



## 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 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  $\mathbf{R}$  induced by the probability measure.

## Notation

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



