

PART 2: $V_{th} = 550\text{mV}$

$$I_{TAIL} = \frac{\beta}{2} \frac{W}{L} (V_{G1} - V_{th})^2$$

$$I_{TAIL} = 4\mu\text{A}$$

$$g_{m1} = g_{m2} = \sqrt{2 \left(\frac{I_{TAIL}}{2} \right) \beta \frac{W}{L}}$$

$$g_{m1} = g_{m2} = 80\mu\text{S}$$

* WITH JUST A 50mV INCREASE IN V_{th} , WE SEE THE TRANSCONDUCTANCE (AND HENCE THE GAIN) DROP BY A FACTOR OF TWO.

IS PROPORTIONAL