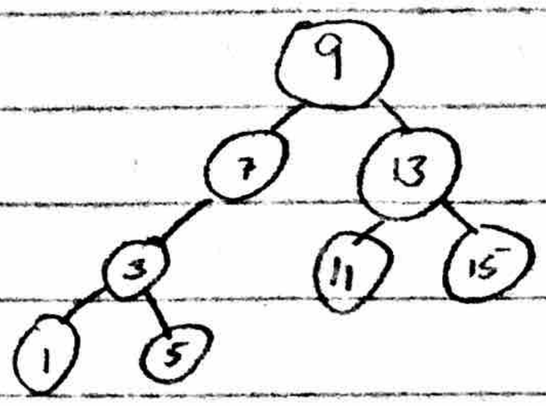
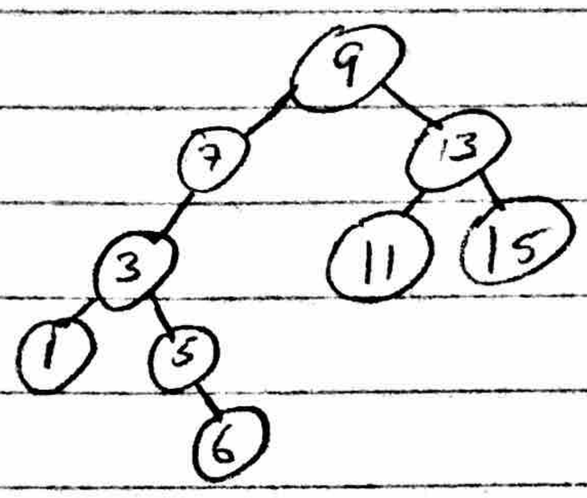
tgl632_hw8.pdf

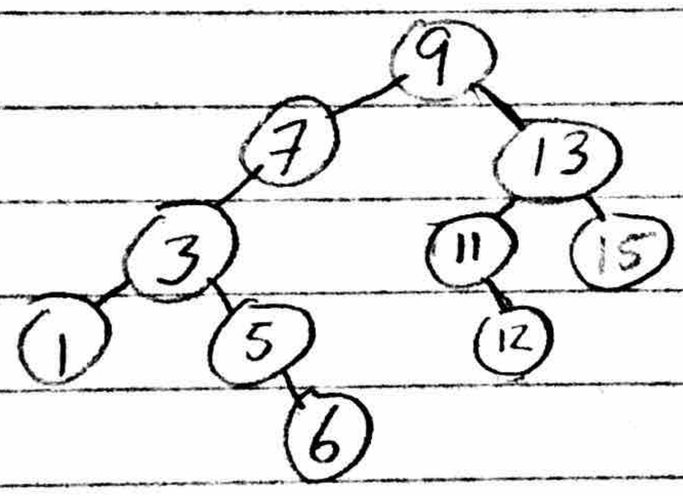
Question 1



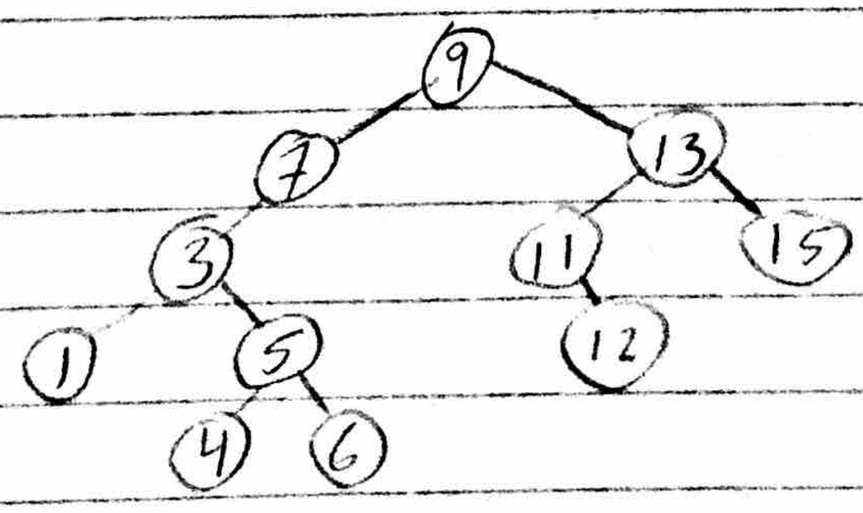
bst[6] = None



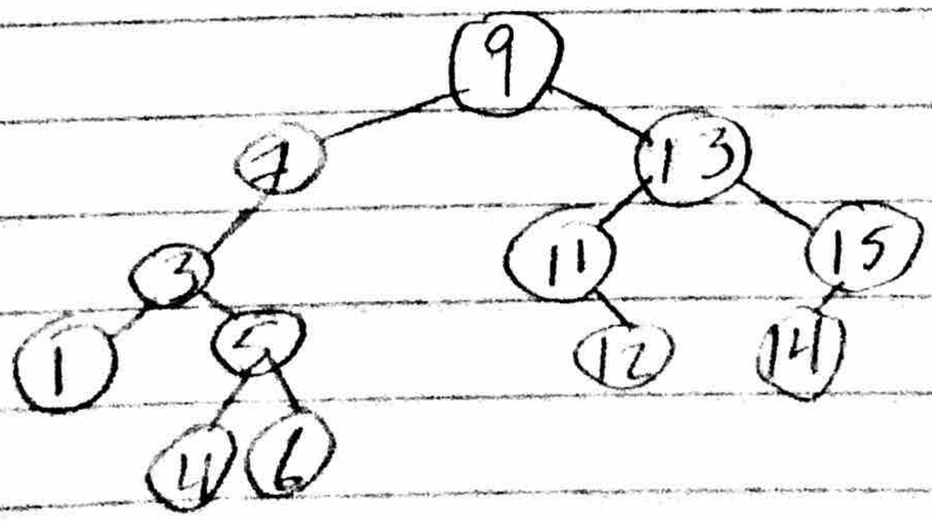
bst[12] = None



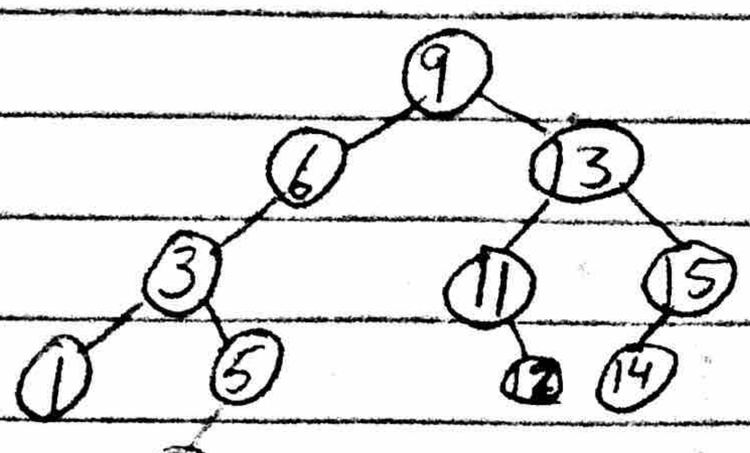
bst[4] = None



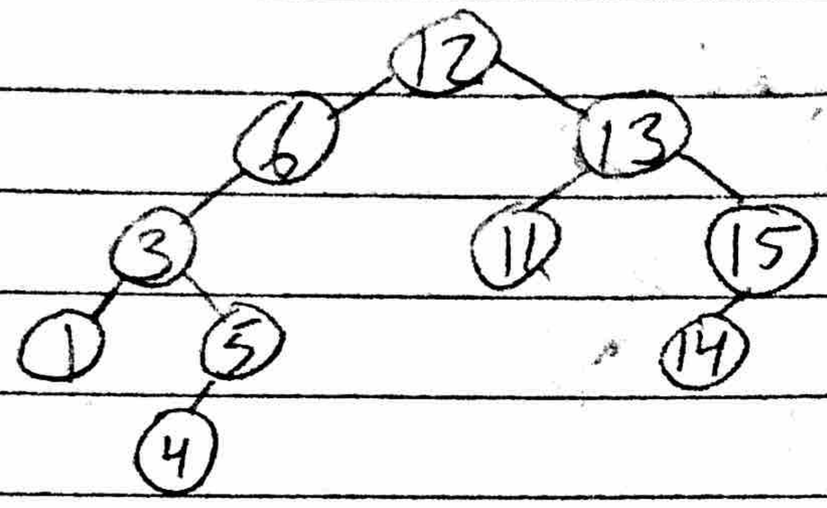
bst[14] = None



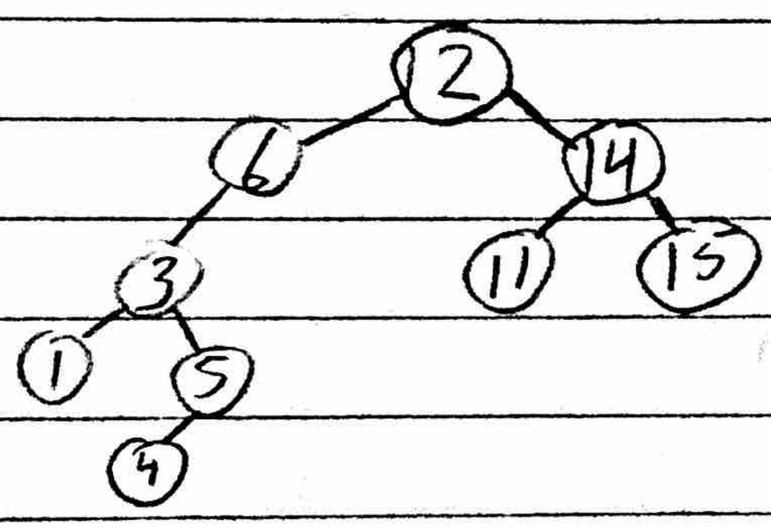
del bst[7]



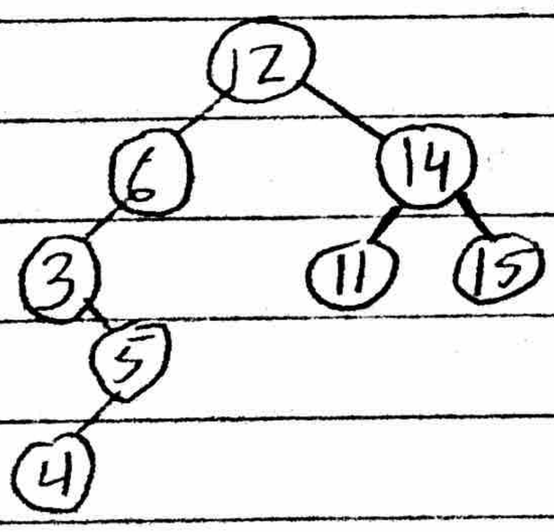
del bst[9]



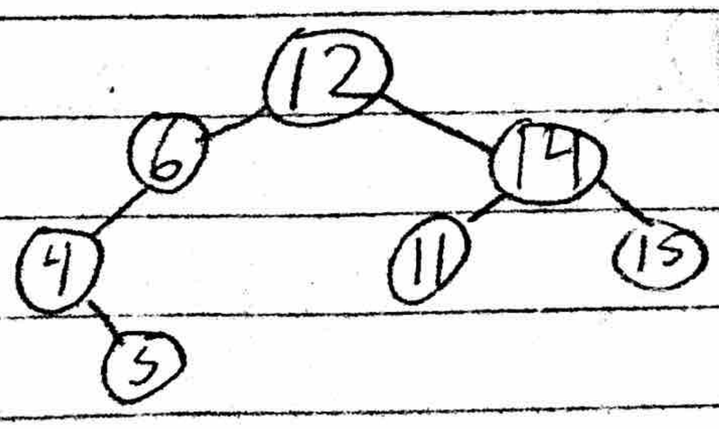
del bst[13]



del bst[1]



del bst[3]



Question 2(c)

a) Since we are adding to the right every time we have to first go through 1 node, then 2, then 3, all the way up to n. This is:

$$1 + 2 + 3 + 4 + 5 + \ldots + n$$

Simplifying you get:

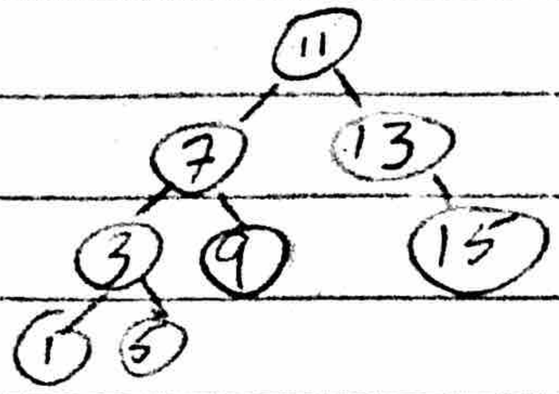
$$\frac{\text{First} + \text{Last}}{2}(\#\text{ of terms}) = \frac{1+n}{2}(n) = n^2$$

Hence $\boxed{O(n^2)}$

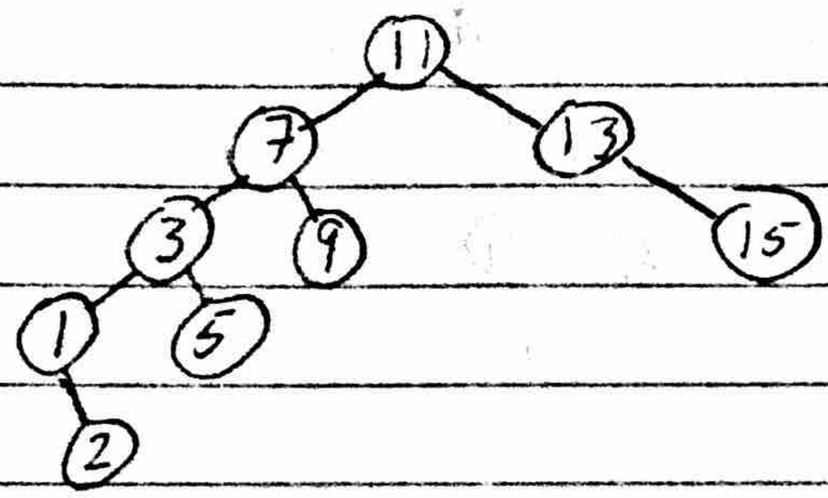
b) Inserting in a complete binary search tree is $\log n$. You do this n times, because there are n items. This means $\boxed{O(n \log n)}$

Question 6

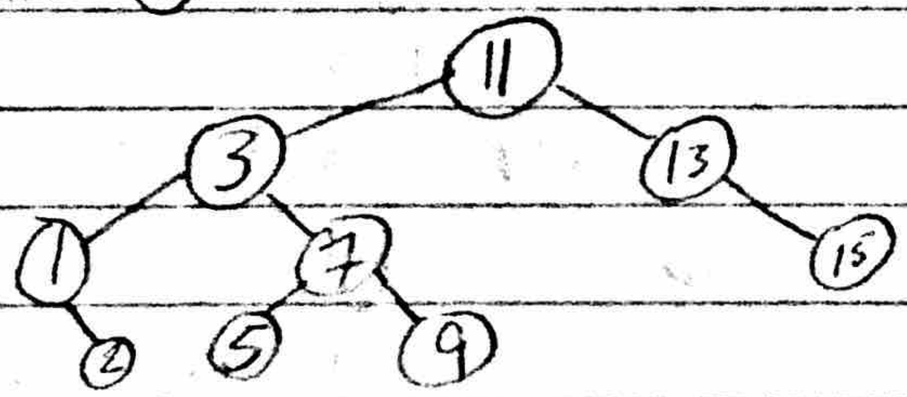
Part a)



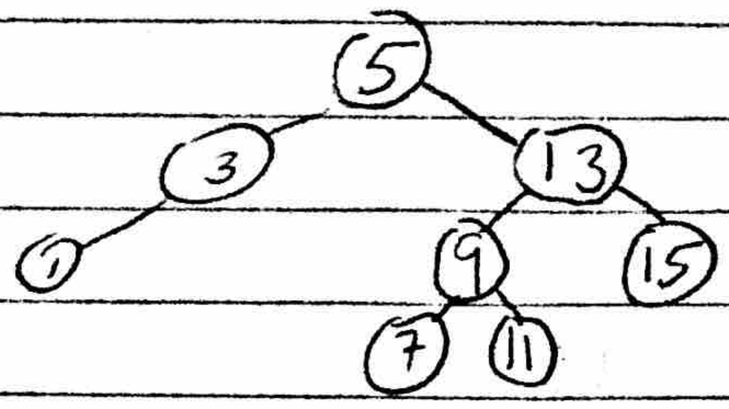
Insert 2:



