

## EE-320 – Exercise 1 Solutions - Fall 2025

1

The drain is open  $\Rightarrow I_D = 0$  &  $V_{DS} = 0$  So if  $M_1$  is on, it is in deep triode region

$$\left\{ \begin{array}{l} V_{GS} < V_{TH} \Rightarrow V_G - 1 < 0.3 \Rightarrow V_G < 1.3 \Rightarrow M_1 \text{ is off} \\ R_{on} = \infty \\ V_{GS} > V_{TH} \Rightarrow V_G > 1.3 \Rightarrow M_1 \text{ is on in deep triode} \Rightarrow \end{array} \right.$$



