**Problem 1**

1. for P = [1, 7/6, 3/2, 2] the 1D-DT is [[1, 7/6], [7/6, 3/2], [3/2, 2]]
2. 1. The 1D-DT is size n-1
   2. T is size 2\*n
   3. Search costs O(n) worst case
   4. Search costs O(log(n)) when randomized, even when searching for the worst case point, so long as the structure is generated randomly.

**Problem 2**

1. In a range tree it takes log(n) to locate a point. In an interval tree, whether you report a point depends on the location of its corresponding point. For every log(n) point lookup, you have to do another log(n) lookup to find its partner.
2. You only need to query for two points on a single segment if the first point resides inside the search box. If no endpoints intersect the window than no partner points need to be located.