CSCI 570 - Fall 2016 - HW 7
Due October 21 2016

1. Solve Kleinberg and Tardos, Chapter 6, Exercise 10.
2. Solve Kleinberg and Tardos, Chapter 6, Exercise 20.
3. Given a sequence $\{a_1, a_2, ..., a_n\}$ of n numbers, describe an $O(n^2)$ algorithm to find the longest monotonically increasing sub-sequence.
4. You are given n points $\{(x_1, y_1), (x_2, y_2), ..., (x_n, y_n)\}$ on the real plane. They have been sorted from left to right and no two points have the same x-coordinate. That means $x_1 < x_2 < ... < x_n$.
   A bitonic tour is defined as follows. The tour starts from (x_1, y_1), goes through some intermediate points and reaches (x_n, y_n). Then it goes back to (x_1, y_1) through every one of the rest of the points. All points except (x_1, y_1) are thus visited exactly once. Furthermore, from (x_1, y_1) to (x_n, y_n), you have to keep going right at every step. Similarly, you have to keep going left from (x_n, y_n) to (x_1, y_1). Describe an $O(n^2)$ algorithm to compute the shortest bitonic tour.