CSC263: Binary Search Trees

Question 1

(Found this one in Algorithm Design and Applications, by Goodrich and Tamassia. Cool book!)

Suppose you have a binary search tree storing numbers in the range from 1 to 500, and you do a search for the integer 250. Which of the following sequences are possible sequences of numbers that were encountered in this search? For the ones that are possible, draw the search path; for the ones that are impossible, say why.

a. (2, 276, 264, 270, 250)

b. (100, 285, 156, 203, 275, 250)

c. (475, 360, 248, 249, 251, 250)

d. (450, 262, 248, 249, 270, 250)

Question 2

Let T be the binary search tree created by inserting the following sequence of keys into an initially empty BST.

$$6, 1, 8, 5, 7, 10, 3, 9, 2, 4$$

Find three other insertion sequences that each result in exactly the same tree as T.