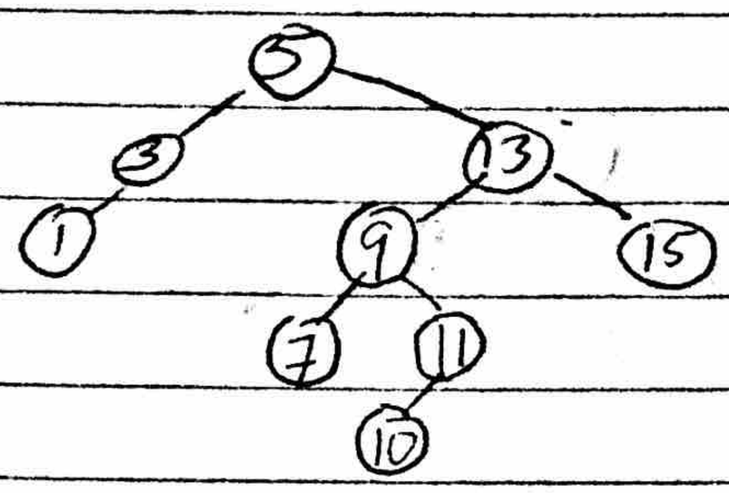
Right Rotate (7)



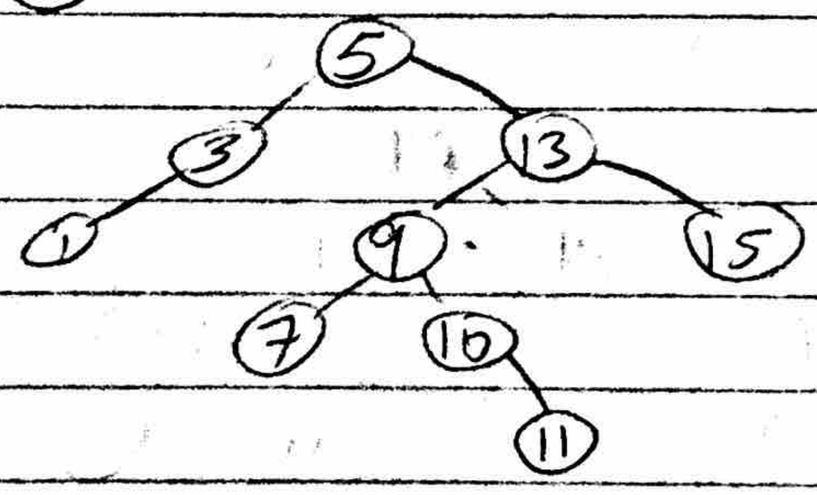
Part b)



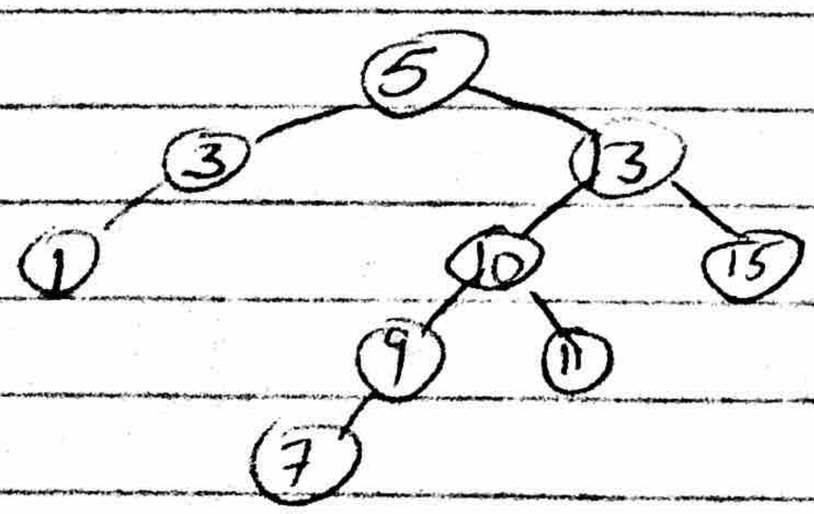
Insert 10:



Right Rotate (10)



Left Rotate (9)



Right Rotate (13)