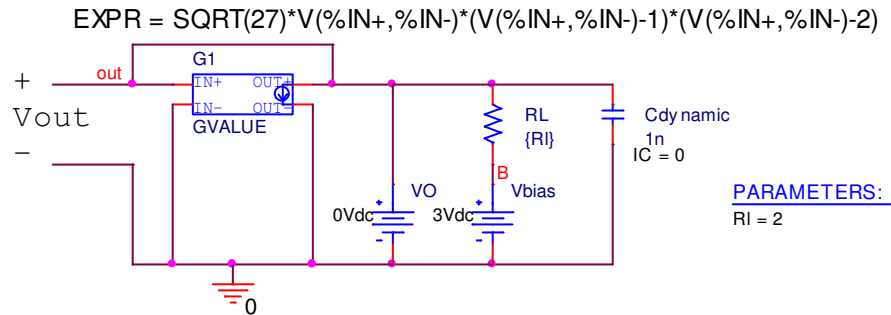


610 Fall 2014 – Homework 2 Due Th 09/18/14

The Gvalue part is in the abm.olb library
 The PARAM part is in the SPECIAL library.

1. (50 points, Gvalue and load line)
 - a) Set up the following circuit in Spice and use that to plot the DC curves of the diode connected Gvalue and its load line over the Gvalue voltage source, VO, of 0 to 5 V and again, by “zooming” with the x-axis setting, over 0 to 2.2 V. Use the parameter and vary RL from 1 Ohm to 7 Ohms in 2 Ohm steps. Change all traces to black and submit your curves along with your circuit diagram. [note that the diode curve is designed to be a cubic with zeroes at v=0,1,2 and a max of 2 between the first two zeroes].



- b) Run a transient analysis and plot the current in the capacitor versus the voltage on the capacitor (be sure to remove VO).
2. (50 points, transistor amplifier graph)

For the following circuit

 - a) Draw the small signal equivalent circuit (note E becomes a short & the top of R_D connects to ground).
 - b) Draw a directed graph directing branches down or to the right; number branch 1 for R_1-e_1 and branch 2 for R_D . Choose a numbering such that the tree is the first four branches,
 - c) Give the cut-set and tie-set matrices.
 - d) Give the branch by branch admittance matrix.

