Why

Consider two convergent sequences. What if we add them termwise? Or multiply?

Main results

Proposition 1. *Let $(x_n)_{n \in \mathbf{N}}$ and $(y_n)_{n \in \mathbf{N}}$ be two limits with x_0 and y_0 in $\mathbf{R}$. Then the sequence (s_n) defined by $s_n = x_n + y_n$ converges to the limit $x_0 + y_0$ and the sequence $m_n = x_n y_n$ converges to the limit $x_0 y_0$.*[1]

In particular for $a \in \mathbf{R}$, the sequence (c_n) defined by $c_n = a x_n$ converges to the limit $a x_0$.

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[1] Future editions will include the account.

Real Limit Algebra

Real Limits

Absolute Value

Interval Length

Intervals

Real Line

Real Order   Real Sequences

Rational Order   Real Numbers   Sequences

Rational Numbers   Integral Line   Lists

Integer Arithmetic   Set Numbers   Direct Products

Integer Products   Natural Multiplicative Identity   Natural Additive Identity

Finite Sets

Arithmetic   Identity Elements   Equivalent Sets

Integer Order   Integer Sums   Natural Powers   Comparisons   Function Inverses   Family Unions and Intersections

Integer Numbers   Natural Products   Orders   Operations   Function Images   Function Composites   Families

Natural Sums   Equivalence Relations   Natural Order   Converse Relations   Functions

Recursion Theorem   Relations

Peano Axioms   Ordered Pair Projections

Natural Induction   Set Products

Natural Numbers   Set Powers   Generalized Set Dualities

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

Set Complements   Set Intersections   Pair Unions   Ordered Pairs

Set Differences   Set Unions   Pair Intersections

Empty Set   Unordered Pairs   Geometry

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities   Sets

Names

Letters   Objects

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