Why

We can generalize the notion of real monotone functions to functions between any two sets with total partial orders.

Definition

Let $(A, \geq_A)$ and $(B, \geq_B)$ be two partially ordered sets. $f : A \to B$ is *isotonic* if it is order preserving and *antitonic* if it is order reversing. A function is *monotonic* if it is either antitonic or isotonic.[1]

Examples

[2]

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[1]Future editions may modify this terminology.

[2]Future editions will include. A nice example is monotonic matrix functions.

Monotonic Functions

Monotone Real Functions

Real Functions

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   Converse Relations

Functions   Recursion Theorem   Equivalence Relations   Natural Order

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 Equality

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets   Identities

Names

Letters   Objects