# Math 382

## Homework 5

## Due Friday, March 4

1. Given two nodes $x$ and $y$ that we wish to delete from a binary search tree, we could first delete $x$ and then $y$ or vice versa. Will the order of deletions affect the resulting tree? Prove that it won't or give a counterexample where it will. (Here consider just a standard binary search tree as described in the textbook, not an AVL tree.)

2. What is the smallest number of nodes that might possibly exist in an AVL tree of hieght 11? (Give an exact number.)

3. In an AVL tree, we require that the height of any two siblings differ by at most 1. Say instead we allowed them to differ by at most 3. Would this still result in the tree being $O(\lg(n))$ height? Prove your answer.