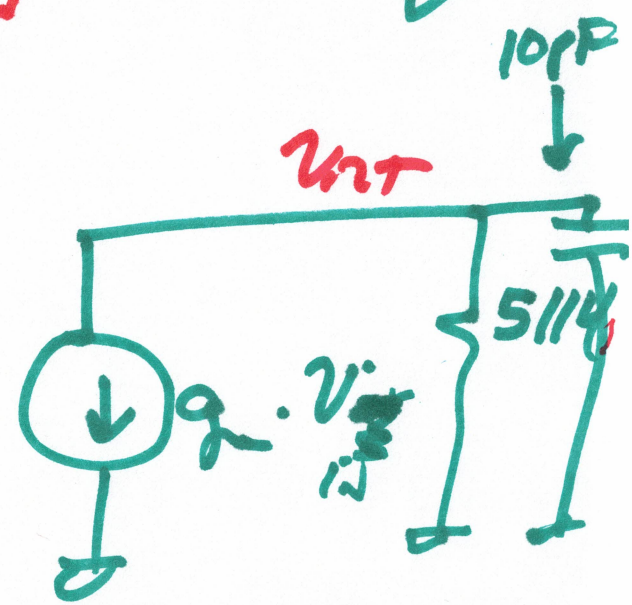
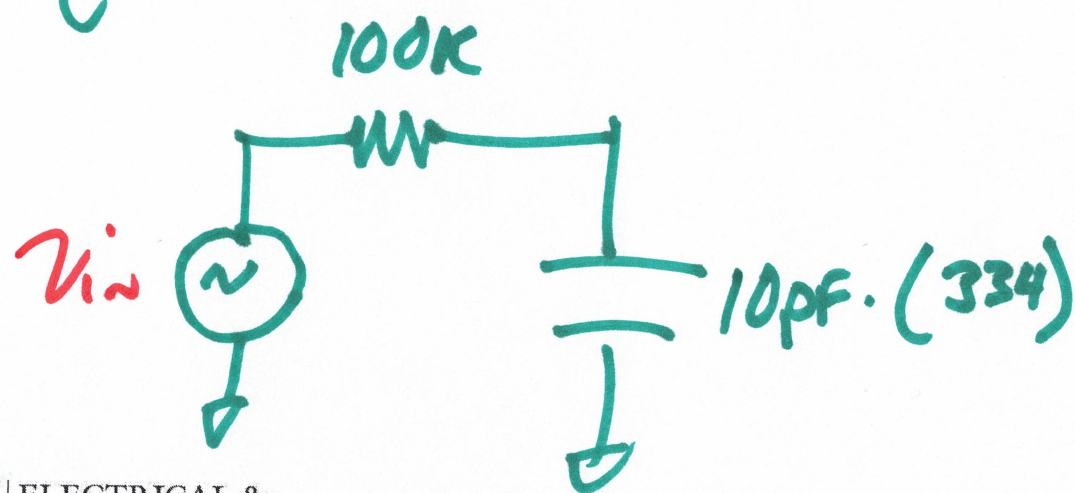
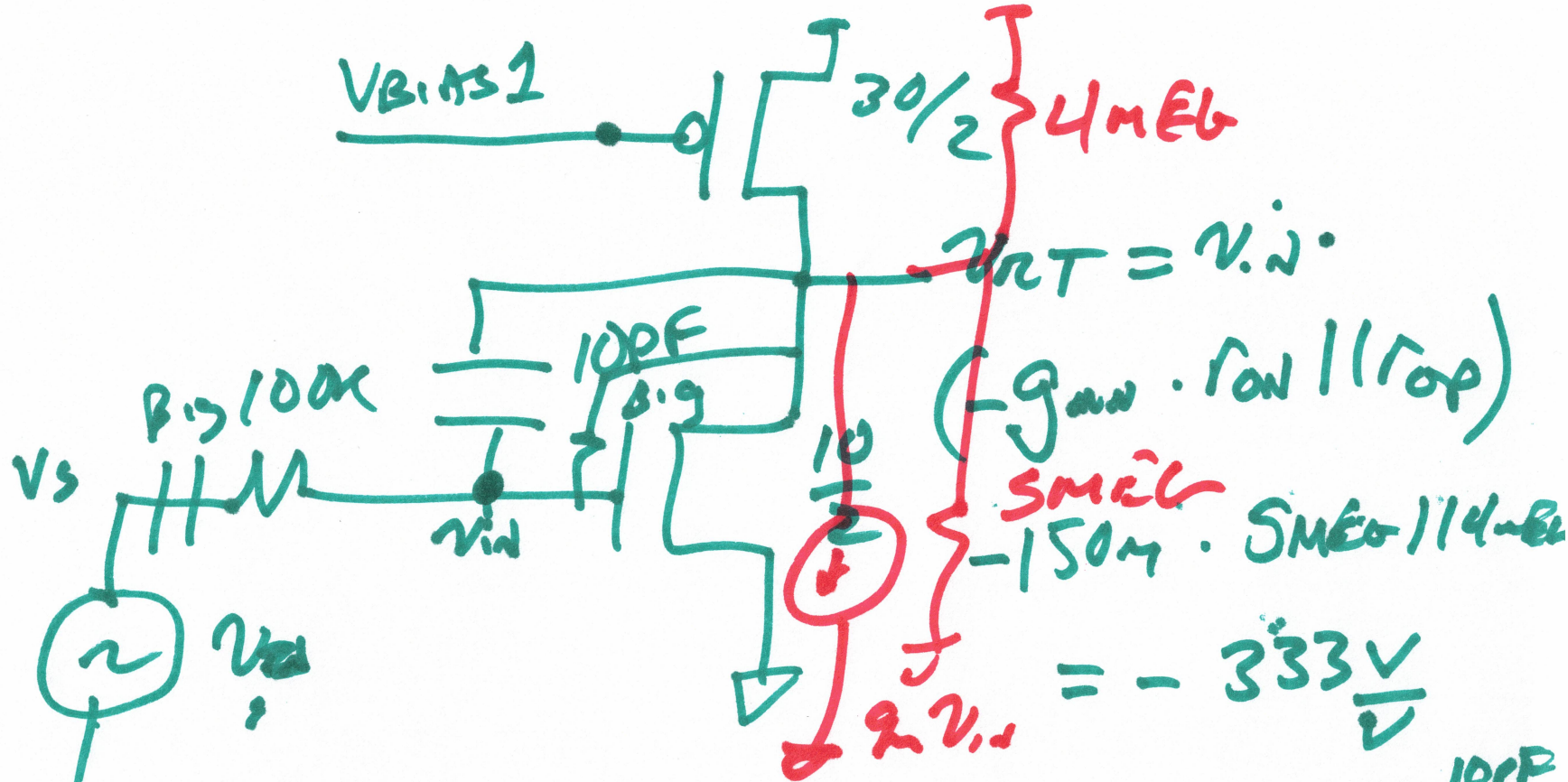
$$V_{GS} - V_{THN} \text{ CMOSedu.com}$$



