Proposition 1. $\mathbf{R}^n$ *is a vector space of dimension n over* $\mathbf{R}$ *with $+$ and* $\cdot$.

Vector Space Examples

Vectors

Real Vectors

N-Dimensional Space — Plane Vector Sums and Difference — Space Vectors

Distance

Plane Vectors

Space Distance

Plane Distance

Interval Length

Real Space

Intervals

Real Plane

Real Line

Real Order — Integral Line

Geometry

Rational Order — Real Numbers — Fields

Rational Numbers

Rings

Lists

Integer Arithmetic

Set Numbers

Integer Products — Natural Multiplicative Identity — Natural Additive Identity

Finite Sets

Arithmetic — Identity Elements

Direct Products — Equivalent Sets

Natural Powers

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

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

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 — Intersection of Empty Set — Successor Sets — Partitions — Set Symmetric Difference

Pair Union — Set Intersections — Ordered Pairs — 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