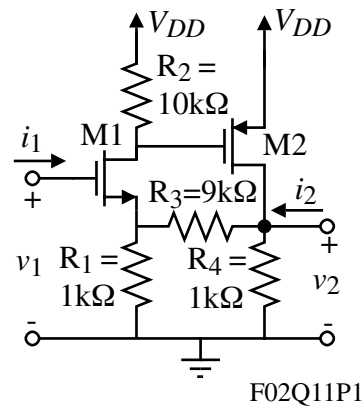


Homework Assignment No. 12

Due on Monday, November 8, 2004

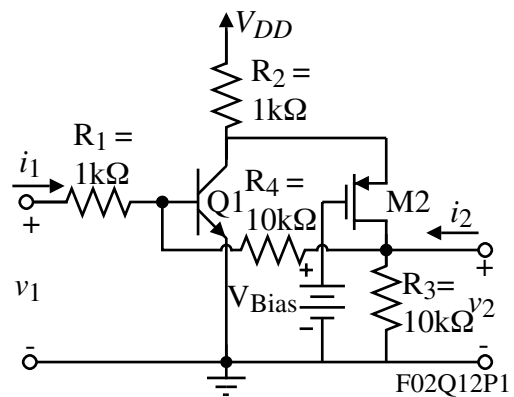
Problems in () correspond to the first edition.

1.) A series-shunt feedback amplifier is shown. Use the methods of feedback analysis to find the numerical values of v_2/v_1 , v_1/i_1 , and v_2/i_2 . Assume that all transistors are matched and that $g_m = 1\text{mS}$ and $r_{ds} = \infty$.



2.) Problem 18.23 (18.16) of the text.

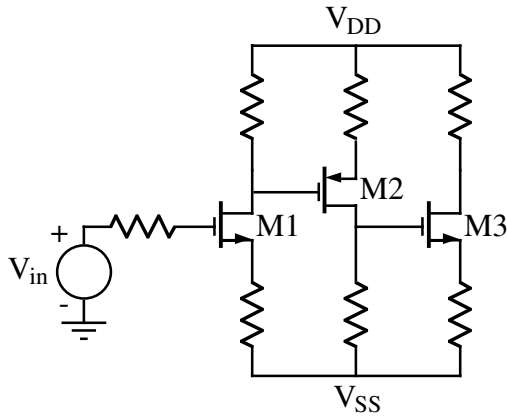
3.) A shunt-shunt feedback amplifier is shown. Use the methods of feedback analysis to find the numerical values of v_2/v_1 , v_1/i_1 , and v_2/i_2 . For Q1, assume that $h_{fe} = 100$, $g_m = 50\text{mS}$ and $r_o = \infty$. For M2, assume that $g_m = 1\text{mS}$ and $r_{ds} = \infty$.



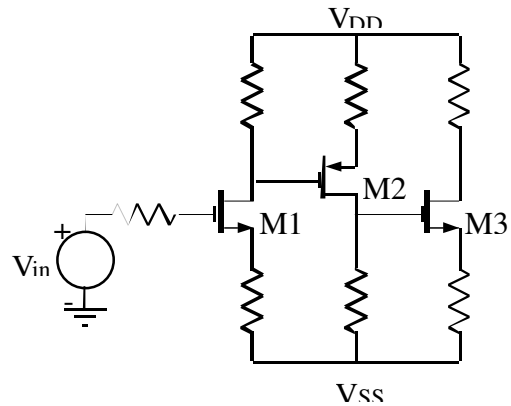
4.) Problem 18.29 (18.22) of the text.

5.) For each of the MOSFET amplifiers shown below, show how to connect a single resistor from the output to the input that achieves a series-shunt, series-series, shunt-shunt and shunt-series negative feedback amplifier. For each of the four configurations, identify on the schematic the correct variables (x_s , x_f , x_i , and x_o). The outputs should be at the drain or source of M3.

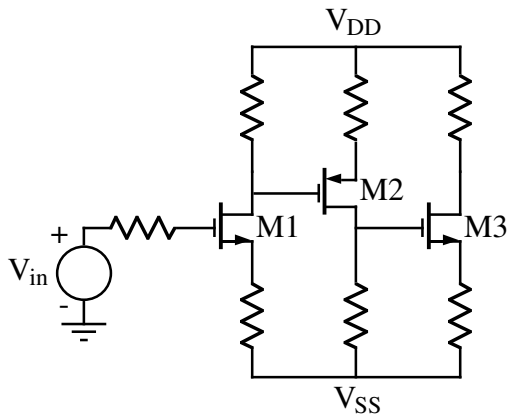
Series-Shunt



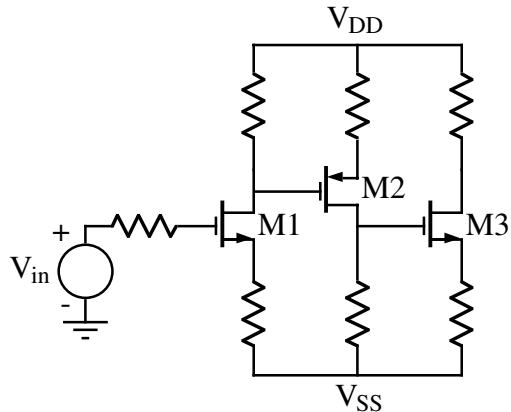
Shunt-Series



Shunt-Shunt



Series-Series



Please note that there are numerous feedback problems you can work (answers only are provided) on the class website.