Definition

An *operator* (or *linear operator*) is a *linear* tranformation where the codomain is the domain. In other words, an operator is a linear transformation with a particular domain and codomain. Warning: some authors refer to linear transformations as operators. For us, and many other mathematicians, the word operator is reserved for the case in which the codomain is the domain.

Notation

Suppose V is a vector space. We usually abbreviate the notation for the set of operators to $\mathcal{L}(V)$ from $\mathcal{L}(V, V)$.

Operators

Linear Transformations

Real Polynomial Derivatives • Derivatives of Scalar Multiples • Derivatives of Sums • Real Integral Additivity • Real Integral Homogeneity

Real Linear Functions • Real Differentiable Functions • Simple Integral Additivity • Simple Integral Homogeneity

Transformations • Linear Combinations • Simple Integrals

Vector Space of Polynomials • Vectors • Real Linear Combinations • Simple Functions • Measurable Functions

Real Polynomials • Fields • Real Functions • Measures • Real Vector

Length Measure • Sigma Algebras • N-Dimensional Space • Plane Vector Sums and Differences • Space Vectors

Real Arithmetic • Rings • Real Series • Extended Real Numbers • Distance • Plane Vectors

Real Multiplicative Inverse • Space Distance • Real Limits • Absolute Value • Plane Distance • Interval Length

Real Products • Real Space • Real Additive Inverse • Real Line • Real Plane

Rational Multiplicative Inverse • Rational Arithmetic • Real Sums • Real Order • Integral Line • Real Sequences

Rational Products • Rational Order • Rational Sums • Real Numbers • Subset Algebras • Sequences • Geometry

Rational Numbers • Cardinality • Lists

Integer Arithmetic • Natural Fractions • Set Numbers • Direct Products

Integer Products • Natural Additive Identity • Natural Multiplicative Identity • Finite Sets • Inverse Elements

Natural Arithmetic • Identity Elements • Equivalent Sets • Element Functions

Integer Sums • Integer Order • Natural Power • Operations • Function Inverses • Comparisons • Family Unions and Intersections

Integer Numbers • Natural Products • Orders • Function Image • Function Composite • Families

Natural Sum • Equivalence Relations • Natural Order • Functions • Converse Relations

Recursion Theorem • Relations

Peano Axioms • Ordered Pair Projections

Natural Induction • Characteristic Functions • Set Products • Subset Systems

Natural Numbers • Generalized Set Dualities • Set Powers • Ordered Pairs

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

Set Complements • Set Intersections • Pair Unions

Set Differences • Set Unions • Pair Intersections

Empty Set • Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Deduction

Quantified Statements

Logical Statements

Statements

Identities • Sets

Names

Letters • Objects

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