303H Fall 2011– Homework 1 Due Tu 09/13/11

1. (50 points, BJT curves)
   Run simultaneous DC curves for the BJT 2N3904 & 2N3906 of IC versus VCE
   for the npn and VEC for the pnp with IB as a parameter to get curves of the type
   of Figure 6.19 of p. 375.
   For this you can use one current source Iin for the base currents into two F
   components with their outputs being IB for the two transistors (note the negative
   sign on the pnp IB). And one voltage source Vbias for the collector – emitter
   voltages.
   Submit these curves for 0Vbias≤5 in 0.1V steps nested with 0≤Iin≤90uA in 30uA
   steps.

2. Download the bicmos12 set. [These can be found by downloading from the
   course web page the transistor files bicmosis12.olb and bicmosis12.lib (or for
   PSpice 8 the two equivalent files bicmosis12.slb & bicmosis12.lib). These files
   may already be installed but if not install them on the computers or folders from
   which you will run Spice]

3. (50 points, NMOS curves)
   For just the mnmosis transistor of the bicmosis12 set do a DC run ID versus
   0≤VDS≤5 with 0≤VGS≤5 incremented in 1V steps.
   Submit both your circuit and the resulting curves.