Show **ALL** work for credit; Give exact answers when possible.
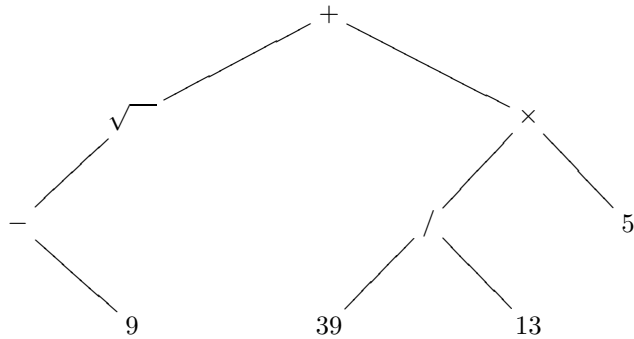
1. Consider the mathematical expression given
   by binary tree drawn the right

   (a) List the vertices in level order _____

   (b) List the vertices in preorder _____

   (c) List the vertices in inorder _____

   (d) List the vertices in postorder _____

   (e) Compute and simplify the complex number given by the tree _____

2. The complete binary tree of height 2 has 7 vertices.

   (a) (2 points) How many insertions sequences (permutations) of $1, 2, 3, 4, 5, 6, 7$ when inserted into an initially empty Priority Tree result in a complete binary tree.

   (b) (8 points) How many insertions sequences (permutations) of $1, 2, 3, 4, 5, 6, 7$ when inserted into an initially empty BST (Binary Search Tree) result in a complete binary tree.