Definition

Given a distribution $p : \Omega \to \mathbf{R}$, the *cumulative distribution* (or *cumulative distribution function*, *cdf*) of a random variable $x : \Omega \to \mathbf{R}$ is the function $F : \mathbf{R} \to \mathbf{R}$ defined by

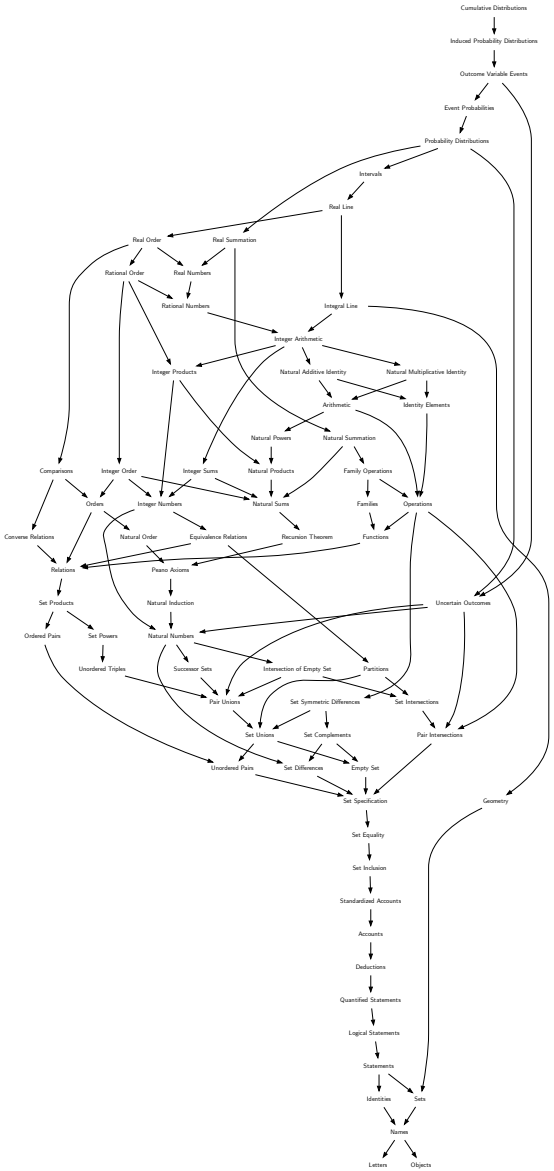
$$F(t) = \mathbf{P}(x \leq t),$$

for all $t \in \mathbf{R}$.

Properties

The cumulative distribution of any random variable is

1. *piecewise constant* and
2. *right continuous*.


Cumulative Distributions
Induced Probability Distributions
Outcome Variable Events
Event Probabilities
Probability Distributions
Intervals
Real Line
Real Order
Real Summation
Rational Order
Real Numbers
Rational Numbers
Integral Line
Integer Arithmetic
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Arithmetic
Identity Elements
Natural Powers
Natural Summation
Comparisons
Integer Order
Integer Sums
Natural Products
Family Operations
Orders
Integer Numbers
Natural Sums
Families
Operations
Converse Relations
Natural Order
Equivalence Relations
Recursion Theorem
Functions
Relations
Peano Axioms
Set Products
Natural Induction
Uncertain Outcomes
Ordered Pairs
Set Powers
Natural Numbers
Unordered Triples
Successor Sets
Intersection of Empty Set
Partitions
Pair Unions
Set Symmetric Differences
Set Intersections
Set Unions
Set Complements
Pair Intersections
Unordered Pairs
Set Differences
Empty Set
Set Specification
Geometry
Set Equality
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects