Due at the start of class Fri, Apr 22, 2011.

Problem 1. Write a recursive program in Ruby to print out all the elements of an array. Do no use a loop, and do not use the Ruby command to print an array. The recursive program should print one element at a time. Run your program on a couple of examples, and show us the output.

Problem 2. Write out an inductive proof that shows that the sum of the first $N$ odd numbers is $N^2$.

Problem 3. Given a sorted array of numbers we would like you to write recursive binary search. Assume for simplicity that the element we are searching for is in the input array. Run your program on a couple of examples, and show us the output.

Problem 4. Modify the ruby program for computing squareroots to figure out the number of iterations the algorithm needs to compute $\sqrt{5}$ to 6 decimal places. Try a few other values as well.

Problem 5. Find two short (different) strings that map to the same value if we use the hash function defined in class (by taking mod 1021).