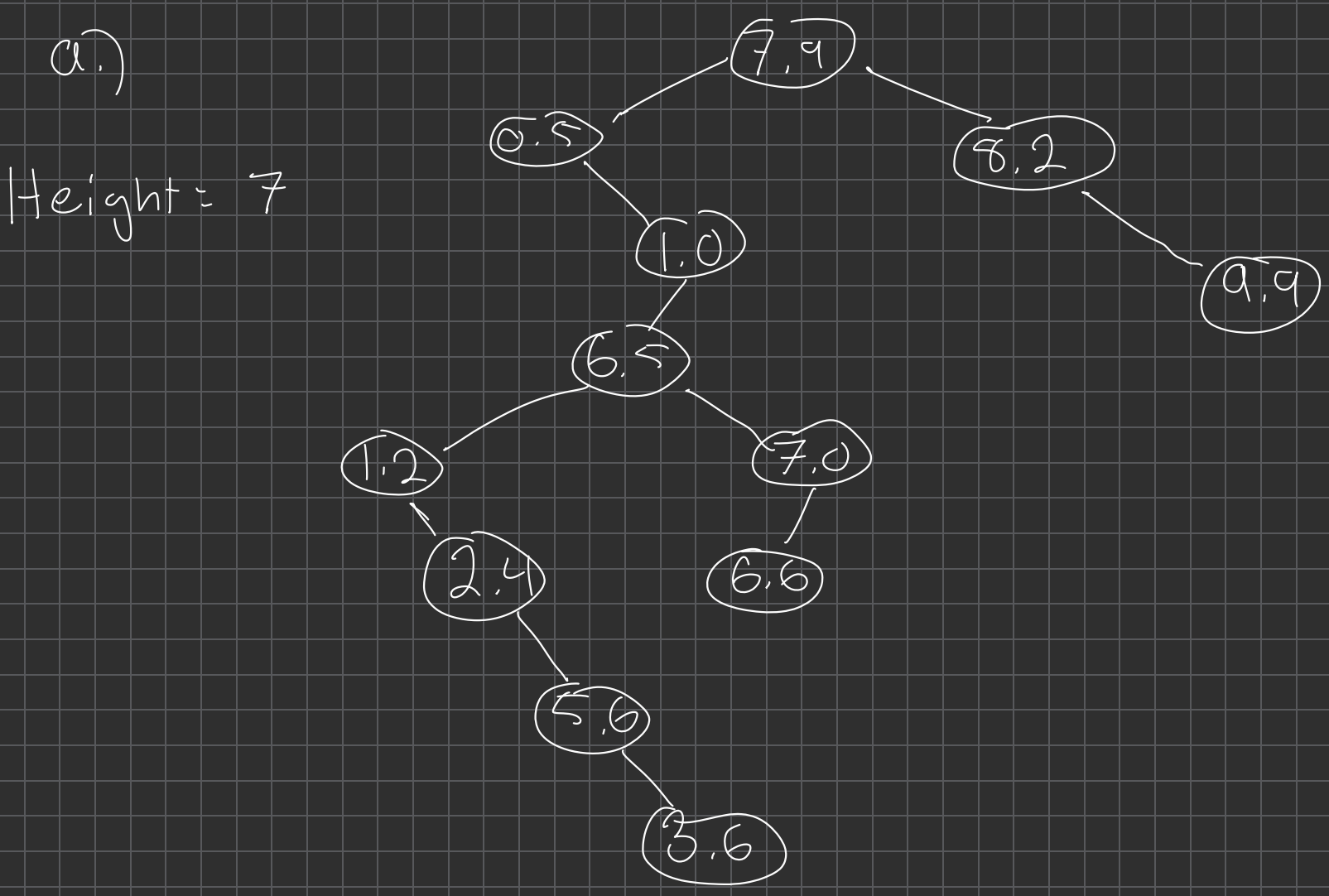
1 (text) Type of Tree [10 points] Given each of the following arrays, create a BST by adding each element of the array in the order it appears in the array. Afterwards, indicate what is the height of the resulting tree.

