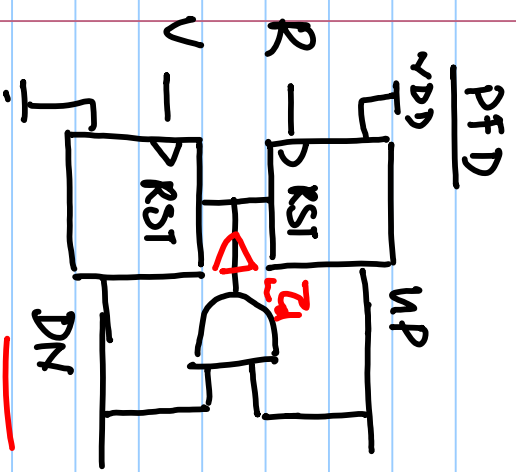
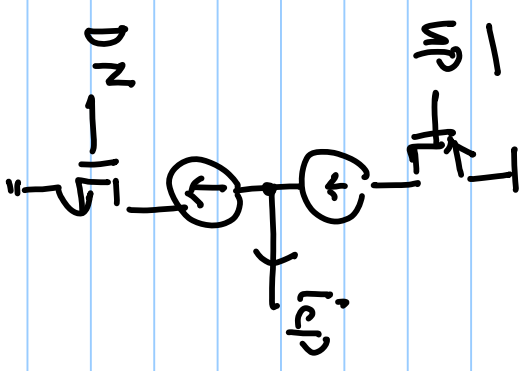
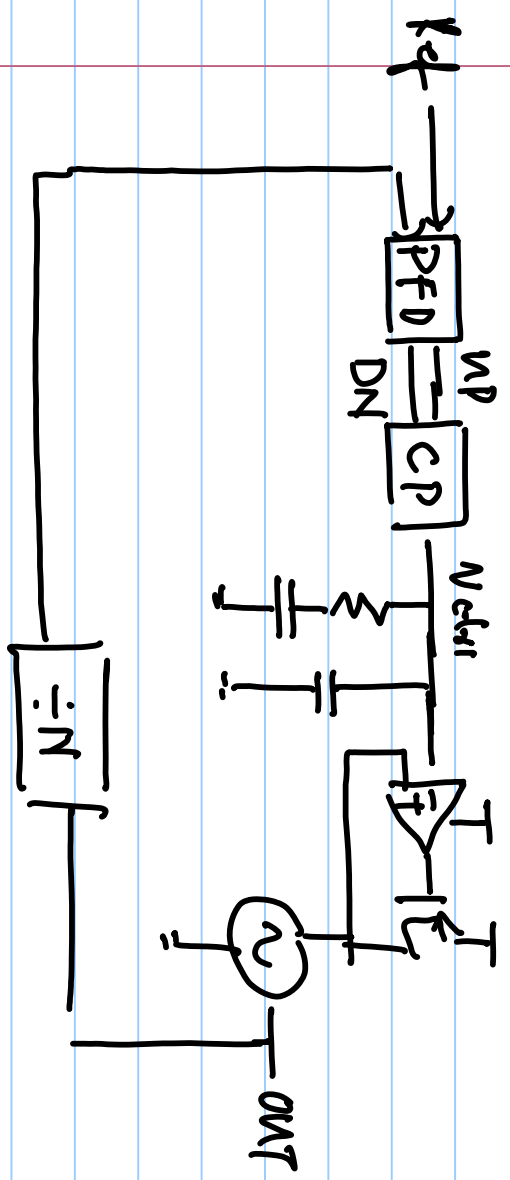
