CS 4810 Homework Assignment 12 due Friday class Dec 6

**Please place your net ID in upper right corner of your homework**

1. Prove or disprove that the set of all finite length strings with symbols from a countably infinite alphabet is countably infinite.

2. The vertex cover problem is to determine a set of $k$ vertices for which each edges is adjacent to at least one of the vertices. Describe how to convert a 3-CNF formula to an instance of the vertex cover problem.

3. Explain why the existences of a set of $k$ vertices in your graph for the previous problem implies that the 3-CNF formula is satisfiable?

4. Let $h(n)$ be the maximum number of moves that any Turing machine with $n$ states starting on blank tape can make before halting. Is $h(n)$ computable? Give a convincing proof of your answer.

5. Give a list ten properties concerning the class of recursive sets and/or the class of recursively enumerable sets such as "every recursive set is r.e". This can be the first item on your list.