**4.48**

Suppose we want to add the operation findKth to our repertoire. The operation findKth(k) returns the kth smallest item in the tree. Assume all items are distinct. Explain how to modify the binary search tree to support this operation in O(log N) average time, without sacrificing the time bounds of any other operation.

In a Binary Search Tree of Node T. Subtree to the left contains smaller elements the that of T. So that means kth smallest element belongs in the left subtree if k is smaller than those found in the left subtree and if k is larger than it is in the right subtree. We can then use recursion on the left subtree which repeatedly asks for the number of elements. A Binary Search Tree takes O(log n) and another O(log n) extra time to maintain the amount of elements. So I believe if you keep element information on the left subtree this should help with time and amount of space.