

ENEE 417 – Spring 2010  
Weeks #3 & #4; starting 02/08/10  
Design #1: Op-Amp Curve Tracer

- a. If Laboratory Projects for weeks 1 & 2 have not been run, do those first.  
No report is needed for weeks 1 & 2 but be sure to have gained working knowledge of the tools, especially LabVIEW, data acquisition, and Spice using transistor models.
- b. In this experiment for weeks 3 an op-amp curve tracer will be designed, constructed, and tested; use 1458 op-amps and bias them with symmetric + & - voltages of about 15 volts each.
1. Review use of a) the Tektronix 577-177-D1 commercial curve tracer and b) curve tracing in PSpice (or Spice).
  2. Design an op-amp curve tracer following the circuit shown below. Test this on resistors and diodes; compare with the results from the commercial curve tracer. Using LabVIEW as a signal generator for your op-amp curve tracer, obtain 2N3904 transistor curves.
  3. Using the LabVIEW oscilloscope, obtain a hard copy along with a file of the curves on a disk.
  4. Use LabVIEW to computer control the Tektronix oscilloscope and record a file on disk of the curves. Print them on the 417 laboratory printer.
  5. For the 4007 CMOS transistors, use the DAQ card to acquire transistor curve data from the circuit below and display on a virtual oscilloscope the ID versus VDS curves with VGS as a parameter. Compare with curves obtained via Spice using the equivalent RCA 3600 transistor models.
  6. Write a one to three page report summarizing your results (for this op-amp curve tracer).

**(as soon as possible) make a parts list from your final choice of circuit and paper and give this to the laboratory technicians; verify that they will be able to obtain the parts needed.)**

