

**Homework Assignment #5**  
**Due: October 22, 3:30 p.m.**

1. Suppose you are given  $n$  points described by Cartesian coordinates  $(x_1, y_1), (x_2, y_2), \dots, (x_n, y_n)$ . All the coordinates are integers between  $-n$  and  $n$ . Show how to sort the points according to their distance from  $(0, 0)$  in  $O(n)$  time. You do not have to give a formal proof in your solution, but you should briefly explain why your answer is correct.
2. Problem 8-3(a) on page 179 of the textbook. You do not need to give a complete proof of correctness. (You might want to write one to check that your algorithm is correct, but do not hand it in.) However, you should state pre- and post-conditions for any subroutine, and you should state loop invariants for any non-trivial loops in your algorithm.