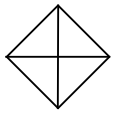

Moment Generating Function

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 $(X, \mathcal{A}, \mu)$ 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 funciton $x \mapsto e^{tf(x)}$.

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

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