**Homework 5**

1.

a)

50

74

80

65

15

40

10

60

20

70

30

36

25

b) **In-Order:** 10, 15, 20, 25, 30, 36, 40, 50, 60, 65, 70, 74, 80

**Pre-Order:** 50, 20, 10, 15, 40, 30, 25, 36, 60, 70, 65, 80, 74

**Post-Order:** 15, 10, 25, 36, 30, 40, 20, 65, 74, 80, 70, 60, 50

c)

80

65

25

40

36

10

15

60

74

70

50

2. a) struct Node

{

int m\_value;

Node\* parent;

Node\* leftChild;

Node\* rightChild;

};

b)

insert(node pointer, root pointer)

if the root is null

set root to node and node’s parent to null

else if node’s value is less than the root’s value

if root has a left child

pass in left child as root in insert

else set root’s left child to node and node’s parent to root

else if node’s value is greater than the root’s value

if root has right child

pass in right child as root in insert

else set root’s right child to node and node’s parent to root

3. a)

2

4

0

6

3

8

8 3 6 0 2 4

b)

c)

6 3 4 0 2

4. a) O(C + S)

b) O(logC + S)

c) O(logC + logS)

d) O(logS)

e) O(1)

f) O(logC + S)

g) O(S)

h) O(C\*logS)