Math 223, Spring '09
Homework 1, due Friday, February 6

Please read Chapter 1 in the textbook and turn in the solutions to the problems below. They refer to the handout on open problems we talked about on the first day of class.

Optional readings (both can be found in the "Handouts" folder of our conference):

- *Number_Systems.pdf*;
- *BriefHistoryOfNT.pdf*
- *Mersenne Primes.pdf*

(1) Show that the "$3n + 1$" algorithm terminates at 1 with 6 as the starting value.

(2) A *perfect number* is a number which is the sum of its divisors. For example, 1, 2, and 3 divide 6 and $6 = 1 + 2 + 3$. Find another perfect number.

(3) Find three *Mersenne primes*, namely primes of the form $2^p - 1$ where p is a prime.