Probability

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Abstract

Sample space, events, conditional probability, independence of events, Bayes' Theorem. Basic combinatorial probability, random variables, discrete and continuous univariate and multivariate distributions. Moment generating functions Independence of random variables. Chebyshev's inequality,central limit theorem, weak law of large numbers (if time allows).

Contents

1 Fundamentals

1.1 Set Theory

Definition 1.1. A **set** is a collection of objects, called elements.

Example 1.1. The set of natural numbers $\mathbb{N} = \{1, 2, 3, \dots\}$, which is both infinite and countable.