



Moment Generating Function

1 Why

TODO

2 Results

The *moment generating function* of a real-valued random variable is the function mapping real numbers to the expectation of the exponential of the product of that real number with the random variable.

2.1 Notation

Let (X, \mathcal{A}, μ) be a probability space. Let f be a real-valued random variable on X . Let R denote the real numbers. For each $t \in R$, denote by tf the function $x \mapsto tf(x)$. Similarly, denote by e^{tf} the function $x \mapsto e^{tf(x)}$.

Denote the moment generating function of f by $m_f : R \rightarrow R$. We defined it by

$$m_f(t) = \mathbf{E}(e^{tf}).$$