Definition

Let $A \subset \mathbf{R}$ be open. A function $f : A \to \mathbf{R}$ is *smooth* if it has derivatives of any order. Since differentiability implies continuity, every derivative of a smooth function is continuous.

Smooth Real Functions

Higher Order Derivatives

Second Derivatives

Real Open Sets   Differentiable Functions

N-Dimensional Space

Distance   Real Functions

Space Distance

Plane Distance

Internal Length

Real Space   Intervals

Real Plane   Real Line

Real Order   Integral Line

Geometry   Rational Order   Real Numbers

                                Rational Numbers

Lists   Integer Arithmetic

Set Numbers   Natural Multiplicative Identity   Natural Additive Identity   Integer Products

Finite Sets   Identity Elements   Arithmetic

Direct Products   Equivalent Sets   Natural Powers

Family Unions and Intersections   Function Inverses   Integer Order   Integer Sums   Natural Products

                Families   Function Composites   Function Images   Comparisons   Orders   Integer Sums   Natural Sums

Functions   Converse Relations   Equivalence Relations   Natural Order   Recursion Theorem

                        Relations   Peano Axioms

                Set Products   Natural Induction

        Generalized Set Dualities   Set Powers   Natural Numbers

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

        Ordered Pairs   Pair Unions   Set Intersections   Set Complements

Pair Intersections   Set Unions   Set Differences

                        Unordered Pairs   Empty Set

                        Set Specification

                        Set Equality

                Set Inclusion

        Standardized Accounts

                Accounts

        Deductions

Quantified Statements

Logical Statements

        Statements

Sets   Identities

        Names

Letters   Objects

4