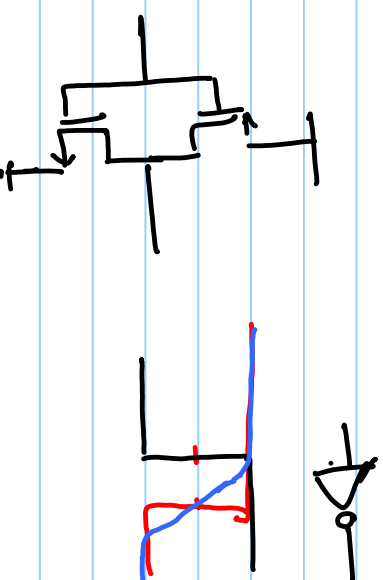
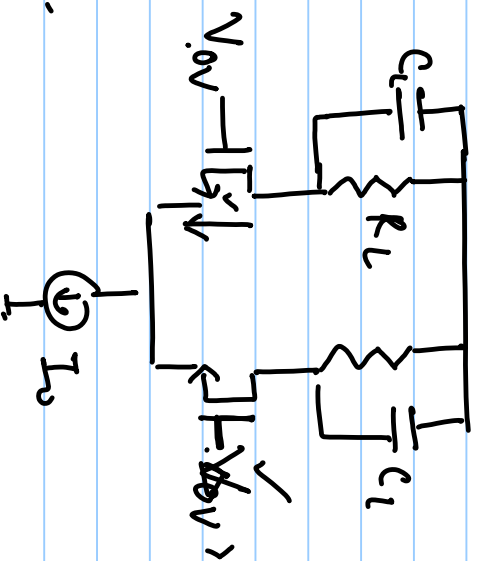
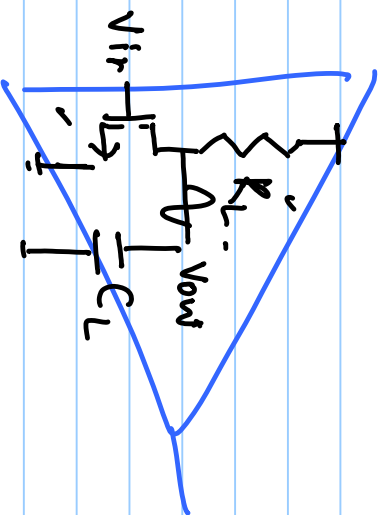
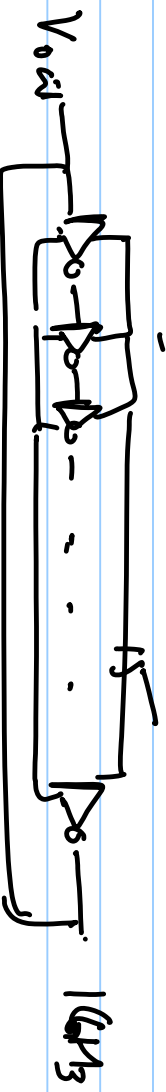
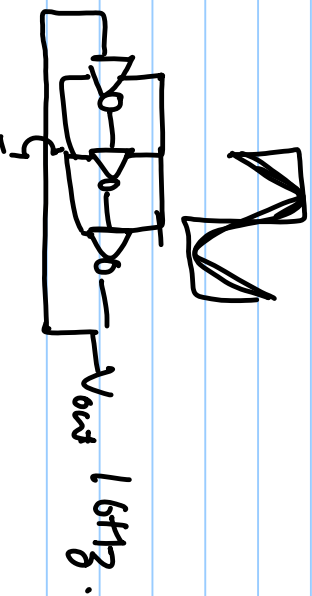


