Why

We extend modular arithmetic to the real numbers.

Definition

Two real numbers $x, y \in \mathbf{R}$ are congruent modulo $\alpha \in \mathbf{R}$ if their difference is a multiple of α

Notation

For $x, y \in \mathbf{R}$, if x and y are congruent modulo $\alpha \in \mathbf{R}$ we write

$$x \equiv y(\mod \alpha)$$

Real Modular Arithmetic

Real Arithmetic

Modular Arithmetic

Real Multiplicative Inverses

Real Products

Real Additive Inverses

Real Order

Real Sums

Rational Arithmetic

Rational Multiplicative Inverses

Rational Order

Real Numbers

Rational Sums

Rational Products

Rational Numbers

Integer Arithmetic

Integer Products

Natural Multiplicative Identity

Natural Additive Identity

Arithmetic

Identity Elements

Natural Powers

Inverse Elements

Comparisons

Integer Order

Integer Sums

Natural Products

Element Functions

Function Inverses

Orders

Integer Numbers

Natural Sums

Operations

Function Composites

Function Images

Converse Relations

Equivalence Relations

Natural Order

Recursion Theorem

Functions

Relations

Peano Axioms

Set Products

Natural Induction

Ordered Pairs

Set Powers

Natural Numbers

Unordered Triples

Partitions

Successor Sets

Intersection of Empty Set

Pair Unions

Set Intersections

Set Symmetric Differences

Set Unions

Set Complements

Pair Intersections

Unordered Pairs

Empty Set

Set Differences

Set Specification

Set Equality

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities

Sets

Names

Letters

Objects