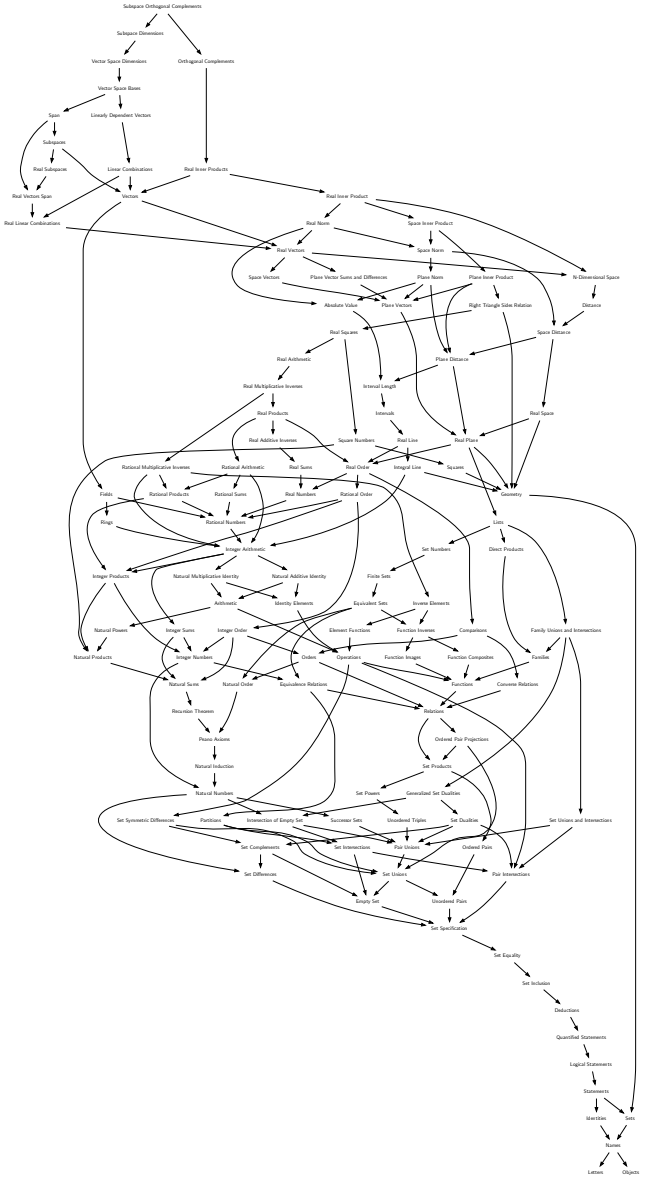
Main result

Proposition 1. *The orthogonal complement of a subspace is a subspace.*

Proposition 2. *Let $L \subset \mathbf{R}^n$ be a subspace. Then*

$$\dim L + \dim L^{\perp} = n.$$

Proposition 3. *Let $b_1, \ldots, b_m$ be a basis for a subspace $L \subset \mathbf{R}^n$. Then $x \perp L$ if and only if $x \perp b_i$ for $i = \{1, 2, \ldots, m\}$.*


Subspace Orthogonal Complements
Subspace Dimension
Vector Space Dimension
Orthogonal Complements
Vector Space Bases
Span
Linearly Dependent Vectors
Subspace
Real Subspace
Linear Combinations
Real Inner Products
Real Vector Span
Vector
Real Linear Combinations
Real Inner Product
Real Norm
Space Inner Product
Real Vectors
Space Norm
Space Vectors
Plane Vector Sums and Differences
Plane Norm
Plane Inner Product
N-Dimensional Space
Absolute Value
Plane Vectors
Right Triangle Side Relation
Distance
Real Squares
Space Distance
Real Arithmetic
Plane Distance
Real Multiplicative Inverses
Interval Length
Real Products
Intervals
Real Space
Real Additive Inverses
Square Numbers
Real Line
Real Plane
Rational Multiplicative Inverses
Rational Arithmetic
Real Sums
Real Order
Integral Line
Squares
Geometry
Fields
Rational Products
Rational Sums
Real Numbers
Rational Order
Rings
Rational Numbers
Lists
Integer Arithmetic
Set Numbers
Direct Products
Integer Products
Natural Multiplication Identity
Natural Additive Identity
Finite Sets
Arithmetic
Identity Elements
Equivalent Sets
Inverse Elements
Natural Powers
Integer Sums
Integer Order
Element Functions
Function Inverses
Comparisons
Family Unions and Intersections
Natural Products
Integer Numbers
Orders
Operations
Function Images
Function Composites
Families
Natural Sums
Natural Order
Equivalence Relations
Functions
Converse Relations
Recursion Theorem
Relations
Peano Axioms
Ordered Pair Projections
Natural Induction
Set Products
Natural Numbers
Set Powers
Generalized Set Dualities
Set Symmetric Differences
Partitions
Intersection of Empty Set
Successor Sets
Unordered Triples
Set Dualities
Set Unions and Intersections
Set Complements
Set Intersections
Pair Unions
Ordered Pairs
Set Unions
Pair Intersections
Set Differences
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Numbers
Letters
Objects