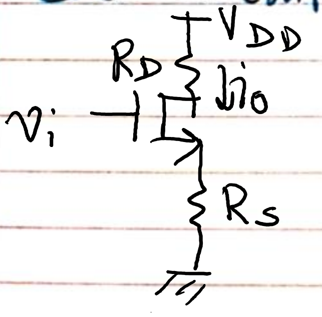
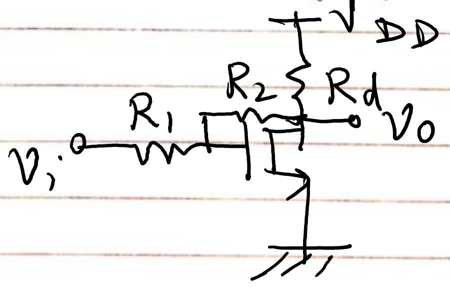
1. Consider four types feedback networks and find out the change in input resistan output resistance and gain each case.

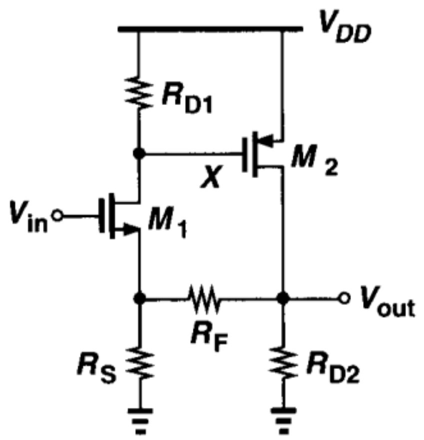
2. Show that negative feedback can increase the cut-off frequency of a low pass filter keeping the gain-bandwidth product constant

3. Consider the gain block as a two port network... Similarly consider the feedback network as a two port network. Find out the gain with feedback for all four types of feed-back networks.

4. Find out the ~~gain~~ ~~openloop~~ gain, input and output impedances w/ and w/o feedback for the following circuits. Also, identify the nature of feedback in each circuit:

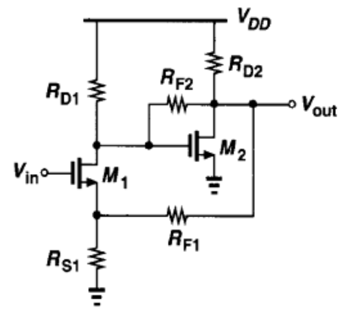






5.

In the circuit of Fig. 8.63, suppose all resistors are equal to 2 kΩ and $g_{m1} = g_{m2} = 1/(200\ \Omega)$. Assuming $\lambda = \gamma = 0$, calculate the closed-loop gain and output impedance.

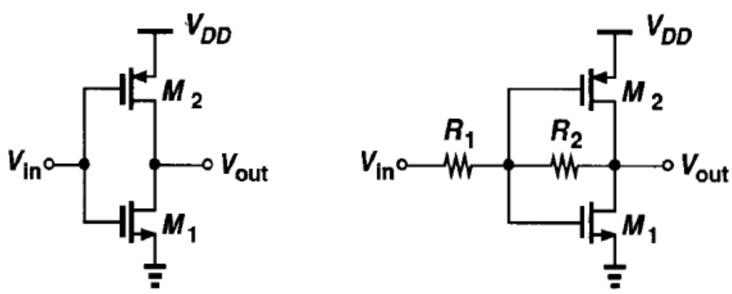


6.

8.20. A CMOS inverter can be used as an amplifier with or without feedback (Fig. 8.64). Assume $(W/L)_{1,2} = 50/0.5$, $R_1 = 1$ kΩ, $R_2 = 10$ kΩ, and the dc levels of V_{in} and V_{out} are equal.

(a) Calculate the voltage gain and the output impedance of each circuit.

(b) Calculate the sensitivity of each circuit's output with respect to the supply voltage. That is, calculate the small-signal "gain" from V_{DD} to V_{out}. Which circuit exhibits less sensitivity?



(a) (b)

7. In the circuit of Fig. 8.66, assume $\lambda = 0$, $g_{m1,2} = 1/(200\ \Omega)$, $R_{1-3} = 2\ k\Omega$, and $C_1 = 100$ pF. Neglecting other capacitances, estimate the closed-loop voltage gain at very low and very high frequencies. (5+5)

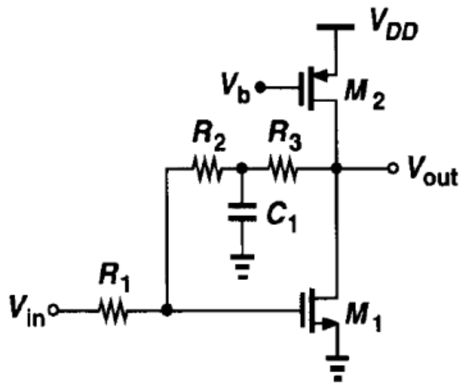


Figure 8.66