Due at the start of class Friday, Feb 25, 2011.

**Problem 1.** Imagine creating a new web page to sell cars. Somehow we convince someone to point to our web page (so our page gets crawled). Now how we can rig the system to get a high authority score (using Kleinberg’s definition) when someone is searching for the word **scooter**? You are allowed to create as many dummy pages as you want, but it is not possible to now convince the world to put pointers to these pages.

**Problem 2.** Prove that the sum of the degrees of all the nodes in a graph is an even number. Assume that the graph is undirected.

**Problem 3.** Derive a formula for the sum of the first $N$ odd integers.

**Problem 4.** Write a Ruby program to find the largest Fibonacci number that is at most a given value $N$.

**Problem 5.** Write a ruby program that scans an array and outputs the sum of all the (strictly) positive numbers in the array. The input array may contain zeros, or negative numbers.