Definition

Suppose G is a finite group with identity 1 and suppose V is a vector space over the field $\mathbf{C}$ of complex numbers. A *linear representation* $\rho : G \to GL(V)$ of G in V is a group homomorphism from G to the general linear group $GL(V)$. Given ρ, we call V a *representation space* (or *representation*) of G

Suppose V has finite dimension n. In this case, we call n the *degree* of the representation ρ. Given a basis $e_1, \ldots, e_n$ of V,

Linear Representations of Groups

General Linear Groups

Vector Space Isomorphisms

Real General Linear Groups
Vector Space Dimension

Real Matrix Inverse
Vector Space Basis

Linearly Dependent Vectors
Real Matrix-Matrix Products
Span

Complex Matrices
Linear Transformations
Real Matrix-Vector Products
Subspaces

Matrices
Transformation
Linear Combinations
Vectors as Matrices
Real Subspaces

Complex Arithmetic
Real Matrices
Real Inner Product
Real Vector Span

Complex Products
Real Norm
Space Inner Product
Real Linear Combinations

Complex Sums
Linear Equations
Real Vectors

Linear Functions
Arrays
Complex Numbers
N-Dimensional Space
Space Vectors
Space Norm

Plane Vector Sums and Differences
Plane Norm
Plane Inner Product

Absolute Value
Distance
Plane Vectors
Right Triangle Sides Relation

Space Distance
Real Squares

Real Arithmetic
Plane Distance

Interval Length

Real Multiplication Inverse
Intervals
Real Space

Real Products
Real Line
Square Numbers

Real Additive Inverse
Real Plane
Squares

Real Sums
Real Order
Integral Line
Geometry

Real Summation
Rational Multiplication Inverse
Rational Arithmetic
Real Numbers
Rational Order
Lists

Groups
Fields
Inverse Elements
Rational Products
Rational Sums
Direct Products

Rings
Rational Numbers
Set Numbers

Fields Sets
Element Functions
Integer Arithmetic

Equivalent Sets
Natural Summation
Integer Products
Natural Additive Identity
Natural Multiplication Identity

Natural Equations
Function Inverse
Family Operations
Identity Elements
Arithmetic
Integer Sums
Integer Order
Comparison
Family Unions and Intersections

Equations
Function Composition
Function Image
Operations
Families
Natural Powers
Integer Numbers
Orders

Natural Order
Functions
Natural Products
Equivalence Relations
Coarsens Relations

Natural Sums
Relations

Recursion Theorem

Peano Axioms

Natural Induction
Set Products

Natural Numbers
Set Powers
Generalized Set Dualities

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

Set Complements
Ordered Pairs
Set Intersections
Pair Unions

Set Differences
Set Unions
Pair Intersections

Empty Set
Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities
Sets

Names

Letters
Objects