Info

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Constant of a flow in $\mathbb{R}^n$

Definition. Integral of flows of a vector field in $\mathbb{R}^n$

$G : \mathcal{U} \to \mathbb{R}$ is a conserved quantity for the flows of $\mathbf{f} : \mathcal{D} \subseteq \mathbb{R}^n \to \mathbb{R}^n$ if

$$\partial_{\mathbf{f}} G(p) = 0, \forall p$$

$\gamma(t)$ be a integral curve of $\mathbf{f}$ then $(g \circ \gamma)'(t) = 0$

reduce the dimension

$\mathbf{f}(x_1, x_2)$. If $g(x_1, x_2) = c$ represents a curve parameterised by θ_c, that is change the variables to

$$(x_1, x_2) \to (\theta, c)$$

such that c is constant

Current note has 0 direct children and 0 total descendants.

- stem
  - subobjects of and functions on $\mathbb{R}^n, S^n, \mathbb{C}^n$ and its quotients $\Gamma\backslash^{\mathbb{R}^n}, \Gamma\backslash^{\mathbb{C}^n}$
    - ODEs in $\mathbb{R}^n$ $\leftrightarrow$ Vector fields in $\mathbb{R}^n$
      - Constant of a flow in $\mathbb{R}^n$

And it has 10 siblings.

- stem
  - subobjects of and functions on $\mathbb{R}^n, S^n, \mathbb{C}^n$ and its quotients $\Gamma\backslash^{\mathbb{R}^n}, \Gamma\backslash^{\mathbb{C}^n}$
    - ODEs in $\mathbb{R}^n$ $\leftrightarrow$ Vector fields in $\mathbb{R}^n$
      - Constant of a flow in $\mathbb{R}^n$
      - Euler's iterative solution method for first order ODEs
      - Existence of integral curves of vector fields in $\mathbb{R}^n$
      - Fixed points
      - Flow of a vector field in $\mathbb{R}^n$
      - Graph $\to$ polynomial ODE
      - Gradient flows on $\mathbb{R}^n$
      - Hamiltonian vector fields in $\mathbb{R}^{2n}$ with standard symplectic form
      - Probability distribution of flow
      - Volume change by flows on $\mathbb{R}^n$