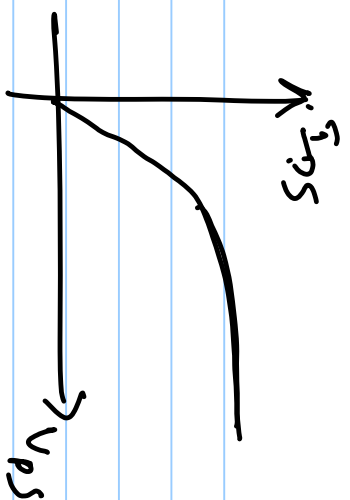
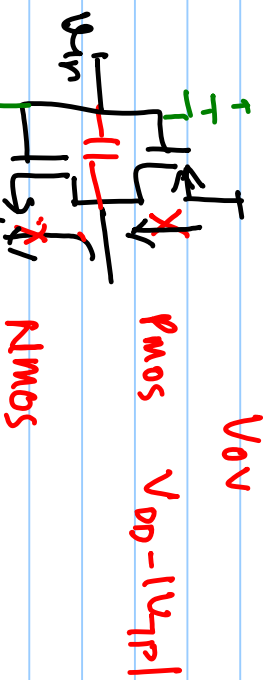
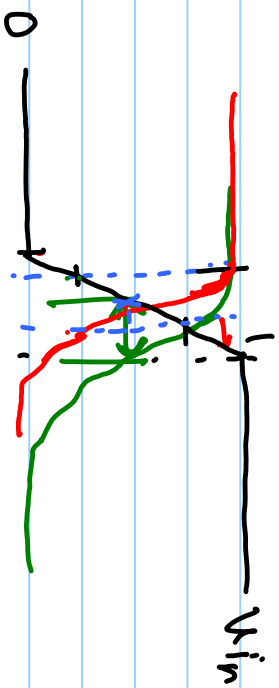
Lecture #26



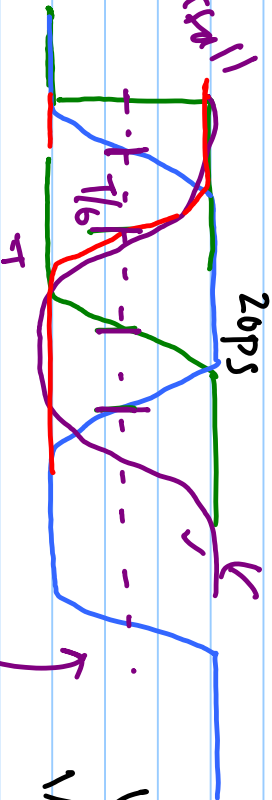
$$\begin{cases} \angle LC_c = 2\pi\kappa \\ |LC_c| = 1 \end{cases}$$

