Undergraduate Math Club
Fall 2007
2nd floor Nesbitt Common Room
October 18, 4:10-5:00pm
(free pizza and pop, as always)

The 3x+1 Problem

Professor Jeff Lagarias

Abstract

The notorious 3x+1 problem considers the function C(n) on positive integers: if n is even, divide by 2, and if n is odd, multiply by 3 and add 1, so C(2n)=n, C(2n+1)=6n+4. The 3x+1 Conjecture (or Collatz problem) is to show that starting from any positive integer n and iterating this function long enough, you will get to 1 (and then cycle through 1, 4, 2). This problem is unsolved. Despite its simple statement, it could well be the hardest problem in mathematics. The talk will discuss why it is probably true, and why it is a really hard problem.