Why

Definition

An *orthonormal family of vectors* in an inner product space is a family of vectors with unit norm.

Prop. 1. *An orthogonal family of vectors can be made orthonormal.*

Prop. 2. *Every orhto*

Orthonormal Vectors

Inner Product Norms

Norms — Inner Products

Functionals

Vectors

Absolute Value — N-Dimensional Space

Real Square Roots

Distance

Real Squares

Space Distance

Real Arithmetic

Plane Distance

Real Multiplicative Inverse

Interval Length

Real Products

Intervals

Real Additive Inverses — Real Line — Real Plane — Real Space

Rational Multiplicative Inverse — Rational Arithmetic — Real Sums — Real Order — Integral Line

Rational Products — Rational Sums — Real Numbers — Fields — Geometry

Rational Numbers — Groups

Integer Arithmetic — Integer Additive Inverses — Sequences

Integer Products — Natural Additive Identity — Natural Multiplicative Identity — Integer Sums — Inverse Elements — Set Numbers

Natural Square Roots — Arithmetic — Identity Elements — Integer Numbers — Element Functions — Finite Sets

Square Numbers — Natural Powers — Algebras — Equivalent Sets — Direct Products

Square — Natural Products — Natural Equations — Operations — Function Inverses — Family Unions and Intersections

Natural Sums — Equations — Natural Order — Function Composites — Function Images — Families

Recursion Theorem — Functions — Equivalence Relations

Peano Axioms — Relations

Natural Induction — Set Products

Natural Numbers — Set Powers — Generalized Set Dualities

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

Ordered Pairs — Set Complements — Pair Unions — Set Intersections

Set Differences — Set Unions — Pair Intersections

Unordered Pairs — Empty Set — Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities — Sets

Names

Letters — Objects

3