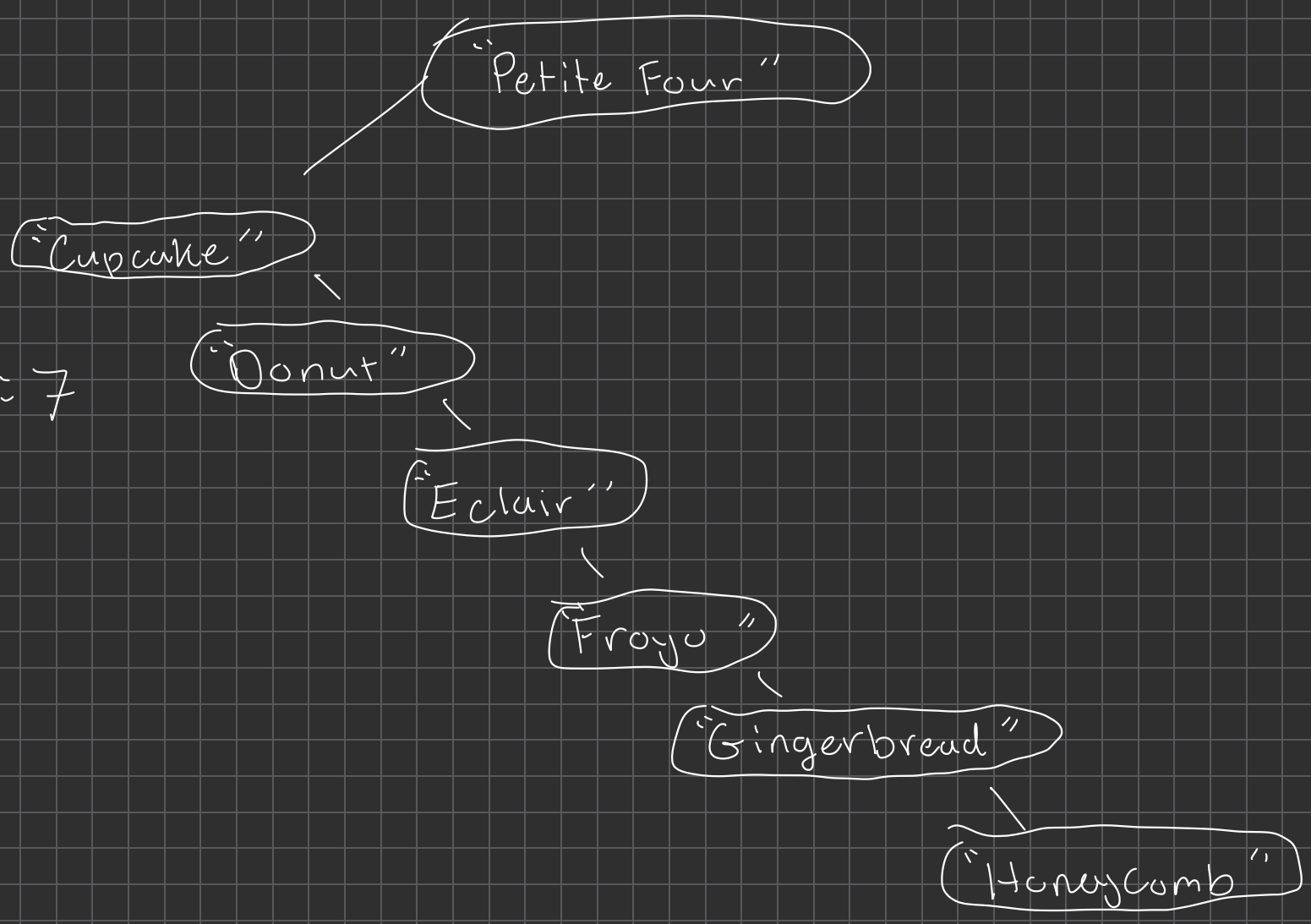
a) [7.9, 0.5, 1.0, 6.5, 8.2, 7.0, 6.6, 9.9,1.2, 2.4,5.6, 3.6]
b) [“Petit Four”, “Cupcake”, “Donut”, “Eclair”, “Froyo”, “Gingerbread”, “Honeycomb”]
c) [32, 5, 94, 87, 10, 18, 85, 47, 25, 29]
d) [34, 30, 75, 77, 96, 48, 39, 50, 93, 13, 10, 5, 11, 20, 19]

