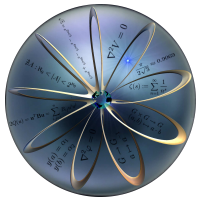

planetmath.org

Math for the people, by the people.

moment generating function

Canonical name	MomentGeneratingFunction
Date of creation	2013-03-22 11:53:51
Last modified on	2013-03-22 11:53:51
Owner	mathcam (2727)
Last modified by	mathcam (2727)
Numerical id	10
Author	mathcam (2727)
Entry type	Definition
Classification	msc 60E05
Classification	msc 46L05
Classification	msc 82-00
Classification	msc 83-00
Classification	msc 81-00
Related topic	CharacteristicFunction2
Related topic	CumulantGeneratingFunction

Given a random variable X, the *moment generating function* of X is the following function:

$M_X(t) = E[e^{tX}]$ for $t \in R$ (if the expectation converges).

It can be shown that if the moment generating function of X is defined on an interval around the origin, then

$E[X^k] = M_X^{(k)}(t)|_{t=0}$

In other words, the kth-derivative of the moment generating function evaluated at zero is the kth moment of X.