Homework Assignment Five
Chaos and Complex Systems

Due Wednesday October 27, 2006.

Note: Please be sure to include a list of the references you consulted and any students you worked with.

1. Complete homework four.

2. Consider the cellular automata that corresponds to rule 150.
   (a) Write out the rule in pictorial form.
   (b) Start with a random initial configuration of width 16. By hand, iterate the CA for 5 generations.
   (c) Start with a single seed. Iterate the CA by hand for as many generations as you have the strength and motivation.

3. Convert the following numbers from base 10 to binary:
   (a) 3
   (b) 16
   (c) 15
   (d) 33

4. Convert the following numbers from binary to base 10:
   (a) 1
   (b) 10
   (c) 111
   (d) 1010

5. Optional, and potentially challenging. Argue that the set of rational numbers is countable.