Definition

The *complex inner product* (or *dot product*, *scalar product*) of two complex vectors $x, y \in \mathbf{C}^n$ is

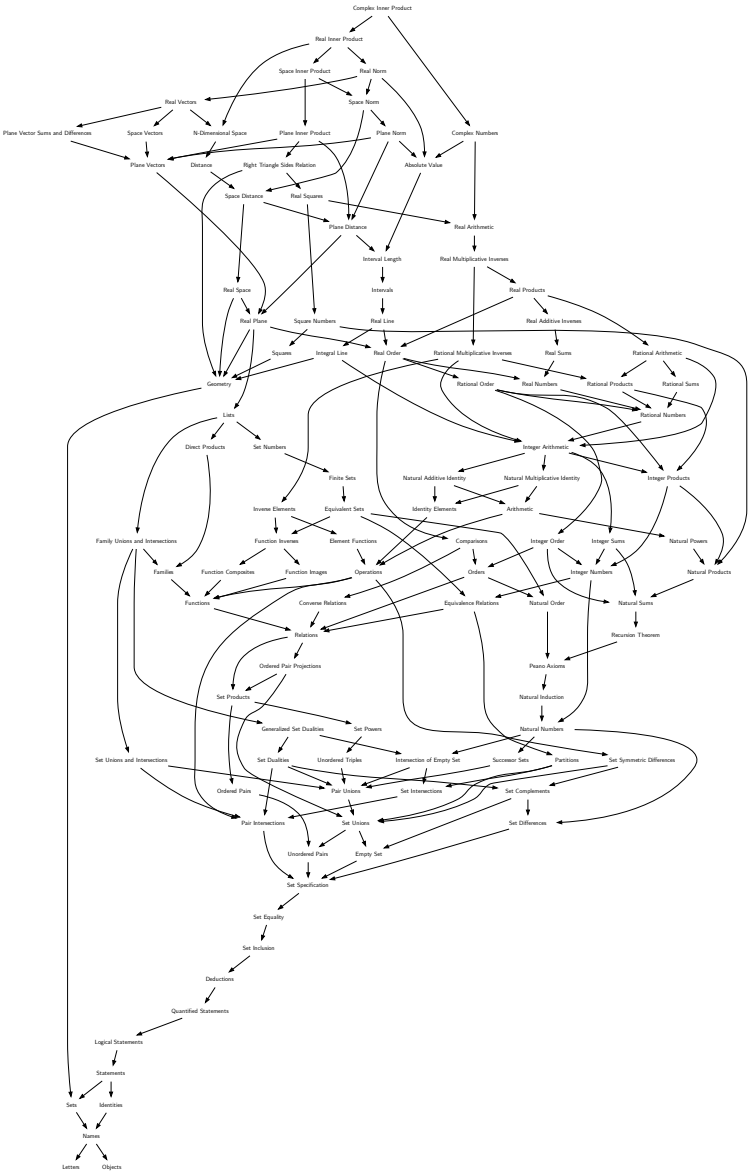
$$x_1 y_1 + x_2 y_2 + \cdots + x_n y_n$$

We denote the inner product of x and y by $\langle x, y \rangle$.

An *inner product space* is tuple whose first object is a vector space over the real or complex numbers and whose second object is a conforming inner product.

Other terminlogy

Some older authors use the term *pre-Hilbert space*.


Complex Inner Product
Real Inner Product
Space Inner Product
Real Norm
Space Norm
Real Vectors
Plane Vector Sums and Differences
Space Vectors
N-Dimensional Space
Plane Inner Product
Plane Norm
Complex Numbers
Plane Vectors
Distance
Right Triangle Sides Relation
Absolute Value
Space Distance
Real Squares
Plane Distance
Real Arithmetic
Interval Length
Real Multiplicative Inverses
Real Space
Intervals
Real Products
Real Plane
Square Numbers
Real Line
Real Additive Inverses
Squares
Integral Line
Real Order
Rational Multiplicative Inverses
Real Sums
Rational Arithmetic
Geometry
Rational Order
Real Numbers
Rational Products
Rational Sums
Rational Numbers
Lines
Integer Arithmetic
Direct Products
Set Numbers
Finite Sets
Natural Additive Identity
Natural Multiplicative Identity
Integer Products
Inverse Elements
Equivalent Sets
Identity Elements
Arithmetic
Family Unions and Intersections
Function Inverses
Element Functions
Comparisons
Integer Order
Integer Sums
Natural Powers
Families
Function Composites
Function Images
Operations
Orders
Integer Numbers
Natural Products
Functions
Converse Relations
Equivalence Relations
Natural Order
Natural Sums
Recursion Theorem
Relations
Ordered Pair Projections
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 Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects