Definition

Let $A \subset \mathbf{R}$ open. Let $f : A \to \mathbf{R}$ be differentiable with derivative $f' : \mathbf{R} \to \mathbf{R}$. We call f *twice differentiable* (or *two times differentiable*) if its derivative f' is differentiable. In this case, we call the derivative of f' the *second derivative* of f.

Notation

Let $A \subset R$. The second derivative of the twice-differentiable function $f : A \to \mathbf{R}$ is sometimes denoted $f''(x) : A \to \mathbf{R}$

Second Derivatives

Real Open Sets — Real Differentiable Functions

N-Dimensional Space

Distance — Real Functions

Space Distance

Plane Distance

Interval Length

Real Space — Intervals

Real Line — Real Plane

Integral Line — Real Order

Geometry — Rational Order — Real Numbers — Lists

Rational Numbers — Set Numbers — Direct Products

Integer Arithmetic — Natural Fractions

Integer Products — Natural Additive Identity — Natural Multiplicative Identity — Finite Sets

Identity Elements — Natural Arithmetic — Equivalent Sets

Integer Sums — Integer Order — Natural Powers — Comparisons — Function Inverses — Family Unions and Intersections

Integer Numbers — Natural Products — Orders — Operations — Function Images — Function Composites — Families

Natural Sums — Equivalence Relations — Natural Order — Converse Relations — Functions

Recursion Theorem — Relations

Peano Axioms — Ordered Pair Projections

Natural Induction — Set Products

Natural Numbers — Generalized Set Dualities — Set Powers

Set Symmetric Differences — Set Partitions — Successor Sets — Intersection of Empty Set — Set Dualities — Unordered Triples — Set Unions and Intersections

Set Complements — Set Intersections — Pair Unions — Ordered Pairs

Set Differences — Set Unions — Pair Intersections

Empty Set — Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Sets — Identities

Names

Letters — Objects

4