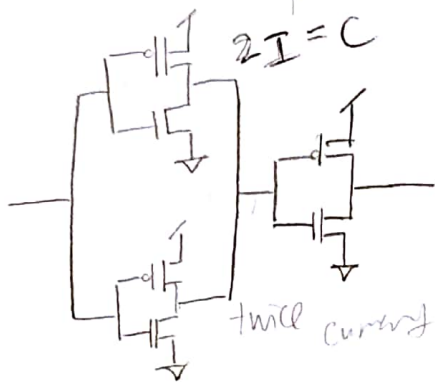
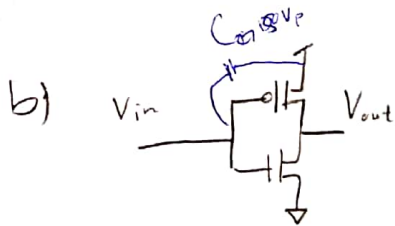


1. a) circuit 1



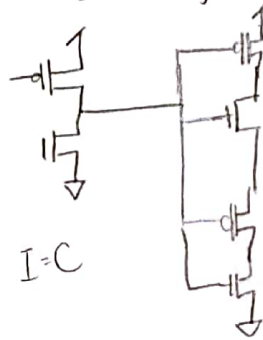
$$\tau = 2 \times N \times t_p$$

less cap is faster

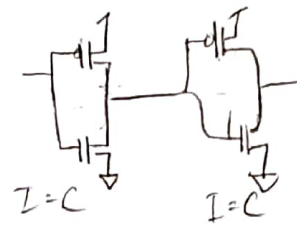


c)

circuit 2 $2I=C$



circuit 3



1. a) Circuit 1 fastest
Circuit 2 middle speed
Circuit 3 slowest

$$C = 2C_{gsVP} + C_{gcP} + 2C_{gdVP} \text{ gate} + C_{gsVN} + C_{gcN} + 2C_{gdVN}$$