Why

(provisional)[1]

Definition

An *transformation* is a function between vector spaces over the same field. In other words, a transformation is a function with a particular domain and codomain.

The utility of this definition is that in place of saying "a function between two vector spaces with the same field" we can "a transformation". So when we define properties of such functions between two vector spaces the properties are specific to such functions, and the dependence on the domain and codomain being vector spaces is explicit in the language.

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[1]Will be given in future editions.

Transformations

Vectors

N-Dimensional Space

Distance

Space Distance

Plane Distance

Interval Length

Intervals

Real Plane   Real Line   Real Space

Integral Line   Real Order

Geometry   Real Numbers   Fields

Rational Numbers   Groups

Sequences   Integer Arithmetic   Integer Additive Inverses

Set Numbers   Natural Additive Identity   Natural Multiplicative Identity   Inverse Elements   Integer Sums

Direct Products   Finite Sets   Identity Elements   Arithmetic   Element Functions

Equivalent Sets   Algebras   Natural Powers   Integer Products

Family Unions and Intersections   Operations   Function Inverses   Natural Products   Integer Numbers

Families   Equivalence Relations   Function Composites   Function Images   Natural Sums

Natural Order   Functions

Relations   Recursion Theorem

Cartesian Products   Peano Axioms

Generalized Set Dualities   Set Powers   Natural Induction

Set Unions and Intersections   Set Dualities   Unordered Triples   Intersection of Empty Set   Successor Sets   Partitions   Natural Numbers

Set Complements   Pair Unions   Set Intersections   Ordered Pairs

Pair Intersections   Set Unions   Set Differences

Empty Set   Unordered Pairs

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets   Identities

Names

Letters   Objects

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