Questions on Binary Trees

1) Recall: Height of tree = longest path from root to leaf (count edges)

2) For binary tree of height $h$:
   1) Max # of leaves?
   2) Max # of nodes?
   3) Min # of leaves?
   4) Min # of nodes?

3) For $n$ nodes, we cannot do better than $O(?)$ height, and we want to avoid $O(?)$ height.
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4) Algorithm to find height of a tree with root root?
5) Are these BSTs?
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6) Delete Node 15?

delete(15)
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7) Delete Node 5?

What can we replace 5 with?
Fun with Binary Search Trees

- Implement a function to check if a binary tree is balanced. For the purposes of this question, a balanced tree is defined to be a tree such that the heights of the two subtrees of any node never differ by more than one.

- Given a sorted (increasing order) array with unique integer elements, write an algorithm to create a binary search tree with minimal height.