Space Distance

Why

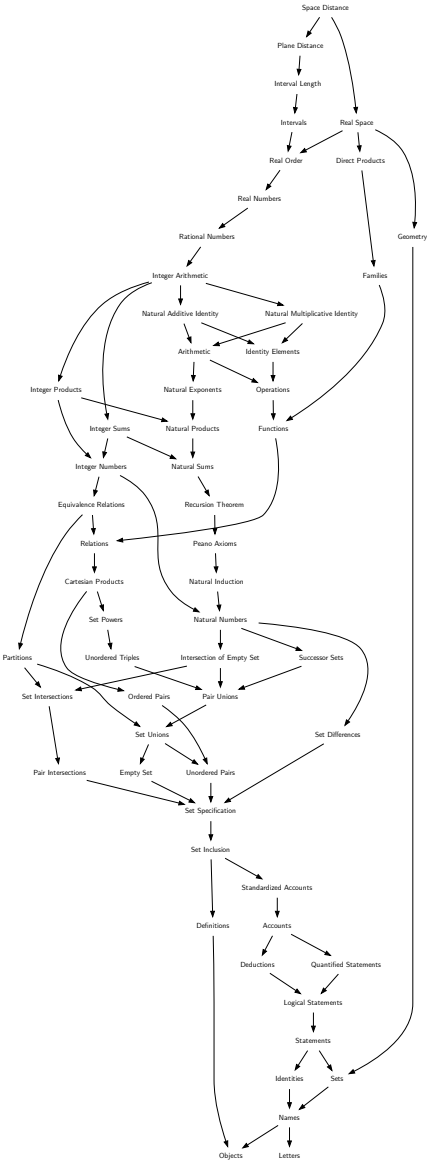
What is the distance between two points in space?

Definition

We define the distance between two points in space as the length of the line segment connecting them. In terms of their coordinates $(x_1, x_2, x_3), (y_1, y_2, x_3) \in \mathbf{R}^3$, the *space distance* of two points is

$$\sqrt{(x_1 - y_1)^2 + (x_2 - y_2)^2 + (x_3 - y_3)^2}.$$

This is sometimes referred to as the *Euclidean distance*. We have thus defined a function mapping $\mathbf{R}^3 \times \mathbf{R}^3$ into $\mathbf{R}$.


Space Distance
Plane Distance
Interval Length
Intervals
Real Space
Real Order
Direct Products
Real Numbers
Rational Numbers
Geometry
Integer Arithmetic
Families
Natural Additive Identity
Natural Multiplicative Identity
Arithmetic
Identity Elements
Integer Products
Natural Exponents
Operations
Integer Sums
Natural Products
Functions
Integer Numbers
Natural Sums
Equivalence Relations
Recursion Theorem
Relations
Peano Axioms
Cartesian Products
Natural Induction
Set Powers
Natural Numbers
Partitions
Unordered Triples
Intersection of Empty Set
Successor Sets
Set Intersections
Ordered Pairs
Pair Unions
Set Unions
Set Differences
Pair Intersections
Empty Set
Unordered Pairs
Set Specification
Set Inclusion
Standardized Accounts
Definitions
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Objects
Letters