Why

As with distributions, if a density factors according to a tree rooted at a particular vertex, it factors according to a tree rooted at any vertex. So, as before, the property of factoring according to a rooted tree is really a property of factoring according to a tree.

Defining result

Proposition 1. *If a density factors according to a tree rooted at a vertex it factors according to that tree rooted at any vertex.*

Undirected definition

A density *factors according to a tree* if it factors according to the tree rooted at any vertex.

Existences and uniqueness

Trees are not a property of densities, since there is no one-to-one correspondence, as demonstrated by the following propositions.

Existence

Proposition 2. *A density f need not factor according to a tree.*

Uniqueness

Proposition 3. *A density f may factor according to multiple trees.*

Tree Densities
Rooted Tree Densities
Conditional Densities
Marginal Densities
Multivariate Real Densities
N-Dimensional Space
Probability Densities
Distance
Real Integrals
Nonnegative Integrals
Simple Integrals
Measurable Functions
Measures
Sigma Algebras
Rooted Tree Distributions
Real Series
Extended Real Numbers
Conditional Distributions
Conditional Event Probabilities
Marginal Distributions
Space Distance
Real Limits
Event Probabilities
Joint Distributions
Plane Distance
Simple Functions
Absolute Value
Probability Distributions
Interval Length
Real Functions
Outcome Probabilities
Real Space
Intervals
Real Summation
Rooted Trees
Real Plane
Real Line
Trees
Directed Graphs
Integral Line
Real Order
Real Sequences
Subset Algebras
Sequences
Natural Summation
Undirected Paths
Geometry
Rational Order
Real Numbers
Cardinality
Lists
Undirected Graphs
Rational Numbers
Set Number
Direct Products
Integer Arithmetic
Finite Sets
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Uncertain Events
Equivalent Sets
Family Operations
Arithmetic
Identity Elements
Function Inverse
Family Unions and Intersections
Integer Order
Comparisons
Integer Sums
Natural Powers
Operations
Function Composite
Function Image
Families
Orders
Integer Number
Natural Products
Functions
Natural Sums
Natural Order
Converse Relations
Equivalence Relations
Recursion Theorem
Relations
Peano Axioms
Ordered Pair Projections
Uncertain Outcomes
Natural Induction
Characteristic Functions
Subset Systems
Set Products
Natural Numbers
Set Powers
Ordered Pairs
Generalized Set Dualities
Partition
Successor Sets
Intersection of Empty Set
Unordered Triples
Set Symmetric Differences
Set Dualities
Set Unions and Intersections
Set Intersection
Pair Unions
Set Complements
Set Differences
Set Unions
Pair Intersections
Unordered Pair
Empty Set
Set Specification
Set Equality
Set Inclusion
Deduction
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects