1106-37-2824 **Jorge Luis Guerrero*** (agntp123@dusty.tamiu.edu), TX. *An Analogy of Li-Yorke's Period Three Implies Chaos for Simple Dendrites.* Preliminary report.

The Li-Yorke theorem outlines the basic requirements needed to make a function mapping from an arbitrary interval to itself under function iterations and ensure that the function is chaotic. The theorem states that as long as a continuous mapping f has a point $a \in I$ where I is an arbitrary interval, and $f^3(a) \leq a < f(a) < f^2(a)$ then for every period there exist a point with such period, and there is an uncountable set $S \subset I$ that contains no periodic points with the following,

(A) For every $p, q \in S$ with $p \neq q$,

$$\limsup_{n\to\infty} |f^n(p) - f^n(q)| > 0 \quad \text{and} \quad \liminf_{n\to\infty} |f^n(p) - f^n(q)| = 0$$

(B) For every $p \in S$ and periodic point $q \in I$,

$$\limsup_{n\to\infty} |f^n(p) f^n(q)| > 0$$

We will consider a simple dendrite which is a locally connected dendroid, having tree branches connected to a center point. A simple dendrite has similar properties to an interval, but a map of a branch may be mapped to a multiple branches. The analogy of the Li-Yorke theorem will be created for the simple dendrite and it will satisfy all of the requirements. A conjecture will also be given for other cases of the dendrites. (Received September 16, 2014)