a)



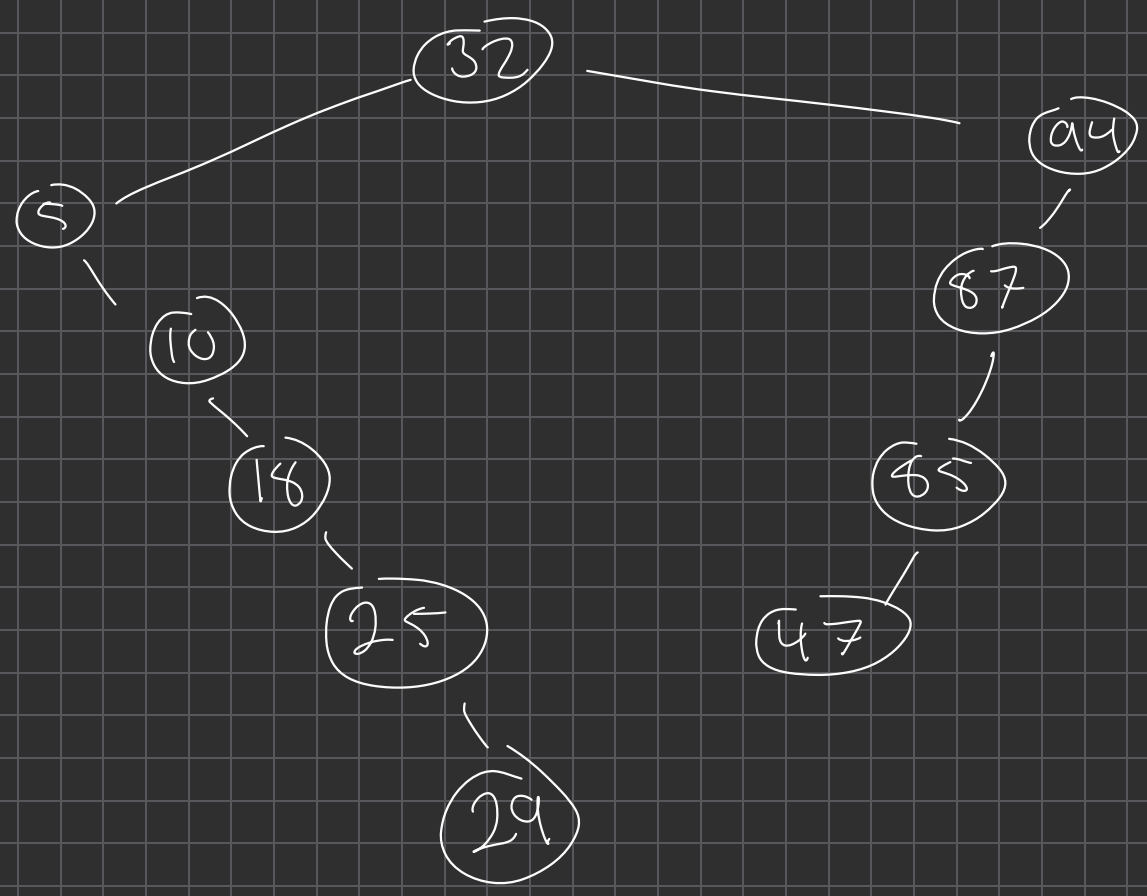
Height: 7

B)



