

1. One-dimensional discrete dynamical systems
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Examples of what are and what are not one-dimensional dynamical systems

Analysis of logistic dynamical systems

Let:

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

Then, holds:

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

$$\cdot \operatorname{Per}_2(f) =$$

Demonstration:

demonstration

Quadratic function bifurcations

Let:

$$\begin{aligned} f : \mathbb{R} &\longrightarrow \mathbb{R} \\ x &\longmapsto a - x^2 \end{aligned}$$

(M, T, f_c) dynamical system family

Then, f bifurcates in $-1/4$:

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

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

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

$$\partial_a f = 1 \neq 0$$

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

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