Homework 1 William Kelley

4. c) If you have a binary tree with just the root, so a tree with height zero. This tree will have no full nodes but the root of the tree will be one leaf. Therefore you have to add one to the number of full nodes to get the number of leafs. From there the only way to increase the number of leafs is to complete a node. This is because if you add a node to a leaf you are creating a new leaf but you are also removing one so the total number of leafs will remain the same. Therefore the only way to add one to the leaf count is to add a node to a parent that already has a child, and this action will also create a new full node. Therefore we can say that the number of full nodes plus one is equal to the number of leafs in a binary tree.

4.8)

Prefix) - * * a b + c d e

Ifix) (a * b *(c + d))- e

Post fix) a b * c d + * e -