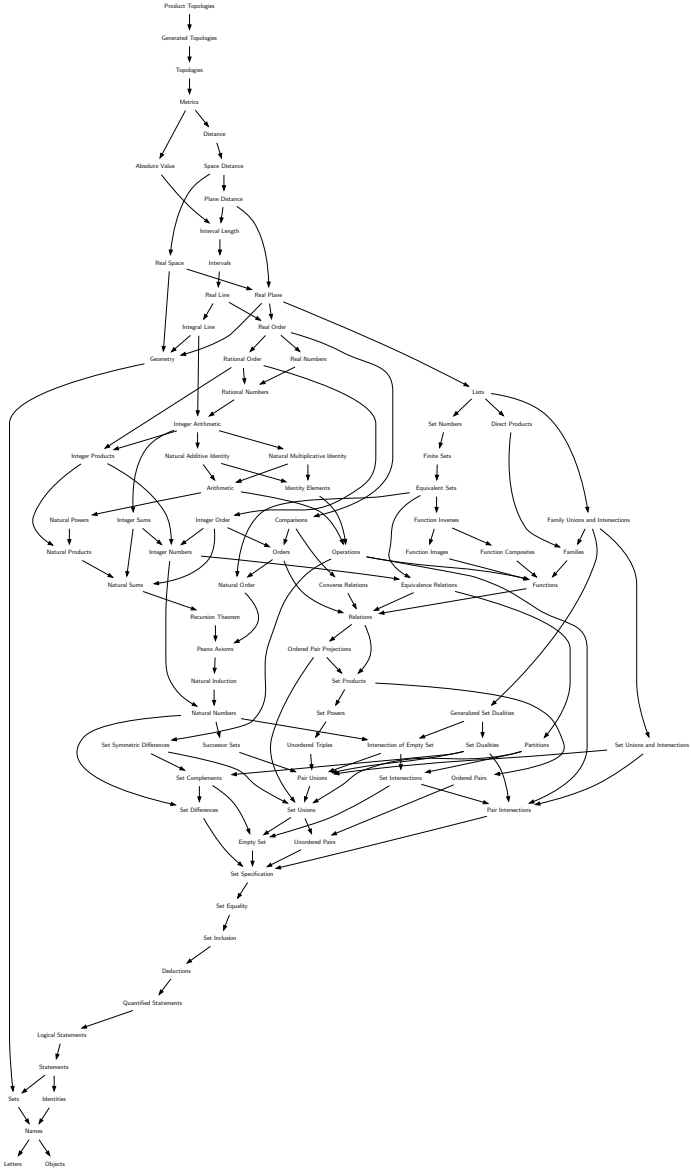
Definition

Given a family of topological spaces $\mathcal{F} = \{(X_\alpha, \mathcal{T}_\alpha\}_{\alpha \in I}$, the *product topology* of $\mathcal{F}$ is the topology on $\prod_{\alpha \in I} X_\alpha$ generated by the set

$$\left\{ p_\beta^{-1}(U_\beta)) \;\middle|\; (\exists \beta)(U_\beta \in X_\beta) \right\}$$

where $p_\beta : \prod_{\alpha \in I} X_\alpha \to X_\beta$ is the β coordinate projection. Some authorities also use the terminology *Tychonoff topology*.


Product Topologies
Generated Topologies
Topologies
Metrics
Distance
Absolute Value
Space Distance
Plane Distance
Interval Length
Real Space
Intervals
Real Line
Real Plane
Integral Line
Real Order
Geometry
Rational Order
Real Numbers
Rational Numbers
Lists
Integer Arithmetic
Set Numbers
Direct Products
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Finite Sets
Arithmetic
Identity Elements
Equivalent Sets
Natural Powers
Integer Sums
Integer Order
Comparisons
Function Inverses
Family Unions and Intersections
Natural Products
Integer Numbers
Orders
Operations
Function Images
Function Composites
Families
Natural Sums
Natural Order
Convene Relations
Equivalence Relations
Functions
Recursion Theorem
Relations
Peano Axioms
Ordered Pair Projections
Natural Induction
Set Products
Natural Numbers
Set Powers
Generalized Set Dualities
Set Symmetric Differences
Successor Sets
Unordered Triples
Intersection of Empty Set
Set Dualities
Partitions
Set Unions and Intersections
Set Complements
Pair Unions
Set Intersections
Ordered Pairs
Set Differences
Set Unions
Pair Intersections
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects