4) (10 pts) ALG (Binary Search Trees and Hash Tables)

a) (8 pts) Draw a **single** binary search tree that gives rise to all three of the following tree traversals:

Inorder: 4 7 8 10 27 30 44 56

Preorder: 4 10 7 8 44 30 27 56

Postorder: 8 7 27 30 56 44 10 4

b) (2 pts) If we insert an element into a hash table using quadratic probing to resolve collisions, what two conditions must be met to ensure that if an open spot exists in our hash table, we will find that spot (rather than getting stuck in an infinite loop)?

1. _____

2. _____