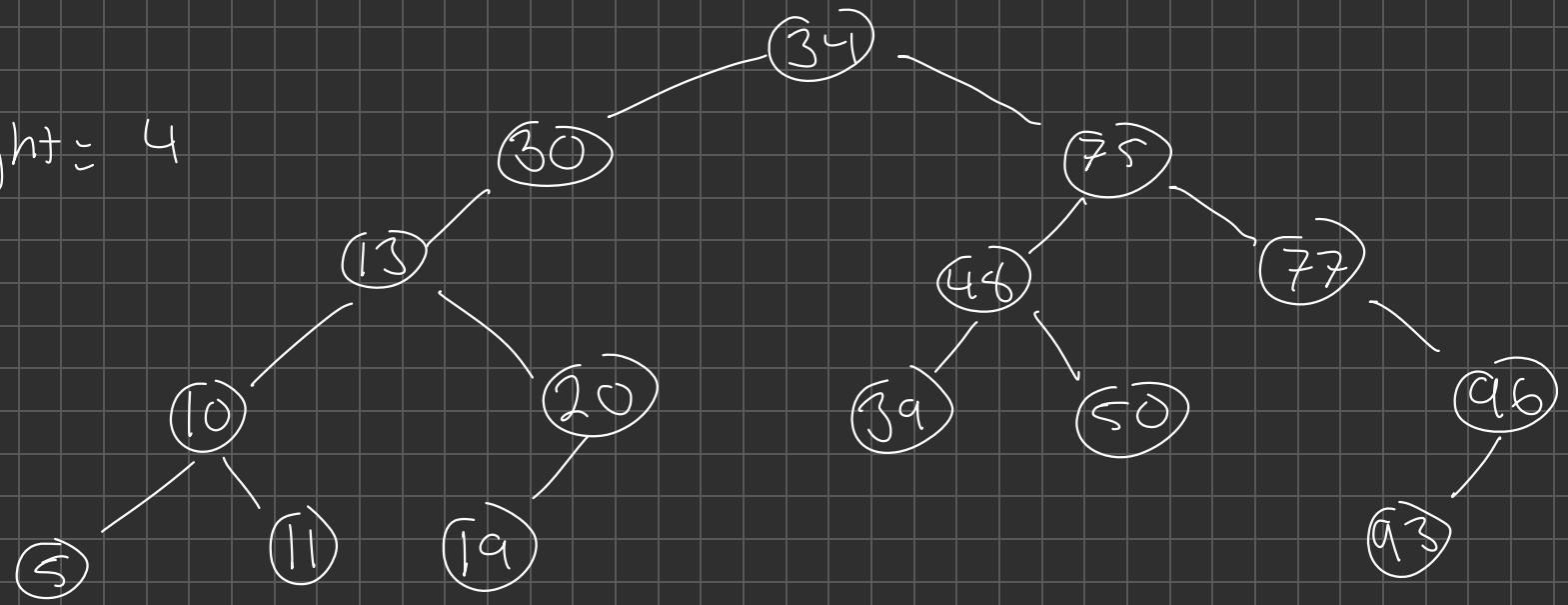
Height: 7

C.)



Height = 6

D.)

