Why

We can represent a probability distribution on a set of size n by a vector in $\mathbf{R}^n$.

Definition

Let A be a set with $|A| = n$ and let $p : A \to \mathbf{R}$ be a probability distribution on A. For $\sigma : A \to \mathbf{N}$ a numbering of A, define the vector $x_i = p(\sigma^{-1}x)$. Then $x \geq 0$ (elementwise) and $1^\top x = 1$.


Probability Vectors
Matrix Transpose
Real Vectors
Matrices
Vectors
N-Dimensional Space
Distance
Space Distance
Plane Distance
Interval Length
Probability Distributions
Intervals
Real Space
Real Plane
Real Line
Sequences
Real Summation
Real Order
Integral Line
Fields
Real Numbers
Rational Order
Geometry
Set Numbers
Direct Products
Groups
Rational Numbers
Finite Sets
Integer Additive Inverses
Integer Arithmetic
Inverse Elements
Natural Multiplicative Identity
Natural Additive Identity
Natural Summation
Integer Products
Equivalent Sets
Family Operations
Element Functions
Integer Sums
Identity Elements
Arithmetic
Family Unions and Intersections
Function Inverses
Algebras
Comparisons
Integer Order
Natural Powers
Function Images
Function Composites
Families
Operations
Integer Numbers
Orders
Natural Products
Equivalence Relations
Functions
Converse Relations
Natural Order
Natural Sums
Relations
Recursion Theorem
Peano Axioms
Set Products
Uncertain Outcomes
Natural Induction
Generalized Set Dualities
Set Powers
Natural Numbers
Set Unions and Intersections
Partitions
Intersection of Empty Set
Set Dualities
Unordered Triples
Successor Sets
Set Intersections
Pair Unions
Set Complements
Ordered Pairs
Pair Intersections
Set Unions
Set Differences
Empty Set
Unordered Pairs
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects