Why

The sum of several independent and identically distributed random variables tends toward a normal distribution. TODO, and defined "tends"

Result

Prop. 1. *Let $(X, \mathcal{A}, \mu)$ be a probability space. Let $(f_n)_n$ be a sequence of independent and identically distributed real-valued random variables on X with $\mathrm{E}(f_n) = \mu < \infty$ and $\mathrm{var}(f_n) = \sigma^2 < \infty$ for all n. Define $s_n = \sum_{i=1}^{n} f_i$. For all real numbers t,*

$$\lim_{n \to \infty} \mu\left(\left\{ x \in X \ \middle| \ \frac{s_n(x) - n\mu}{\sigma\sqrt{n}} \leq t \right\}\right) = \Phi(t).$$

Central Limit Theorem

Variance

Expectation

Random Variables

Topological Sigma Algebra

Outcome Variables

Measurable Functions

Probability Measures

Topological Spaces

Measures

Metrics

Extended Real Numbers

Distance

Real Limits

Space Distance

Sigma Algebras

Event Probabilities

Absolute Value

Plane Distance

Probability Distributions

Interval Length

Intervals

Real Sequences

Real Plane

Real Space

Real Line

Real Summation

Sequences

Real Order

Integral Line

Real Numbers

Set Numbers

Geometry

Uncertain Outcomes

Rational Numbers

Finite Sets

Natural Summation

Integer Arithmetic

Direct Products

Subset Algebra

Family Operations

Natural Multiplicative Identity

Natural Additive Identity

Cardinality

Set Operations

Algebras

Identity Elements

Arithmetic

Equivalent Sets

Operations

Function Inverses

Natural Powers

Integer Products

Integer Sums

Family Unions and Intersections

Families

Function Composites

Function Images

Natural Products

Integer Numbers

Functions

Natural Sums

Equivalence Relations

Natural Order

Relations

Recursion Theorem

Subset Systems

Cartesian Products

Peano Axioms

Ordered Pairs

Set Powers

Natural Induction

Natural Numbers

Unordered Triples

Generalized Set Dualities

Set Symmetric Differences

Successor Sets

Set Dualities

Set Unions and Intersections

Intersection of Empty Set

Partitions

Set Complements

Pair Unions

Set Intersections

Set Differences

Set Unions

Pair Intersections

Unordered Pairs

Empty Set

Set Specification

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities

Sets

Names

Letters

Objects