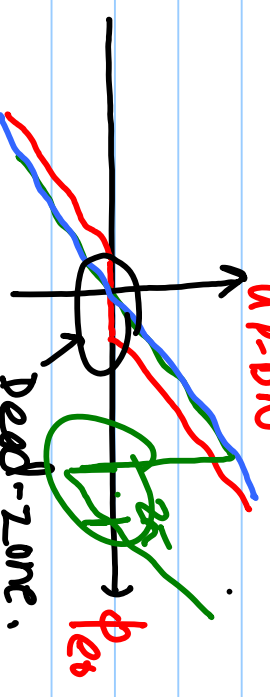
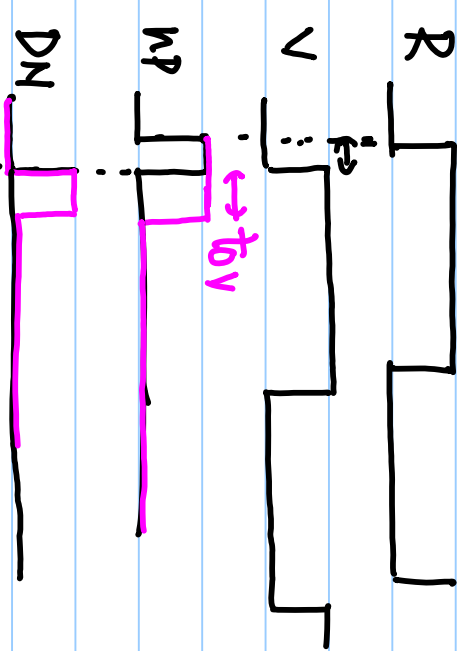
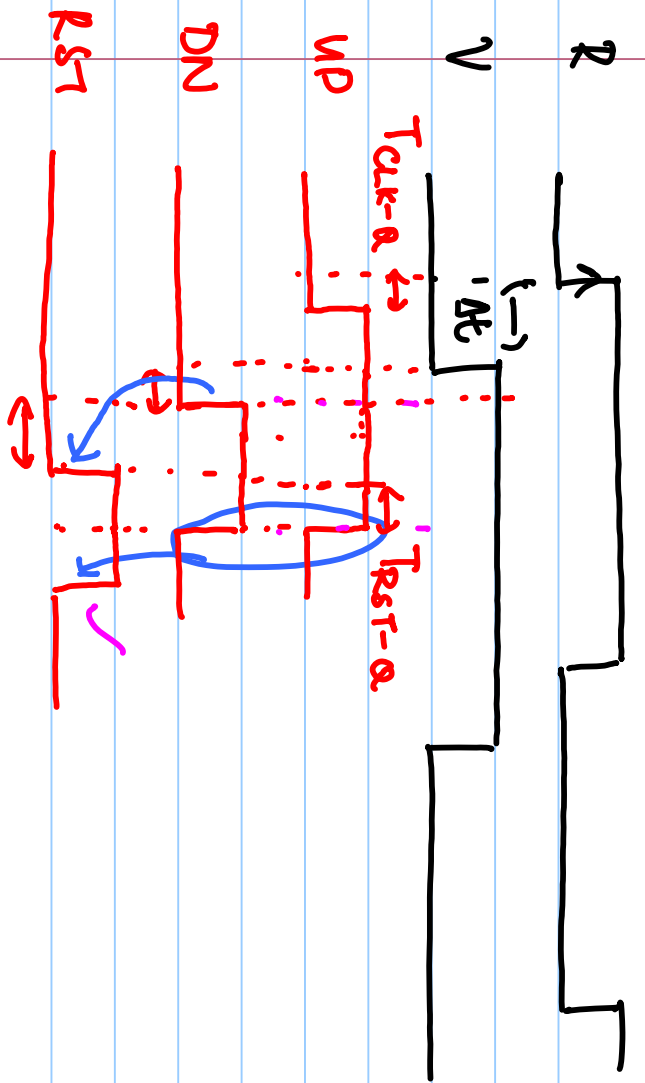


# Lecture # 36



- Operating freq.
- power dissipation
- Noise
- Dead-zone free operation

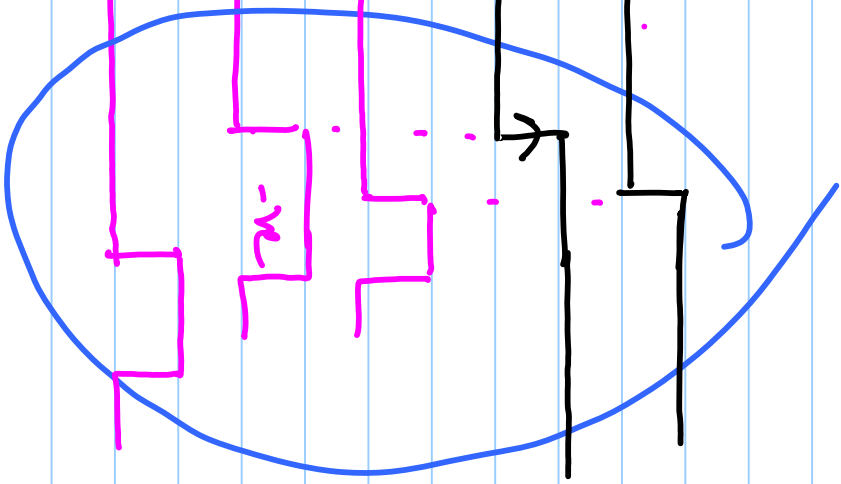
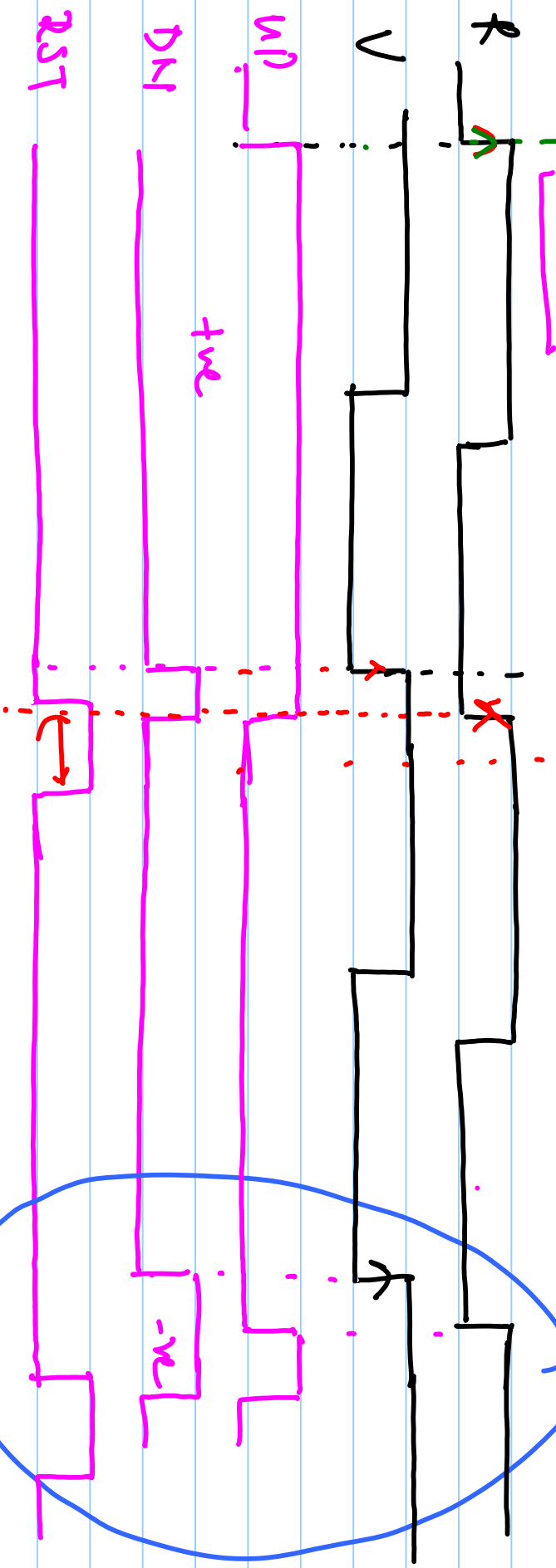
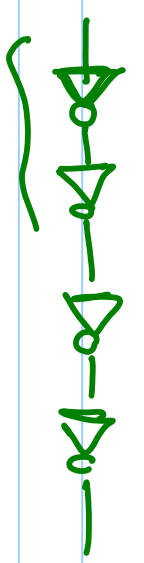


