Why

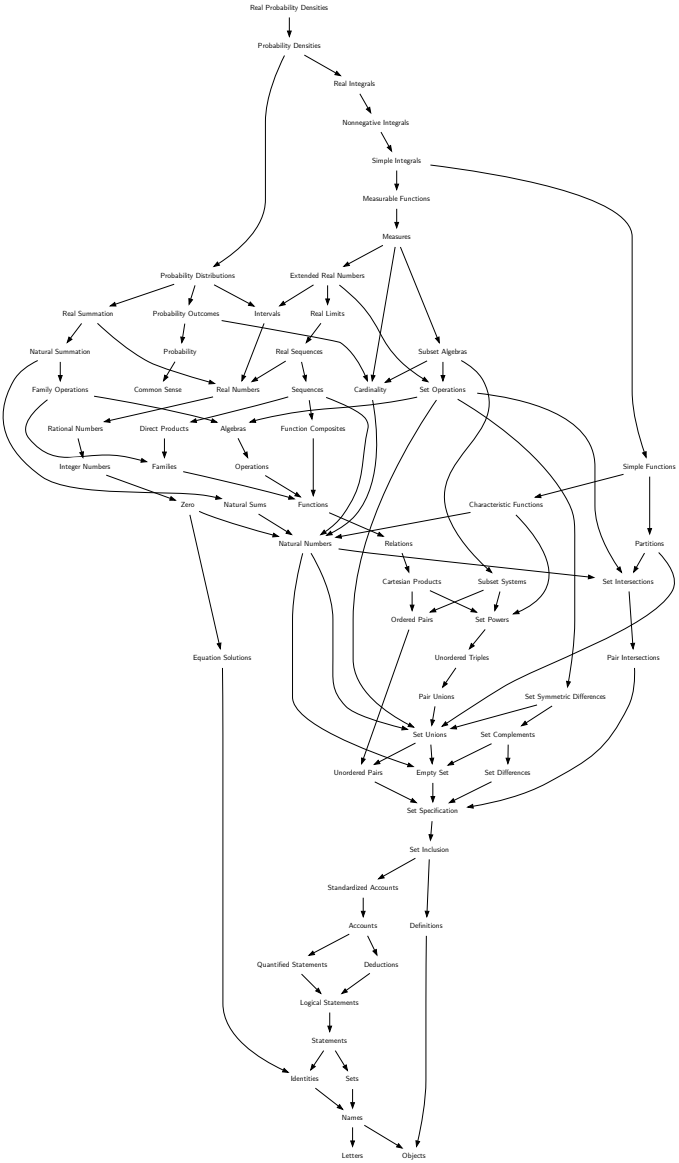
We want to talk about probability on the set of outcomes which is the real numbers.

Definition

A *probability density* or *probability density function* is a real-valued function on the reals which is nonnegative and normalized. A real-valued function on the reals is *normalized* if it integrates to 1.

Notation

Let $f : \mathbf{R} \to \mathbf{R}$ with $f \geq 0$ and $\int f = 1$. Then f is a probability density.


Real Probability Densities
Probability Densities
Real Integrals
Nonnegative Integrals
Simple Integrals
Measurable Functions
Measures
Probability Distributions
Extended Real Numbers
Real Summation
Probability Outcomes
Intervals
Real Limits
Natural Summation
Probability
Real Sequences
Subset Algebras
Family Operations
Common Sense
Real Numbers
Sequences
Cardinality
Set Operations
Rational Numbers
Direct Products
Algebras
Function Composites
Integer Numbers
Families
Operations
Simple Functions
Zero
Natural Sums
Functions
Characteristic Functions
Natural Numbers
Relations
Partitions
Cartesian Products
Subset Systems
Set Intersections
Ordered Pairs
Set Powers
Equation Solutions
Unordered Triples
Pair Intersections
Pair Unions
Set Symmetric Differences
Set Unions
Set Complements
Unordered Pairs
Empty Set
Set Differences
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Definitions
Quantified Statements
Deductions
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects