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

Real Limits Space Distance

Absolute Value Plane Distance

Interval Length

Intervals

Real Line Real Plane Real Space

Real Sequences Integral Line Real Order

Real Numbers Sequences Geometry

Rational Numbers Set Numbers Direct Products

Integer Arithmetic Finite Sets

Natural Additive Identity Natural Multiplicative Identity

Arithmetic Identity Elements Equivalent Sets

Integer Sums Integer Products Natural Powers Operations Function Inverses Family Unions and Intersections

Integer Numbers Natural Products Comparisons Function Images Function Composites Families

Natural Sums Equivalence Relations Converse Relations Orders Functions

Recursion Theorem Relations Natural Order

Peano Axioms Set Products

Natural Induction Set Powers Generalized Set Dualities

Natural Numbers 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

Identities Sets

Names

Letters Objects