$I_2 \rightarrow \text{D}_1 \rightarrow \text{D}_2 \rightarrow \text{D}_3 \rightarrow \text{D}_4 \rightarrow \text{D}_5 \rightarrow \text{D}_6 \rightarrow \text{D}_7 \rightarrow \text{D}_8 \rightarrow \text{D}_9 \rightarrow \text{D}_{10} \rightarrow \text{D}_{11} \rightarrow \text{D}_{12} \rightarrow \text{D}_{13} \rightarrow \text{D}_{14} \rightarrow \text{D}_{15} \rightarrow \text{D}_{16} \rightarrow \text{D}_{17} \rightarrow \text{D}_{18} \rightarrow \text{D}_{19} \rightarrow \text{D}_{20} \rightarrow \text{D}_{21} \rightarrow \text{D}_{22} \rightarrow \text{D}_{23} \rightarrow \text{D}_{24} \rightarrow \text{D}_{25} \rightarrow \text{D}_{26} \rightarrow \text{D}_{27} \rightarrow \text{D}_{28} \rightarrow \text{D}_{29} \rightarrow \text{D}_{30} \rightarrow \text{D}_{31} \rightarrow \text{D}_{32} \rightarrow \text{D}_{33} \rightarrow \text{D}_{34} \rightarrow \text{D}_{35} \rightarrow \text{D}_{36} \rightarrow \text{D}_{37} \rightarrow \text{D}_{38} \rightarrow \text{D}_{39} \rightarrow \text{D}_{40} \rightarrow \text{D}_{41} \rightarrow \text{D}_{42} \rightarrow \text{D}_{43} \rightarrow \text{D}_{44} \rightarrow \text{D}_{45} \rightarrow \text{D}_{46} \rightarrow \text{D}_{47} \rightarrow \text{D}_{48} \rightarrow \text{D}_{49} \rightarrow \text{D}_{50} \rightarrow \text{D}_{51} \rightarrow \text{D}_{52} \rightarrow \text{D}_{53} \rightarrow \text{D}_{54} \rightarrow \text{D}_{55} \rightarrow \text{D}_{56} \rightarrow \text{D}_{57} \rightarrow \text{D}_{58} \rightarrow \text{D}_{59} \rightarrow \text{D}_{60} \rightarrow \text{D}_{61} \rightarrow \text{D}_{62} \rightarrow \text{D}_{63} \rightarrow \text{D}_{64} \rightarrow \text{D}_{65} \rightarrow \text{D}_{66} \rightarrow \text{D}_{67} \rightarrow \text{D}_{68} \rightarrow \text{D}_{69} \rightarrow \text{D}_{70} \rightarrow \text{D}_{71} \rightarrow \text{D}_{72} \rightarrow \text{D}_{73} \rightarrow \text{D}_{74} \rightarrow \text{D}_{75} \rightarrow \text{D}_{76} \rightarrow \text{D}_{77} \rightarrow \text{D}_{78} \rightarrow \text{D}_{79} \rightarrow \text{D}_{80} \rightarrow \text{D}_{81} \rightarrow \text{D}_{82} \rightarrow \text{D}_{83} \rightarrow \text{D}_{84} \rightarrow \text{D}_{85} \rightarrow \text{D}_{86} \rightarrow \text{D}_{87} \rightarrow \text{D}_{88} \rightarrow \text{D}_{89} \rightarrow \text{D}_{90} \rightarrow \text{D}_{91} \rightarrow \text{D}_{92} \rightarrow \text{D}_{93} \rightarrow \text{D}_{94} \rightarrow \text{D}_{95} \rightarrow \text{D}_{96} \rightarrow \text{D}_{97} \rightarrow \text{D}_{98} \rightarrow \text{D}_{99} \rightarrow \text{D}_{100}$





Kreislauf

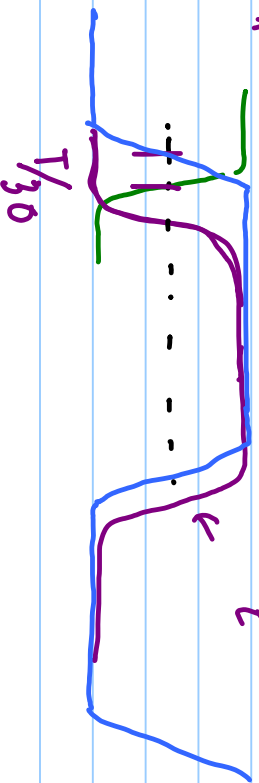


$$V_{in} = V_{DD}$$

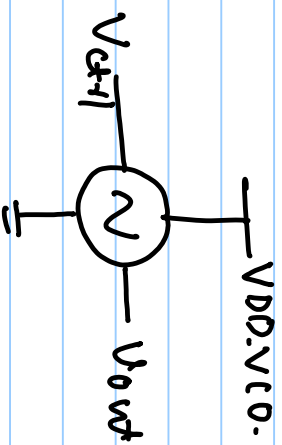
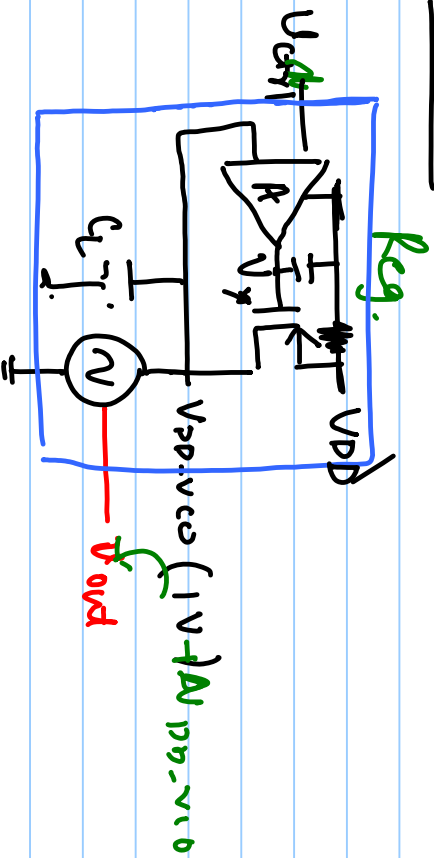
$$V_{ov, nmos} = V_{DD} - V_{tn} \quad , \quad V_{ds} = 0.$$