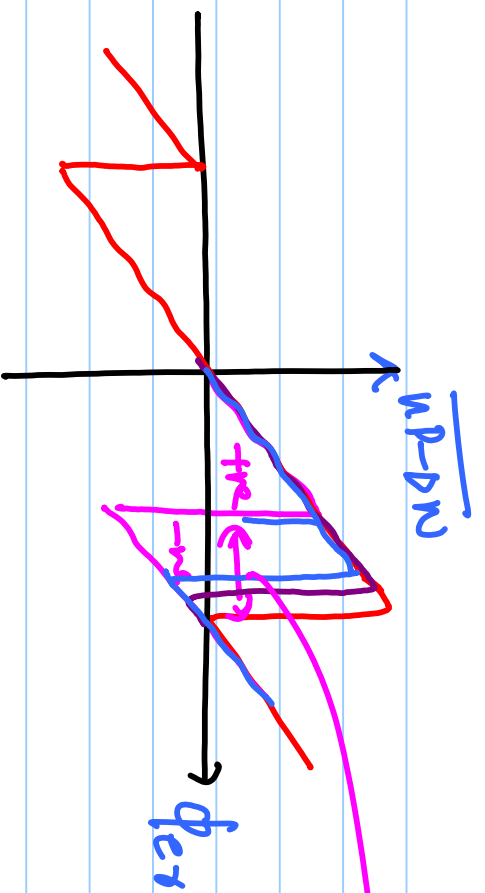


RST is high for  $T_{RST-Q} + T_{and} + t_g$

MP-DN for  $\Delta T$

$$T_{ov} = T_{and} + T_Q + T_{RST-Q} \gg T_{on}$$



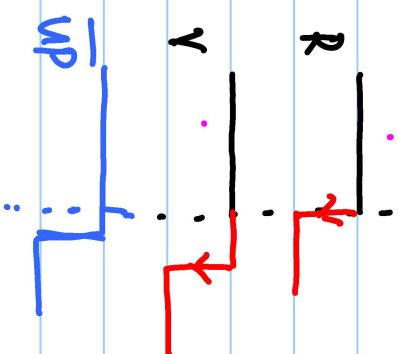
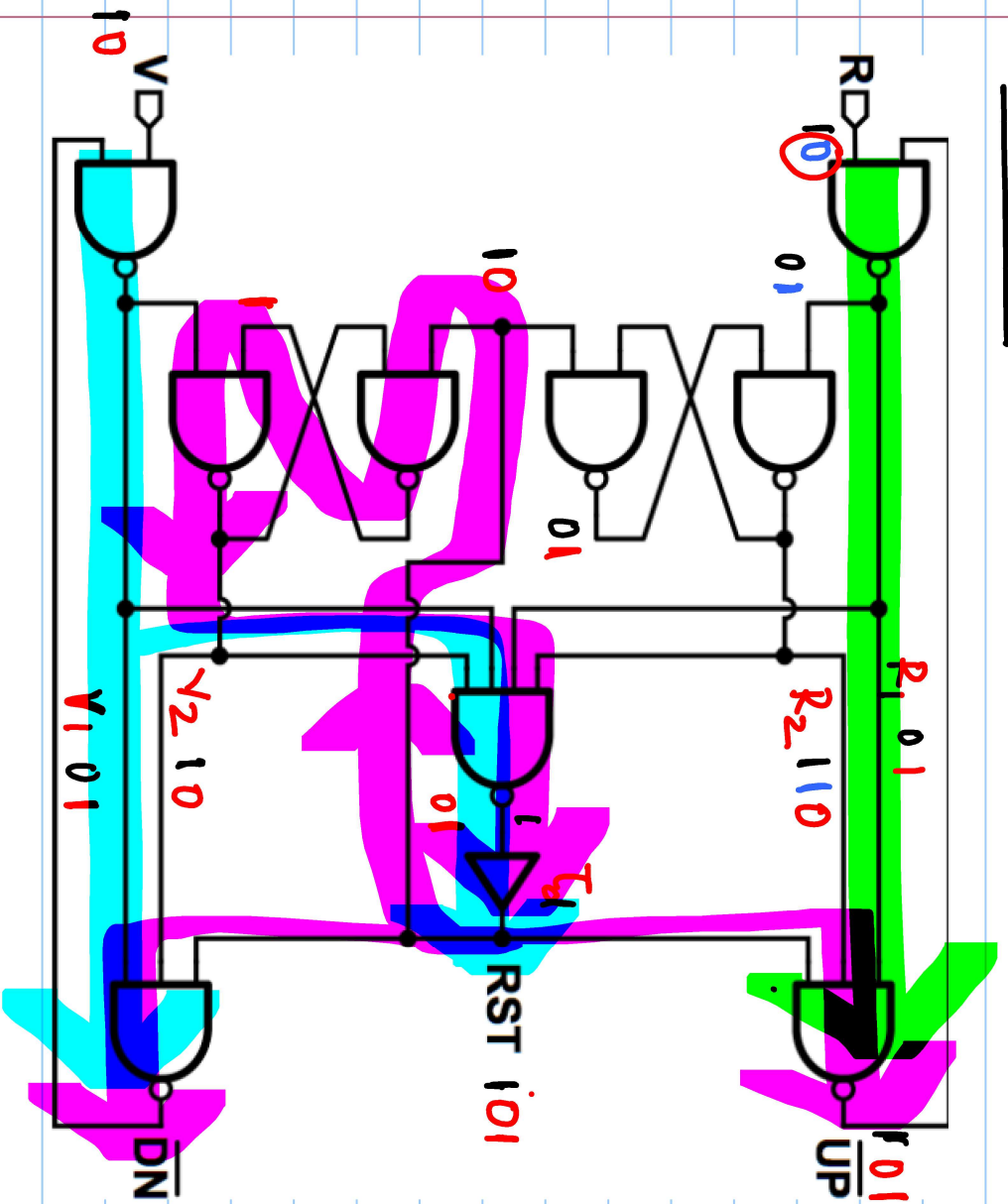


