LINEAR FUNCTIONS

Why

Definition

A function $f : \mathbf{R}^n \to \mathbf{R}$ is *linear* if

1. $f(x + y) = f(x) + f(y)$ for all $x, y \in \mathbf{R}^n$ and

2. $f(\alpha x) = \alpha f(x)$ for all $x \in \mathbf{R}^n$ and $\alpha \in \mathbf{R}$.

There are simple consequences to these conditions. For example, $f(0) = 0$.

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[1]Future editions will include.

Linear Functions

N-Dimensional Space

Distance

Space Distance

Plane Distance

Interval Length

Real Space

Intervals

Real Plane

Real Line

Integral Line

Real Order

Real Summation

Geometry

Real Numbers

Rational Order

Rational Numbers

Integer Arithmetic

Lists

Natural Additive Identity

Natural Multiplicative Identity

Integer Products

Set Numbers

Direct Products

Finite Sets

Identity Elements

Arithmetic

Natural Powers

Natural Summation

Equivalent Sets

Family Unions and Intersections

Function Inverses

Family Operations

Comparisons

Integer Order

Integer Sums

Natural Products

Families

Function Images

Function Composites

Operations

Orders

Integer Numbers

Natural Sums

Functions

Converse Relations

Equivalence Relations

Natural Order

Recursion Theorem

Relations

Peano Axioms

Set Products

Natural Induction

Generalized Set Dualities

Set Powers

Natural Numbers

Set Unions and Intersections

Set Dualities

Unordered Triples

Intersection of Empty Set

Successor Sets

Partitions

Set Symmetric Differences

Ordered Pairs

Pair Unions

Set Intersections

Set Complements

Pair Intersections

Set Unions

Set Differences

Unordered Pairs

Empty Set

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets

Identities

Names

Letters

Objects