Homework Set 1 due Friday 02/02/07
If not yet done, download the bicmos12 files and the 4007 (=RCA36000) CMOS models
(in Spice model file ANL_MISC.lib) to use in your Spice programs. For grading
purposes submit your circuit diagrams as well as requested plots.

1. [50 points] (analysis and transfer function of an op-amp circuit)
For the following calculate the transfer function T(s)=Vo/Vi under the two conditions:
   a) The op amp is ideal. Also sketch the frequency response magnitude of T(jω).
   b) The op amp is linear and described by Vo(s)=[K/(1+(s/ωo))]Vd(s)
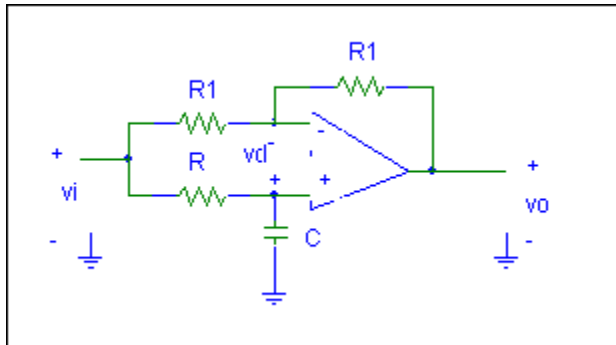
2. [50 points] (use of DC sweeps with parameters for NMOS transistors)
Set up the following two circuits in Spice using mnmosis transistors (from the bicmos12
      library) and then do dc runs. For part a) fix Vbias1=Vbias2=2V and vary Vdd1 and
      Vdd2 from 0 to 8V in DC sweeps.
a)   For each circuit plot the drain current, ID, versus the drain voltage measured with
      respect to ground (that is the indicated Vdd).
b)   Use Vbias1 as a nested DC sweep from -4V to +4V in 2V steps, and repeat part a)
      for the left circuit.
c)   Choose the channel width, W, as a parameter, varying it from 5u to 20u in 5u steps
      (giving four curves on a plot) and repeat part a). Then also repeat part b) with W
      still a parameter.