Homework 2

Due date: Tuesday, January 23

1. Franklin Chapter 1, Problem 7, page 20.
2. Franklin Chapter 2, Problem 3, page 37.
3. Franklin Chapter 2, Problem 7, page 37.
4. Franklin Chapter 2, Problem 4, page 43.
5. Franklin Chapter 2, Problem 5, page 43.
6. Find the dimension of the space of n by n symmetric matrices, as well as a basis.
7. If A is an n by n matrix such that $A^2 = A$ and rank $A = n$, prove that A must be the identity.
8. What is the rank of the n by n matrix with every entry equal to one? How about the "checkboard matrix," with $a_{ij} = 0$ when $i + j$ is even and $a_{ij} = 1$ when $i + j$ is odd?