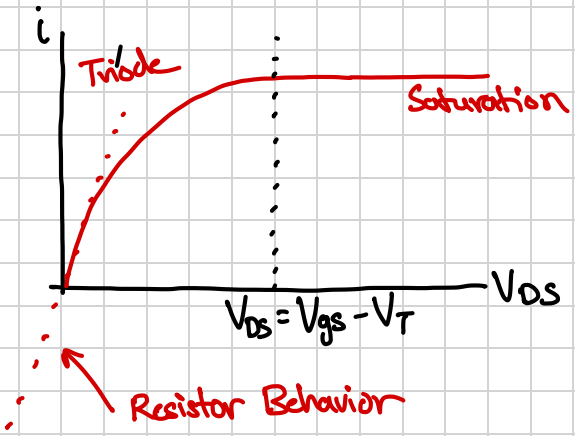
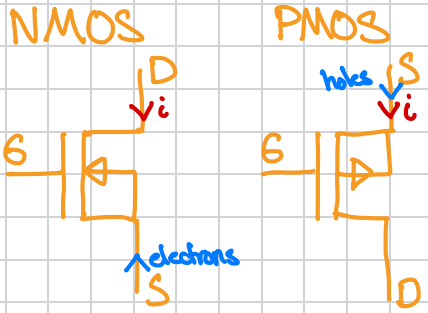
MOSFET REVIEW

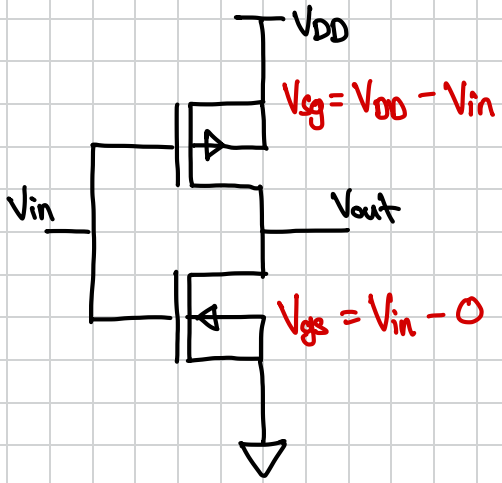
$$i = \mu_n C_{ox} \frac{W}{L} \left[(V_{gs} - V_T) V_{DS} - V_{DS}^2/2 \right]$$ ⇐ NMOS

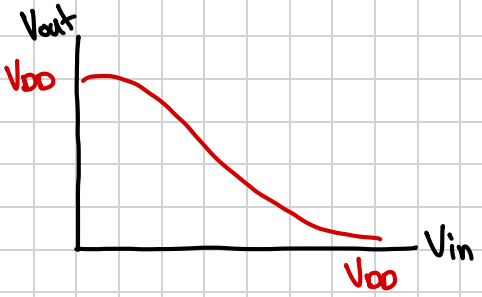




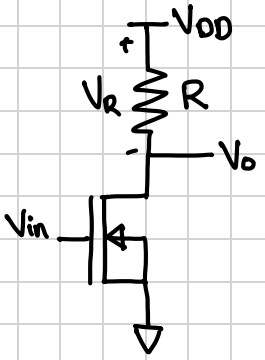
$$i = \mu_p C_{ox} \frac{W}{L} \left[(V_{sg} - V_T) V_{SD} - V_{SD}^2/2 \right]$$ ⇐ PMOS

DIGITAL INVERTER





ANALOG CIRCUIT



If MOSFET is in saturation

$V_o = V_{DD} - V_R$

$= V_{DD} - R \times \frac{1}{2} \mu_n C_{ox} \frac{W}{L} (V_{gs} - V_T)^2$

- Inverting
- Amplifier

} Properties

METHOD OF ASSUMED STATES

AKA. Guess & Check

1. Guess by plugging in and solving
2. Check saturation assumptions

$V_{DS} > V_{gs} - V_T$