

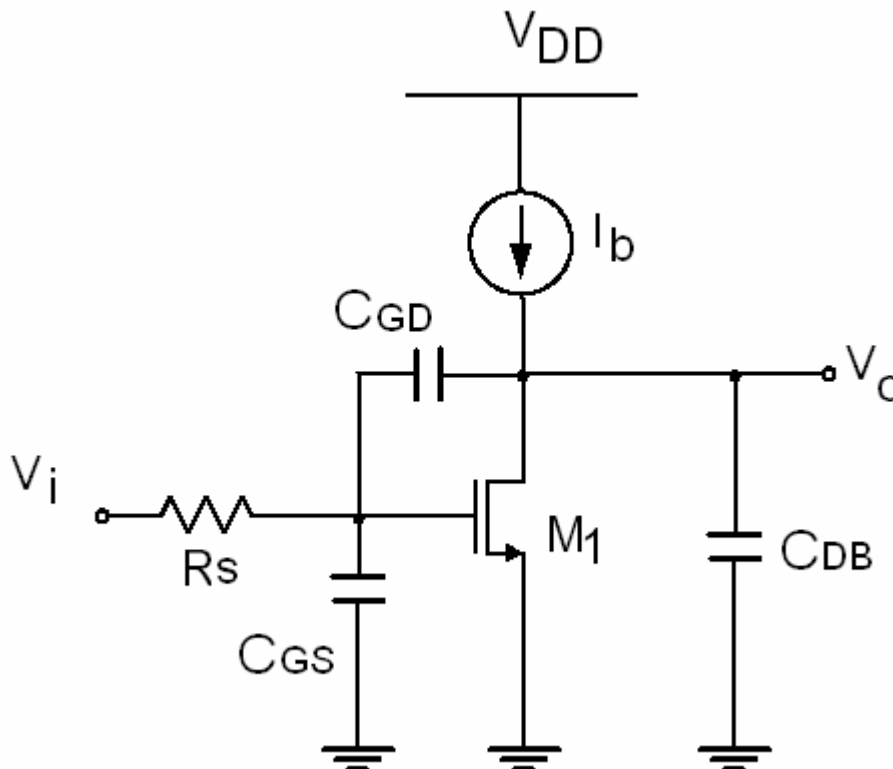
UNIVERSITY OF CALIFORNIA AT BERKELEY
College of Engineering
Department of Electrical Engineering and Computer Science

R.W. Brodersen
Jianhui Zhang

Homework #7
(Due 11/05/03)

EECS 140
Fall 2003

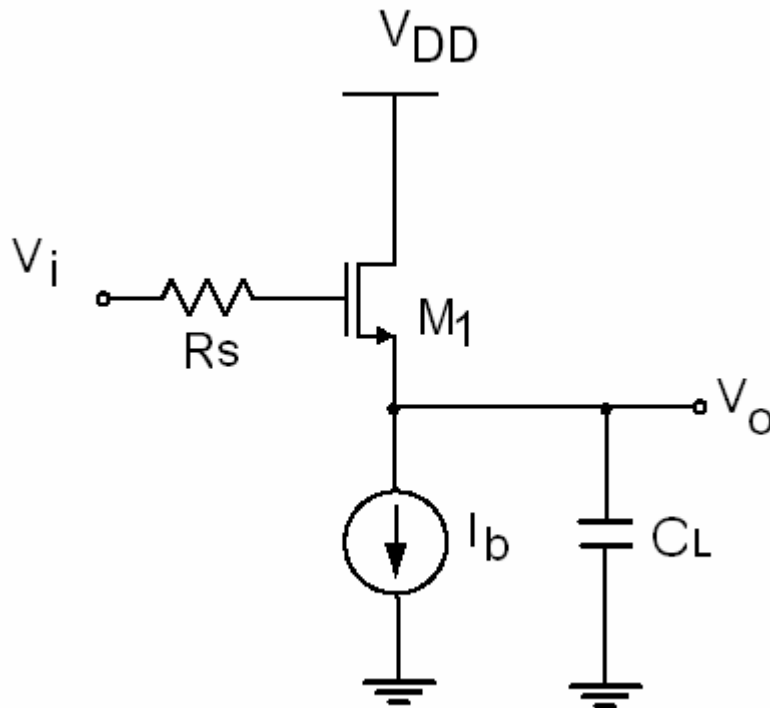
1.



For the circuit shown above, note there are only two poles, why? Calculate those two poles. (We are looking for a somewhat more insightful explanation than “because the denominator of the transfer function is of the second order.”)

Then, how many poles are there if there happens to be a resistance, R_{GD} in series with C_{GD} ? Explain and calculate all the poles.

2.



For the circuit shown above,

- Compute the impedance looking into the source terminal as a function of frequency. (Ignore C_{gd} for simplicity and do not include C_L).
- If $1/g_m < R_s$, the output impedance of the source follower (the circuit shown above) shows inductive behavior, Why? If we use an equivalent three components circuit below to represent the output impedance of the source follower, find the expressions for all three elements.

