



# Random Variable Moments

## 1 Why

TODO

## 2 Results

Let  $n$  be a natural number. If the integral of the  $n$ th power of a real-valued random variable exists, the  $n$ th *moment* of the random variable is the expectation of its  $n$ th power.

### 2.1 Notation

Let  $n$  be a natural number. Let  $(X, \mathcal{A}, \mu)$  be a probability space. Let  $f$  be a real-valued random variable on  $X$  such that  $\int f^n d\mu$  exists. In expectation notation, the  $n$ th moment of  $f$  is  $\mathbf{E}(f^n)$ .