

962-B1-354

Prashant S Sangirya* (sangirp@coastal.edu), Department of Mathematics and Statistics, P. O. Box 261954, Coastal Carolina University, Conway, SC 29528-6054. *A study of the Tent and Logistic Function as a Two Parameter Family of Functions and Their Iterates.*

Dynamical systems have been studied for many common relationships. For instance, the logistic and tent function is extensively analyzed and presented in the literature as part of the study of chaos theory. This paper attempts to combine the above functions into a two-parameter family of the form

$$f(x) = \begin{cases} (1-b)ax^2 + abx(1-x) & 0 \leq x \leq \frac{1}{2} \\ (1-b)a(1-x)^2 + abx(1-x) & \frac{1}{2} < x \leq 1 \end{cases}$$

The parameter a varies in the interval $[0, 4]$ and b in $[0, 1]$. Analysis of the behavior of the fixed and periodic points of $f(x)$ as a function of a and b is done via the bifurcation diagrams (orbit diagrams). Some interesting observations are made for different choices of the parameter b . This work was conducted during the academic year 1999-2000 with a student as part of an undergraduate research project. (Received September 12, 2000)