Why

[1]

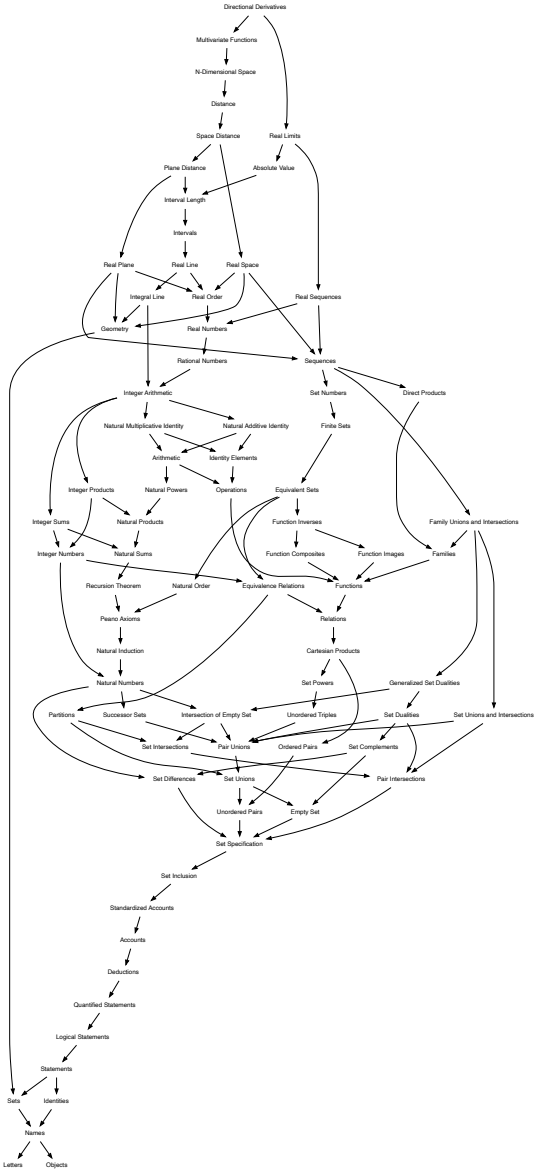
Definition

Let $f : \mathbf{R}^n \to \mathbf{R}$. Let $a \in \mathbf{R}^n$ and pick $\delta \in \mathbf{R}^n$, if the limit

$$\lim_{t \to 0} \frac{f(a + t\delta) - f(a)}{t}$$

exists, then we say that f is *differentiable at a in the direction x*. We call the value of the limit the *directional derivative* of f at a, in the direction δ.

[1] Future editions will include.


Directional Derivatives
Multivariate Functions
N-Dimensional Space
Distance
Space Distance
Real Limits
Plane Distance
Absolute Value
Interval Length
Intervals
Real Plane
Real Line
Real Space
Integral Line
Real Order
Real Sequences
Geometry
Real Numbers
Rational Numbers
Sequences
Integer Arithmetic
Set Numbers
Direct Products
Natural Multiplicative Identity
Natural Additive Identity
Finite Sets
Arithmetic
Identity Elements
Integer Products
Natural Powers
Operations
Equivalent Sets
Integer Sums
Natural Products
Function Inverses
Family Unions and Intersections
Integer Numbers
Natural Sums
Function Composites
Function Images
Families
Recursion Theorem
Natural Order
Equivalence Relations
Functions
Peano Axioms
Relations
Natural Induction
Cartesian Products
Natural Numbers
Set Powers
Generalized Set Dualities
Partitions
Successor Sets
Intersection of Empty Set
Unordered Triples
Set Dualities
Set Unions and Intersections
Set Intersections
Pair Unions
Ordered Pairs
Set Complements
Set Differences
Set Unions
Pair Intersections
Unordered Pairs
Empty Set
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects