1145-05-1876 **Keith J. Copenhaver*** (keithc@ufl.edu). *Vertical Paths in Simple Varieties of Trees.*

We will call a path between v_1 and v_2 in a rooted tree *vertical* if v_2 is contained in the subtree rooted at v_1, or vice versa. Many different tree statistics pertain to the length of vertical paths with restricted endpoints; height is the length of the longest vertical path, the depth of a vertex is the length of the (necessarily vertical) path from the root to that vertex, path length is the sum of the lengths of all vertical paths starting at the root, and rank is the length of the shortest vertical path from a vertex to a leaf.

We will examine the expected length of vertical paths in simply generated trees and how this expectation changes if we impose restrictions upon the endpoints of the paths. How much longer can we expect a uniformly selected path to be if we insist the bottom vertex is a leaf? What about if the top vertex is the root? How does this vary in different tree structures? We also give asymptotic formulas for the kth moment of the length of a uniformly selected vertical path. (Received September 24, 2018)