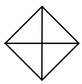


Why

We want to generalize the construction of cover area as generated as a product of two cover lengths, and more generally for arbitrary measure spaces. TODO

Definition

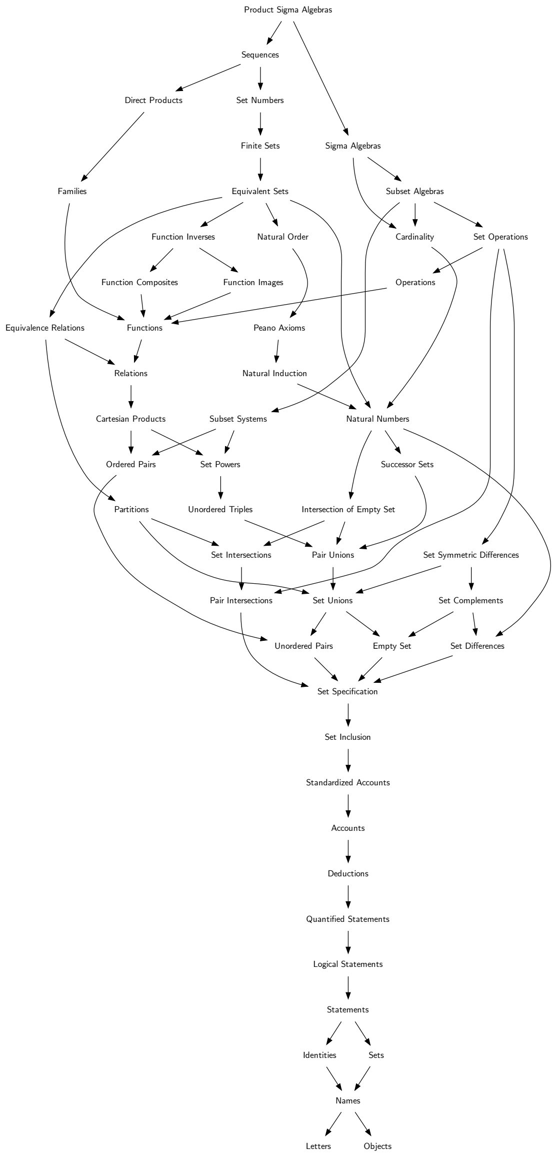
Consider two measurable spaces. The *product base set* is the cartesian product of the first base set with the second base set. A first distinguished set is a distinguished set of the first measurable space, and likewise for a second distinguished set.

A *rectangle with measurable sides* is a set in product base set which is a product of a first distinguished set with a second distinguished set. The *product sigma algebra* is the sigma algebra generated by the rectangles with measurable sides.

The *product measurable space* is the measurable space whose base set is the product base set and whose sigma algebra is the product sigma algebra.

Notation

Let $(X, \mathcal{A})$ and $(Y, \mathcal{B})$ be measurable spaces. The product base set is $X \times Y$. A set $R \in X \times Y$ is a rectangle with measurable sides if $R = A \times B$ for $A \in \mathcal{A}$ and $B \in \mathcal{B}$. We denote the product sigma algebra of $\mathcal{A}$ and $\mathcal{B}$ by $\mathcal{A} \times \mathcal{B}$. $(X \times Y, \mathcal{A} \times \mathcal{B})$ is the product measurable space.



Product Sigma Algebras
Sequences
Direct Products
Set Numbers
Finite Sets
Sigma Algebras
Families
Equivalent Sets
Subset Algebras
Function Inverses
Natural Order
Cardinality
Set Operations
Function Composites
Function Images
Operations
Equivalence Relations
Functions
Peano Axioms
Relations
Natural Induction
Cartesian Products
Subset Systems
Natural Numbers
Ordered Pairs
Set Powers
Successor Sets
Partitions
Unordered Triples
Intersection of Empty Set
Set Intersections
Pair Unions
Set Symmetric Differences
Pair Intersections
Set Unions
Set Complements
Unordered Pairs
Empty Set
Set Differences
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects