1. One-dimensional discrete dynamical systems

$Examples of what are and what are not one-dimensional dynamical systems$

logistic function

Let:

- (M, T, ϕ) logistical dynamical system defined by f

Then, holds:

- $Fix(f) = \{0, \frac{a-1}{a}\}$
- $Per_2(f) =$

Demonstration:

demonstration

Quadratic function

Let:

- $\begin{array}{rcl} f : \mathbb{R} & \longrightarrow & \mathbb{R} \\ x & \longmapsto & a - x^2 \end{array}$
- (M, T, f_c) dynamical system family

Then, f is bifurcates in -1/4 :

$f_{-\frac{1}{4}}(x) = x \leftrightarrow x = -\frac{1}{2}$

$f'_{-\frac{1}{4}}(x) = -2x$

$f'_{-\frac{1}{4}}(-\frac{1}{2}) = 1$

$\partial_a f = 1 \neq 0$

$\partial_{x^2} f = -2 \neq 0$

$sgn(1 * -2) = - \rightarrow -\frac{1}{2}$ SN

Henon's application

Let:

$$\cdot \begin{array}{rcl} f\ :\mathbb{R}^2 & \longrightarrow & \mathbb{R}^2 \\ (x,y) & \longmapsto & (-x^2+0.4y,x) \end{array}$$

Study:

$\cdot$ Fixed points of f

Demonstration:

$(0,0),(-0$

$6,-0$

$6)$ fixed points