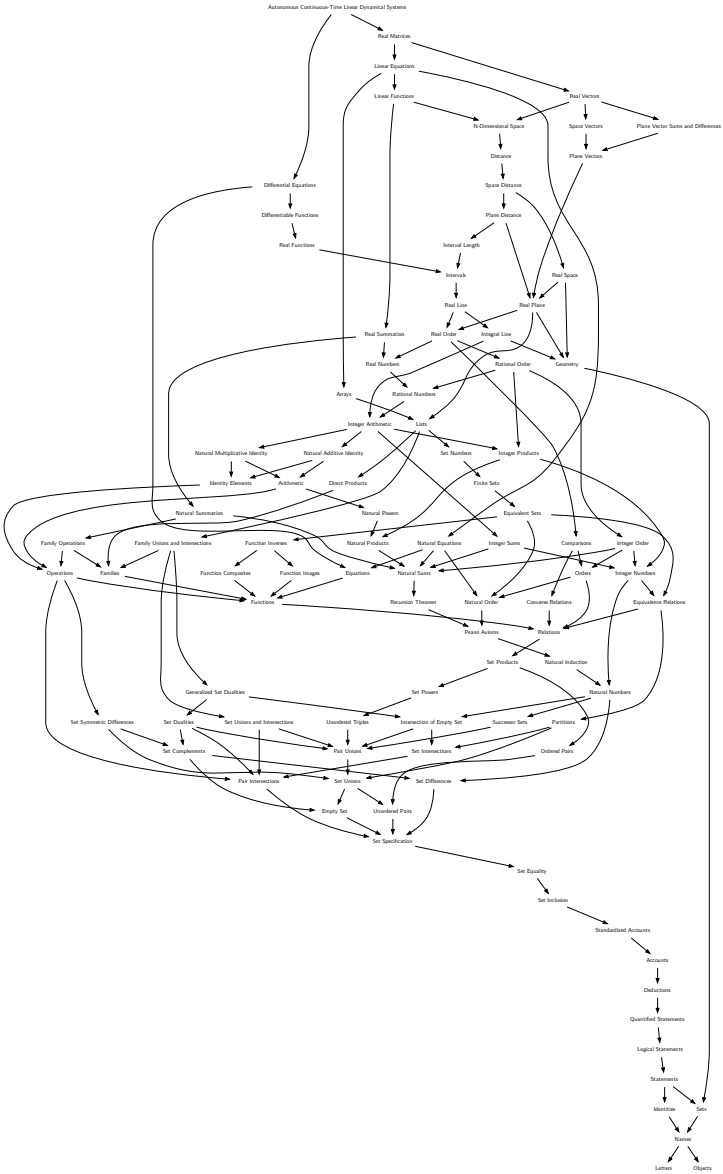
Definition

An *autonomous continuous-time linear dynamical system* is a matrix $A \in \mathbf{R}^{n\times n}$. It models the behavior of a *signal* $x : \mathbf{R} \to \mathbf{R}^n$ by

$$\dot{x} = Ax, \tag{1}$$

where $\dot{x}$ is notation for $\frac{d}{dt}x(t)$. A is called the *dynamics matrix*.

A signal x satisfying Equation (1) is called a *solution* or a *trajectory*. For $t \in \mathbf{R}$, $x(t) \in \mathbf{R}^n$ is called the *state* and $\mathbf{R}^n$ is called the state space. n is called the *state dimension*.


Autonomous Continuous-Time Linear Dynamical Systems
Real Matrices
Linear Equations
Linear Functions
Real Vectors
N-Dimensional Space
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Relations
Set Products
Natural Induction
Generalized Set Dualities
Set Powers
Natural Numbers
Set Symmetric Differences
Set Dualities
Set Unions and Intersections
Unordered Triples
Intersection of Empty Set
Successor Sets
Partitions
Set Complements
Pair Unions
Set Intersections
Ordered Pairs
Pair Intersections
Set Unions
Set Differences
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
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Objects