CS 485 Assignment 10, due April 21

Your choice, either do problem 1 or do problems 2-5.

1. Write a program that will generate the URL's of n=1000 web sites selected at random. Run your algorithm with n=10 and turn in the 10 web sites with one or two words indicating what the web sites are. Fro example e-commerce site, someone's web page, or a journal article. The heart of your program will be a method to find random pages given some seed.

2. Prove that $trace(A) = \lambda_1 + \lambda_2 + \cdots + \lambda_n$

3. Prove that $trace\left(A^2\right) \neq \left(trace\left(A\right)\right)^2$ but that $trace(A^2) = \lambda_1^2 + \lambda_2^2 + \cdots + \lambda_n^2$

4. Consider a random walk on an undirected graph. Give conditions on the graph for the probability to converge to a stationary probability. Hint: For bipartite graphs the probability oscillates and for a single cycle the probability does not converge.

5. Calculate the moments of $\frac{2}{\pi}\sqrt{1-x^2}$.