1. New

defined by f

Let:

- $f \ : \ \mathbb{R}^n \to \mathbb{R}^n$

Then, $(\mathbb{R}^n, \mathbb{N}, \phi)$ is defined by $f$if:

- $\begin{array}{rcl} \phi \ : \mathbb{R}^n \times \mathbb{N} & \longrightarrow & \mathbb{R}^n \\ x & \longmapsto & f^n(x) \end{array}$

We denote:

- $(\mathbb{R}^n, \mathbb{N}, f)$ n-D

Henon's application

Let:

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

Study:

- Fixed points of f

Demonstration:

$(0, 0), (-0$

$6, -0$

$6)$ fixed points

Invariant curve

Let:

- $\cdot\ \gamma$ differentiable curve
- $\cdot\ p \in \mathbb{R}^n$

Then, γ is invariant if:

$\cdot\ \forall\ x \in \gamma * :$

$$o(x) \subset \gamma *$$

Then, γ is converges to $p$if:

$\cdot\ \forall\ x \in \gamma * :$

$$o(x) \xrightarrow{n} p$$

Invariance of stability over periods

Let:

- $\cdot\ (\mathbb{R}^n, \mathbb{N}, f)$ n-D dynamical system
- $\cdot\ p \in \mathbb{R}^n$ k-periodic point
- $\cdot\ \chi$ character of periodic points

Then, holds:

$\cdot\ \ \exists\ \sigma \in \mathrm{Im}(\chi) :$

$\forall\ x \in o(p) :$

$$\chi(x) = \sigma$$

Demonstration:

i will