$$V_{ov, pmos} = V_{DD} - V_{tp} - |V_{tp}| < 0$$

Kreislauf



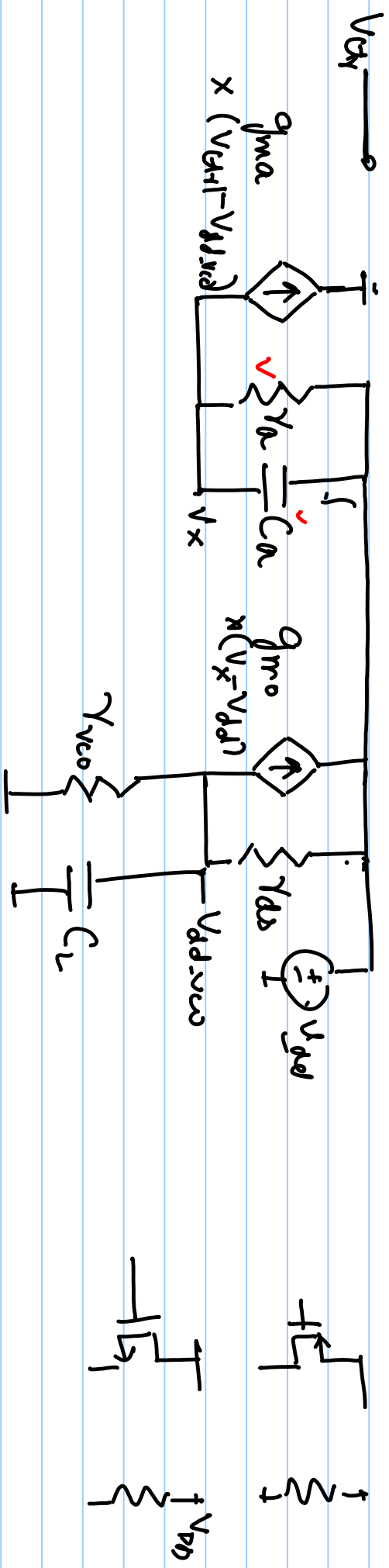
PSRR



$$V_{out} = A \sin(\omega_{freq} t + 2\pi K_{vco} \int V_{GM1} dt)$$

$$\frac{V_{DD-V_{C0}}}{V_{GM1}} = H(s) \quad - \quad V_{out} = A \sin(\omega_{freq} t + 2\pi K_{vco} \int V_{GM1} dt)$$

$$L.N(s) = \frac{1}{2\pi} T_{cp} (1 + 1/s) \frac{2\pi K_{vco}}{s} \times \frac{1}{(1 + s/\omega_{reg})}$$



$$\frac{V_{dd-vco}(s)}{V_{in-1}(s)} = \frac{L_{nreg}}{1 + L_{nreg}} \quad L_{nreg} = \frac{(g_{m1}r_a)(g_{m2}r_o)}{(1+s/\omega_a)(1+s/\omega_o)}$$

$$\approx \frac{1}{(1+s/\omega_{reg})}$$

$$\omega_a = \frac{1}{r_a C_n}$$

$$\omega_o = \frac{1}{(r_{ds1} || r_{ds2}) C_L}$$

