Definition

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

$$\left\{ \prod_{\alpha \in I} U_i \;\middle|\; U_\alpha \in \mathcal{T}_\alpha \right\}$$

Box Topologies

Generated Topologies

Topologies

Metrics

Distance

Space Distance — Absolute Value

Plane Distance

Interval Length

Real Space — Intervals

Real Plane — Real Line

Real Order — Integral Line

Geometry — Rational Order — Real Numbers

Rational Numbers

Lists — Integer Arithmetic

Set Numbers — Natural Multiplicative Identity — Natural Additive Identity — Integer Products

Finite Sets — Identity Elements — Arithmetic — Natural Power

Direct Products — Equivalent Sets — Comparisons — Integer Order — Integer Sums — Natural Products

Family Unions and Intersections — Function Inverse

Families — Function Composites — Function Images — Operations — Orders — Integer Numbers — Natural Sums

Functions — Converse Relations — Equivalence Relations — Natural Order — Recursion Theorem

Relations — Peano Axioms

Set Products — Natural Induction

Generalized Set Dualities — Set Powers — Natural Numbers

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

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Sets — Identities

Names

Letters — Objects