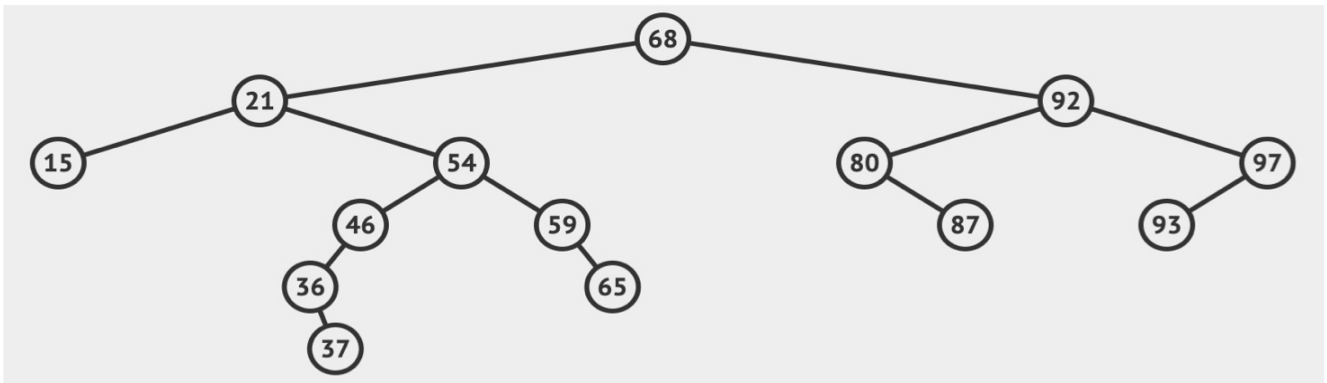


Height = 4

2 (text) BST Traversal [10 points] Given the following BST, in which the data on an empty node is 0.

a. **[6 points]** What will be the resulting tree after doing preorder and inorder traversal and applying the following operation on each node. Note round up the node values.

node.data += left.data + (right.data*2)



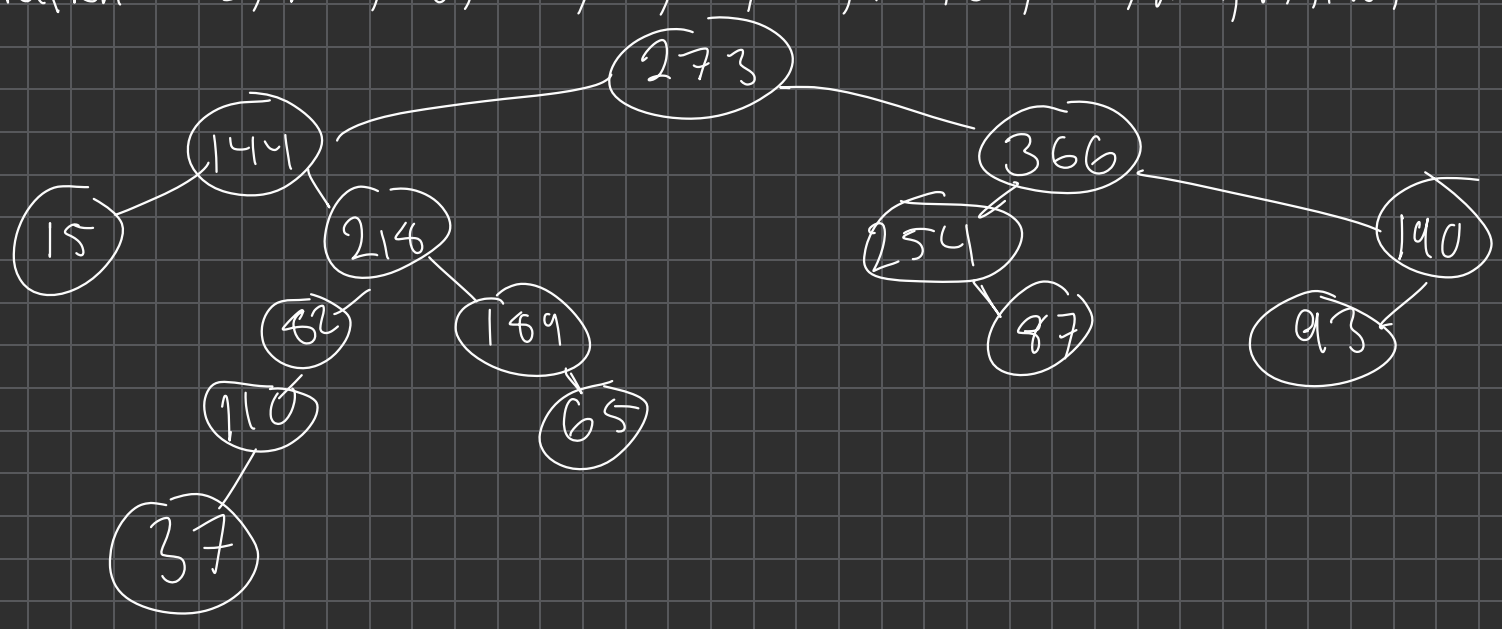
b. **[2 points]** Are the resulting trees BSTs?
c. **[2 points]** Are the resulting trees AVLs?

a.)

Preorder: Root → Left node → Right node.

Order: 68, 21, 15, 54, 46, 36, 37, 59, 65, 92, 80, 87, 97, 93

Operation: 273, 144, 15, 218, 82, 110, 37, 189, 65, 366, 254, 87, 190, 93



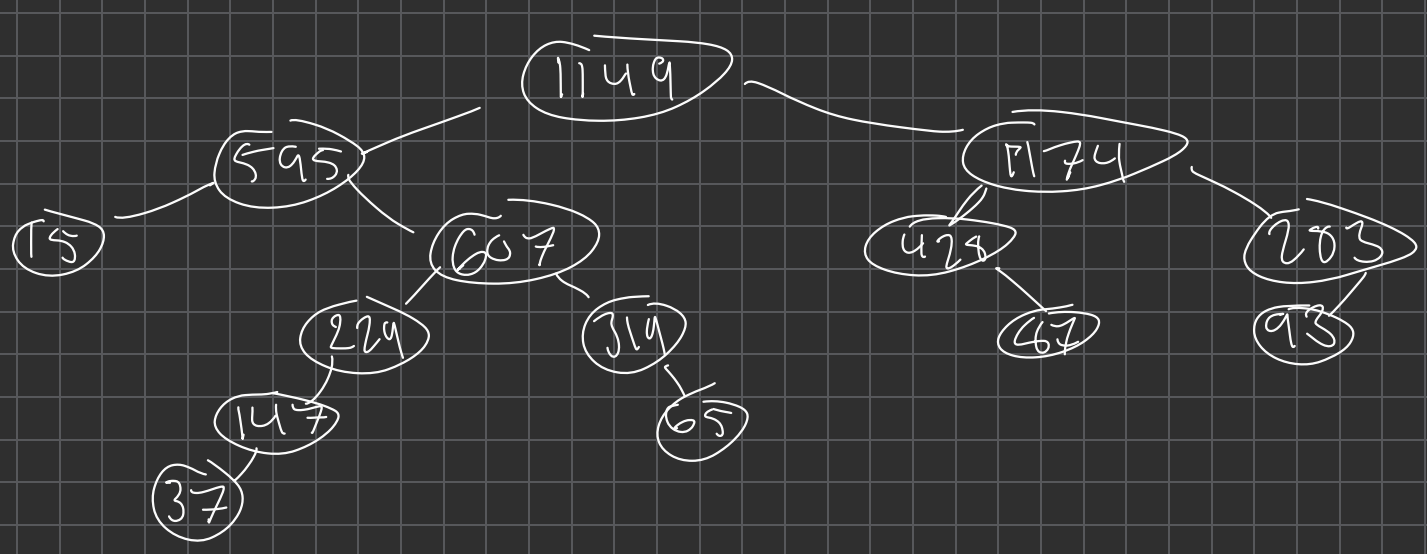
Inorder: Left → Root → Right

Order: 15, 144, 37, 110, 82, 218, 189, 65, 254, 87, 366, 93, 190

15, 595, 37, 147, 229, 607, 319, 65, 428, 87, 1174, 93,

273 + 366·2 + 144 = 1149

283



b.) Not a BST. 428 has a right child that is less than it. 428 > 87

c.) Not an AVL. None of the nodes has a balance factor.