CSU200 Discrete Structures Professor Fell Fall 2004
Written Homework 1 Due: Wednesday, 9/22/2004
at the start of class

We expect your homework to be neat, organized, and legible. If your handwriting is unreadable, please type. We will NOT accept pages that are ripped from a spiral notebook. Please use 8.5" by 11" loose-leaf or printer paper.

1. Write the field axioms using Scheme notation. See section 2.1 and 2.2 of "How to Design Programs, An Introduction to Programming and Computing," Felleisen et al. (Note: There is a typo in the Distributive Law of the printed Field Axiom handout. It should be $x \times (y + z) = (x \times y) + (x \times z)$ and is fixed in the pdf.)

2. Which of these are fields? For those that are not fields, tell which axioms don't work.

$\mathbb{Q}, \mathbb{R}^+, \mathbb{Z}, \{\text{imaginary numbers}\}, \mathbb{C}$.

3. Create an Excel spreadsheet to compute values of the polynomial

$$3x^4 + 7x^3 - 11x^2 - 8x + 5$$

for integers x, $-10 \le x \le +10$. Create a graph of the polynomial for $-10 \le x \le +10$. Turn in a printout of your values and the graph. Here is a sample with another polynomial.

$2x^4 - 5x^3 - 210x^2 + 225x + 2000$

2	-10	3750
-5	-9	-268
-210	-8	-2488
225	-7	-3348
2000	-6	-3238
	-5	-2500
	-4	-1428
	-3	-268
	-2	782
	-1	1572
	0	2000
	1	2012
	2	1602
	3	812
	4	-268
	5	-1500
	6	-2698
	7	-3628
	8	-4008
	9	-3508
	10	-1750