CS 325 - Algorithms - Summer 2014 - Assignment 1

Directions: One of the questions on this assignment will appear on the quiz on Thursday, June 26.

1. Give an example (other than the one in class) of where the greedy coloring algorithm fails.
2. Clearly state a greedy minimum spanning tree algorithm.
3. Prove by induction that the number of subsets of an n-element set is 2^n.
4. Use contradiction to prove that $1 \cdot 2 + 2 \cdot 3 + \ + n(n+1) = \frac{n(n+1)(n+2)}{3}$.
5. Use induction to prove that $1 \cdot 2 + 2 \cdot 3 + \ + n(n+1) = \frac{n(n+1)(n+2)}{3}$.
6. Prove that a tree with n vertices has exactly $n - 1$ edges.