

RANDOM VARIABLE LAWS

Why

We name the image measures of real-valued random variables.

Definition

The law of a random variable is the image measure (see Image Measures) of the probability measure under the random variable.

For example, if the random variable is real-valued we use the topological sigma algebra of the real numbers and the law is the image measure on R induced by the probability measure.

Notation

Let (X, \mathcal{A}) and (Y, \mathcal{B}) be two measurable spaces. Let $f: X \to Y$ be a random variable. Let $\mu: \mathcal{A} \to [0, \infty]$ be a probability measure. We denote the law of f by μ_f .

