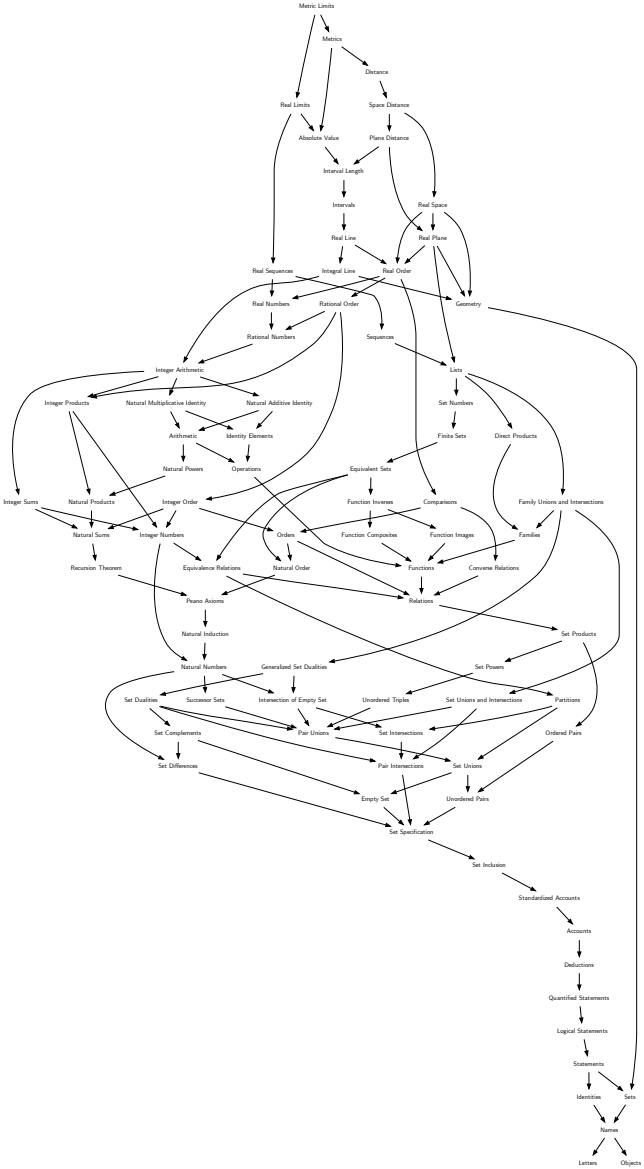
Why

Once we have a notion of distance, we can define a more general notion of convergence.

Definition

Let (X, d) be a metric space and let $(x_n)_{n \in \mathbf{N}}$ be a sequence in X. A *limit* $(x_n)_{n \in \mathbf{N}}$ is an element $x \in X$ for which $d(x, x_n) \to 0$.


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