Homework 9

CS 3233 – Fall 2003 assigned November 20, 2003
Tom Bylander, Instructor due December 2, 2003

1. (10 pts.) Draw a full binary tree with height 4 and 7 leaf vertices.
2. (20 pts.) Suppose a full binary tree has 250 edges.
   (a) How many leaf vertices does the tree have?
   (b) How many internal vertices does the tree have?
   (c) What is the minimum height of the tree?
   (d) What is the maximum height of the tree?
3. (10 pts.) Represent the expression $((s * s) - (n * u * u))/(n - 1)$ using a binary tree.
4. (10 pts.) Write $((s * s) - (n * u * u))/(n - 1)$ in prefix notation.
5. (10 pts.) Write $((s * s) - (n * u * u))/(n - 1)$ in postfix notation.
6. (10 pts.) Do Exercise 9.4.14.
7. (10 pts.) Use a breadth-first search to produce a spanning tree for the simple graph of Exercise 9.4.14. Choose a as the root of the spanning tree.
8. Consider the weighted graph from Exercise 8.6.17(a).
   (a) (10 pts.) Show the order in which the edges of the minimum spanning tree are selected by Prim's Algorithm.
   (b) (10 pts.) Show the order in which the edges of the minimum spanning tree are selected by Kruskal's Algorithm.