$$\Delta\phi = 2\alpha.$$

$$\frac{T_{RST}}{T_{REF}} < \bar{\kappa}$$

$$f_{RCF} < \frac{1}{2T_{RST}}$$

# Hand-PFD

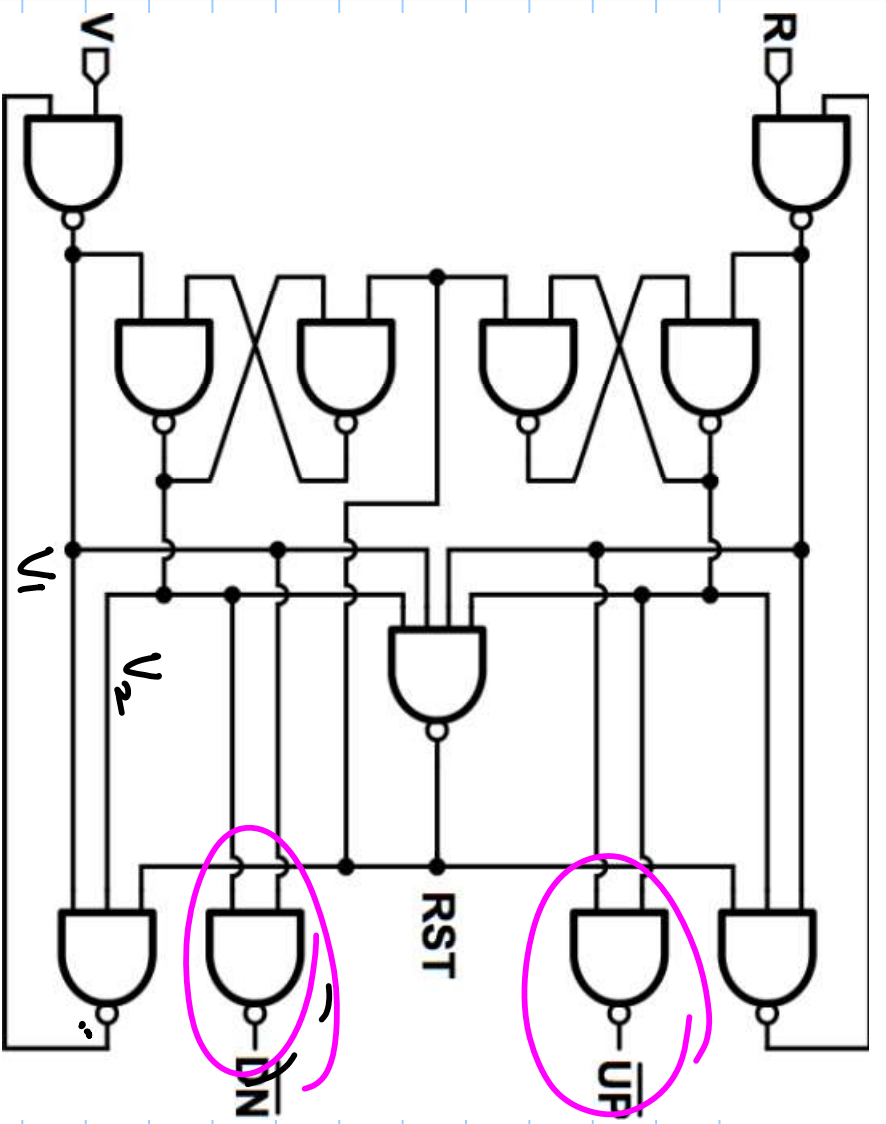


$$T_{\text{inand2}}, T_{\text{inand4}}, T_{\text{inand3}}, \zeta_d$$

$$T_{\text{RST}} = 2T_{\text{inand2}} + T_{\text{inand4}} + \zeta_d$$

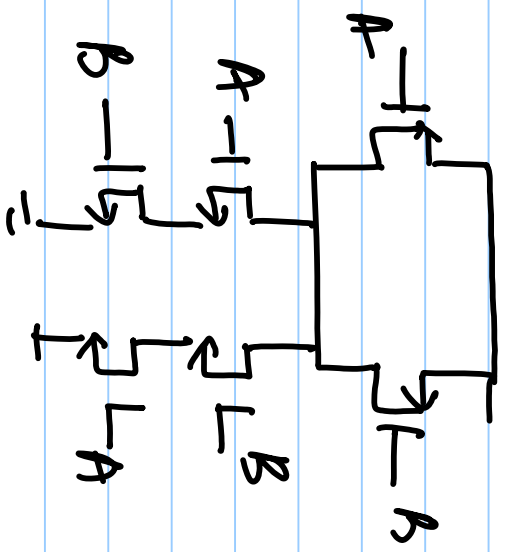
