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

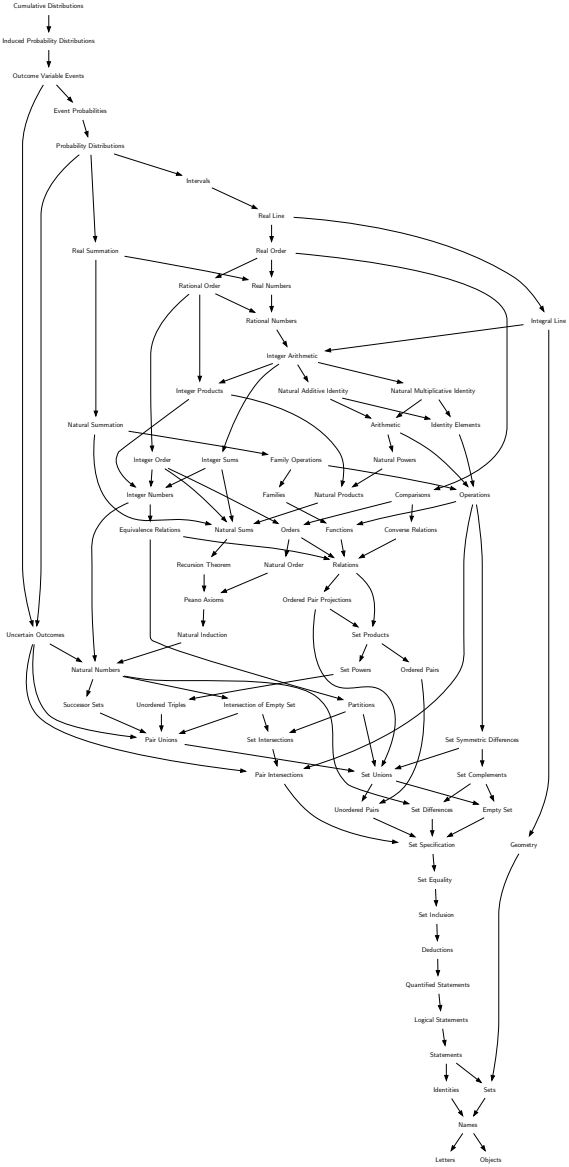
$$F(t) = \mathbf{P}(x \leq t),$$

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