Why

[1]

Definition

Let $X, Y : \Omega \to \mathbf{R}$ be random variables on probability space $(\Omega, \mathcal{F}, \mathbf{P})$. The *joint cumulative distribution function* denoted $F_{X,Y} : \mathbf{R}^2 \to [0,1]$ is defined by $F_{X,Y}(s,t) = \mathbf{P}[X \leq s, Y \leq t]$.

In general the *joint cdf* for a random vector $X : \Omega \to \mathbf{R}^n$ is $F_X : \mathbf{R}^d \to [0,1]$ defined by $F_X(t) = \mathbf{P}[X \leq t]$ where $x \leq t$ means $x_i \leq t_i$ for all i.

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[1]Future editions will include.

Joint Cumulative Distribution Functions

Cumulative Distribution Functions

Random Variables

Topological Sigma Algebra

Outcome Variables

Measurable Functions

Probability Measure

Topological Spaces

Measures

Metrics

Sigma Algebras

Extended Real Numbers

Distance

Real Limits

Space Distance

Event Probabilities

Absolute Value

Plane Distance

Probability Distributions

Interval Length

Intervals

Uncertain Outcomes

Real Line

Real Plane

Real Space

Real Summation

Real Sequences

Integral Line

Real Order

Real Numbers

Sequences

Geometry

Rational Numbers

Direct Products

Set Numbers

Natural Summation

Integer Arithmetic

Finite Sets

Subset Algebra

Family Operations

Natural Multiplicative Identity

Natural Addition Identity

Equivalent Sets

Set Operations

Algebra

Identity Elements

Arithmetic

Integer Products

Integer Sums

Cardinality

Function Inverse

Family Unions and Intersections

Operations

Natural Powers

Integer Numbers

Comparisons

Families

Function Composites

Function Images

Natural Products

Equivalence Relations

Converse Relations

Orders

Functions

Natural Sums

Relations

Natural Order

Subset Systems

Set Products

Recursion Theorem

Ordered Pairs

Set Powers

Peano Axioms

Unordered Triples

Natural Induction

Natural Numbers

Generalized Set Dualities

Set Symmetric Differences

Partitions

Intersection of Empty Set

Successor Sets

Set Dualities

Set Unions and Intersections

Set Complements

Set Intersections

Pair Unions

Set Unions

Set Differences

Pair Intersections

Unordered Pairs

Empty Set

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities

Sets

Names

Letters

Objects