Why

We name a function which preserves algebraic structure.

Definition

A *group homomorphism* between two groups $(A, +)$ and $(B, \tilde{+})$ is a bijection $f : A \to B$ such that $f(1_A) = 1_B$ for $1_A \in A$ and $1_B \in B$ and $f(a + a') = f(a) \tilde{+} f(a')$ for all $a, a' \in A$. We define a *ring homomorphism* and *field homomorphism* similarly.

Homomorphisms

Groups   Fields

Finite Sets   Rational Numbers   Rings

Natural Fractions   Integer Arithmetic

Natural Additive Identity   Natural Multiplicative Identity

Equivalent Sets   Natural Arithmetic   Identity Elements

Function Inverses   Integer Sums   Integer Products   Natural Powers

Function Images   Function Composites   Integer Numbers   Natural Products   Operations

Functions   Equivalence Relations   Natural Sums

Relations   Natural Order   Recursion Theorem

Ordered Pair Projections   Peano Axioms

Set Products   Natural Induction

Ordered Pairs   Set Powers   Natural Numbers

Unordered Triples   Set Partitions   Successor Sets   Intersection of Empty Set

Pair Unions   Set Symmetric Differences   Set Intersections

Set Unions   Set Complements   Pair Intersections

Unordered Pairs   Empty Set   Set Differences

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities   Sets

Names

Letters   Objects

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