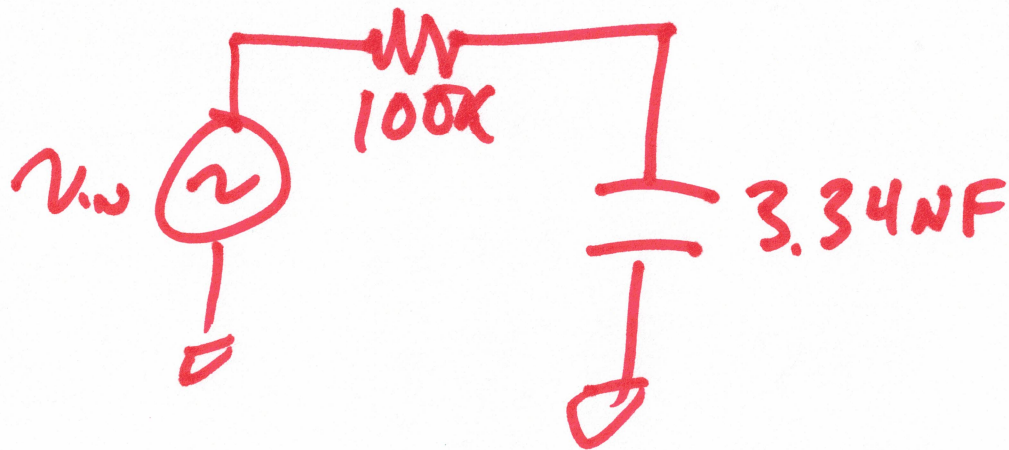
$$i = \frac{v_{in} - (-A \cdot v_{in})}{\frac{1}{j\omega C}} = \frac{v_{in} \cdot (1 + |A|)}{\frac{1}{j\omega C}}$$

$$\frac{v_{in}}{i} = \frac{1}{j\omega C(1 + |A|)}$$





5)



$$f_{low} = \frac{1}{2\pi \cdot 100k \cdot 3.34nF}$$

$$f_{HT} = \frac{1}{2\pi \cdot 2.2ME\Omega \cdot 10pF} = 7.2 kHz$$

