1 Question 1

1.1 a.

1.2 b.

1.3 c.

2 Question 2

2.1 a.

Let z denote the right child of x. If z has no left child, x's successor (z) has no children. If z has a left child, all of the children in the subtree on the left of z can be no less than the value of x or z because, if they are, the BST properties would not hold. Therefore, at most, x's successors has

$$nodeVal(z) - nodeVal(x) - 1$$

children. We subtract the one on the end because we have to take into account the node z.

2.2 b.

Let y denote the left child of x. If y has no right child, x's predecessor (y) has no children. If y has a right child, all of the children in the right subtree of y can be no greater than the value of x. or y Therefore, at most, x's predecessor has

$$nodeVal(x) - nodeVal(y) - 1$$

children. We subtract the one because we have to take into account the y node.

3 Question 3

$$AisCORRET, BisINCORRECT$$

3.1 a.

For funB, I will give an example to show that it is incorrect. Suppose we take an arbitrary node x in the BST. Let l be the left child of of x and l_r be the right child of l. If $nodeVal(l_r) < nodeVal(x)$

3.2 b.

4 Question 4

5 Question 5