UNIVERSITY OF CALIFORNIA AT BERKELEY
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1. In the circuit of Fig.1, ignore all device capacitance. Include only C_{GS1}, C_{GS3}, and C_O in your calculations. Take $\lambda n = 0.01$ and all $V_{DSAT} = 200mV$. Also take $C_{GS1} = C_{GS2} = 1pF$ and $C_O = 100nF$. Assume M1-3 are active.

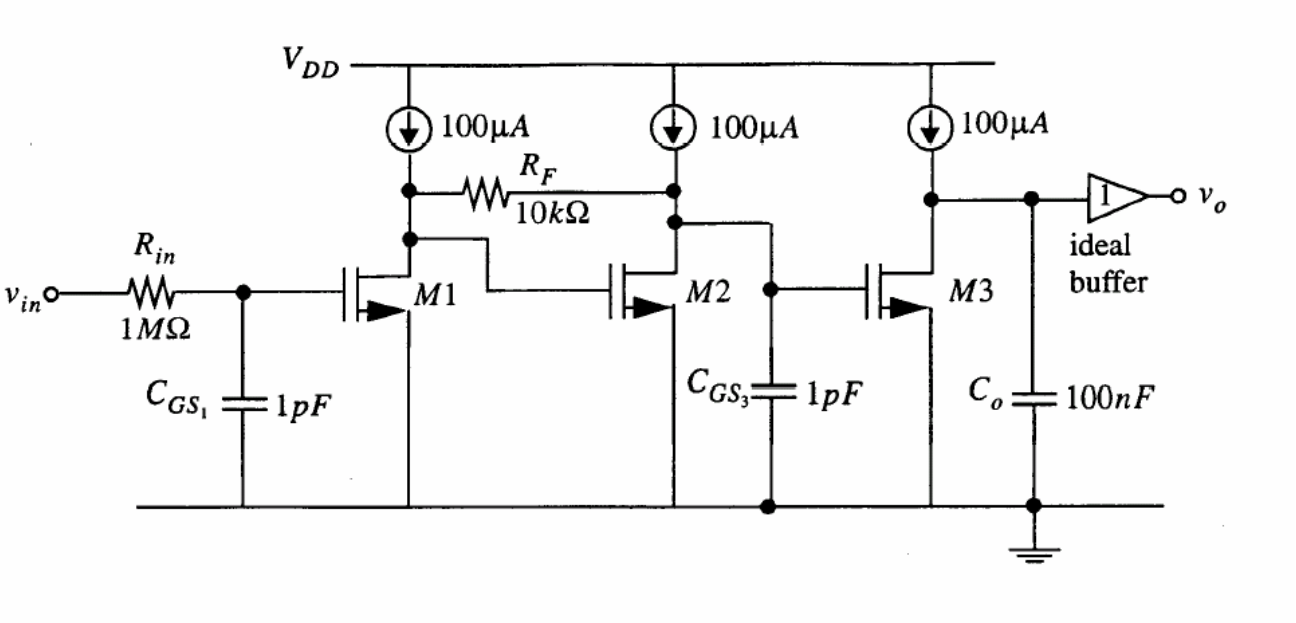

Fig. 1

a. Determine the poles of the amplifier of Fig.1 if $R_F = \infty$, i.e. if R_F is removed.
b. If the amplifier of Fig.1 with $R_F = \infty$ was connected in a unity gain connection, i.e. connect Vin to Vo, would the circuit be stable? Explain.
c. Determine the poles of the amplifier with $R_F = 10k\Omega$.
d. Determine the low frequency gain of the amplifier if $R_F = 10k\Omega$.
e. Estimate the frequency of the lowest pole in a unity gain feedback connection with $R_F = 10k\Omega$, i.e. connect Vin to V_o.

2.

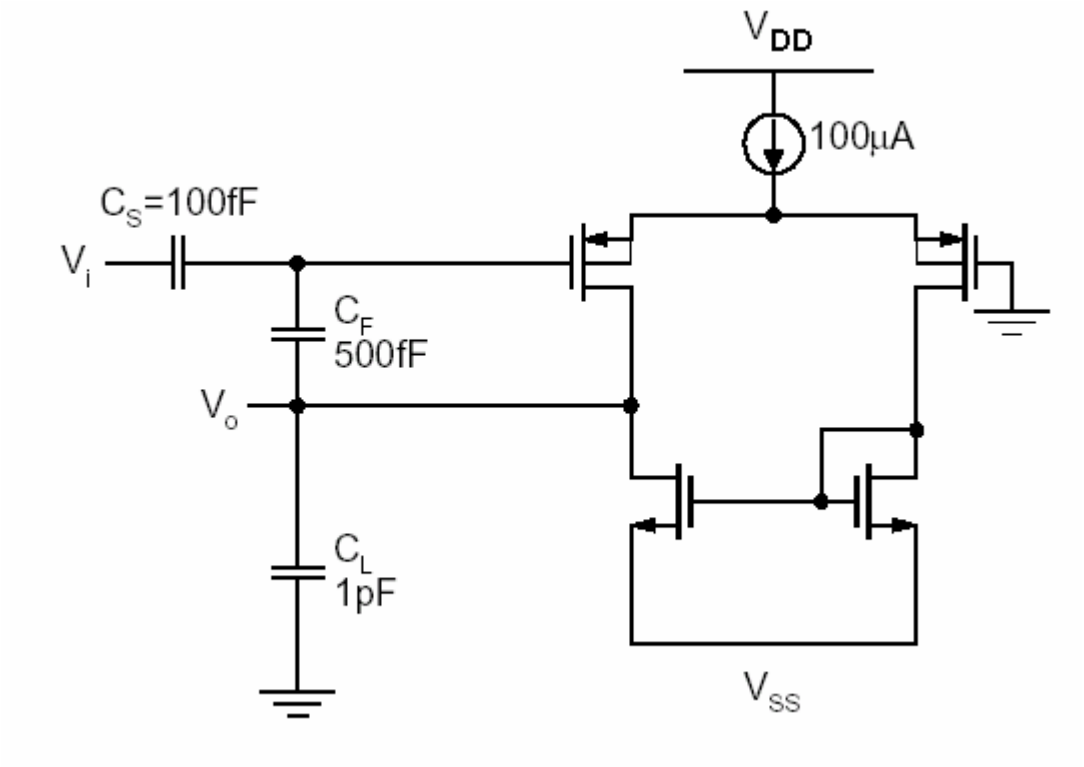

Fig. 2

In the circuit shown in Fig.2, estimate the settling time for 0.1% error for an input step amplitude Vi = 2V into the amplifier below. Neglect all capacitors except the three that are explicitly shown. V_{DSAT} = 200mV (all device). Assume all devices in saturation, amplifier is stable and $\lambda n = \lambda p = 0.1$.