For any problems that require an algorithm, include a brief English explanation of your algorithm.

Problem 1. Modify Kruskal's algorithm as follows. Sort the edges of the graph in DECREASING order, and then run the algorithm as before. True or False: This modified algorithms produces a MAXIMUM Cost Spanning Tree. If True then prove your answer, and if False then give a counterexample.

Problem 2. Do Exercise 5 on page 190 of Kleinberg and Tardos. Prove your algorithm places as few base stations as possible.

Problem 3. Do Exercise 9 on page 192 of Kleinberg and Tardos.

(c) What do you learn about the relationship of the two problems in terms of how hard they are to solve?

Problem 4. Do Exercise 24 on pages 200 and 201 of Kleinberg and Tardos. Prove your algorithm finds an optimal zero-skew tree.

Problem 5. Do Exercise 29 on page 203 of Kleinberg and Tardos.

Problem 6. Do Exercise 2 on page 246 of Kleinberg and Tardos.

Problem 7. Do Exercise 3 on pages 246-7 of Kleinberg and Tardos.

Problem 8. Assume we measure the distance between points in the plane using *Manhattan Distance*, where the distance between points (x_1, y_1) and (x_2, y_2) is $|x_1 - x_2| + |y_1 - y_2|$. Modify the closest-pair of points algorithm for this alternative method of measuring distance.