Interval Partitions

Why

We partition a real interval into interval pieces.

Definition

An *interval partition* is a finite partition of a closed real interval.

An interval partition is *regular* if all pieces except the largest are closed on the left and open on the right and the largest is closed.

Any regular interval partition with $n - 1$ elements can be represented by $n + 1$ real numbers: the endpoints of each interval. We call these the *cut points* of the interval partition.

Notation

Let R denote the set of real numbers. Let $[a, b]$ a closed interval in R with endpoints $a, b \in R$.

Consider a regular partition. of $[a, b]$ with $n - 1$ pieces. We can identify its cut points:

$$a = a_1 < a_2 < \ldots a_{n-1} < a_n = b.$$

The pieces of the partition are:

$$[a_1, a_2), [a_2, a_3), \ldots, [a_{n-2}, a_{n-1})[a_{n-1}, a_n].$$

Interval Partitions

Intervals

Real Line

Real Order

Real Numbers

Rational Order

Integral Line

Rational Numbers

Integer Arithmetic

Natural Additive Identity

Natural Multiplicative Identity

Integer Products

Identity Elements

Arithmetic

Natural Powers

Natural Products

Integer Sums

Integer Order

Comparisons

Operations

Natural Sums

Integer Numbers

Orders

Functions

Recursion Theorem

Equivalence Relations

Natural Order

Converse Relations

Peano Axioms

Relations

Natural Induction

Set Products

Natural Numbers

Set Powers

Ordered Pairs

Partitions

Intersection of Empty Set

Successor Sets

Unordered Triples

Set Symmetric Differences

Set Intersections

Pair Unions

Pair Intersections

Set Complements

Set Unions

Empty Set

Set Differences

Unordered Pairs

Geometry

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets

Identities

Names

Letters

Objects