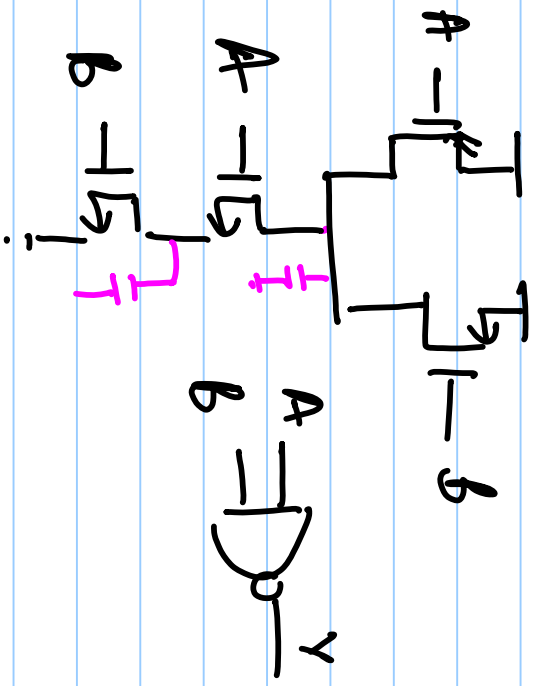
$$T_{\text{ov}} = T_{\text{inand4}} + \zeta_d$$

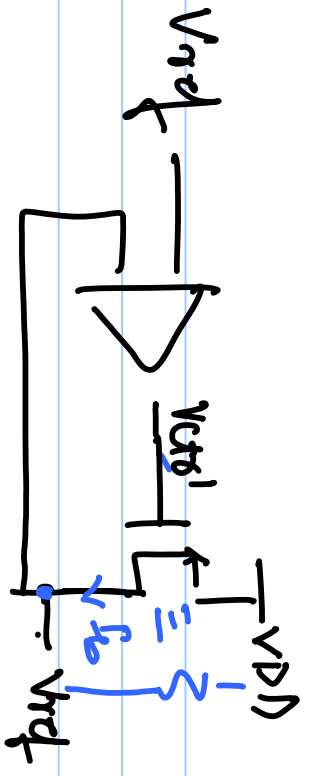
01



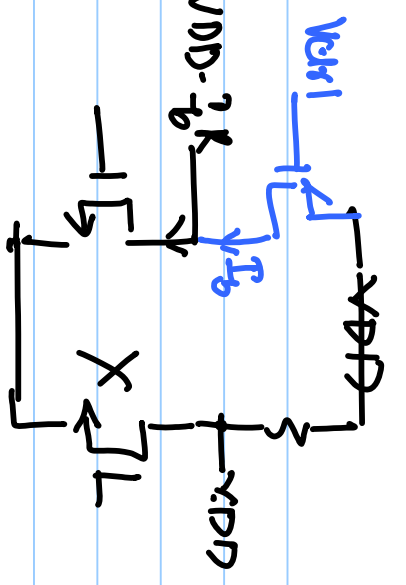
$$T_{RST} = 2T_{\text{and}2} + T_{\text{and}4}$$

$$T_{\text{av}} \approx 2T_{\text{and}2} + T_{\text{and}4}$$





$$V_{ref} = V_{DD} - I_0 R$$



$$\Delta V = V_{DD} - V_{ref} = I_0 R$$

