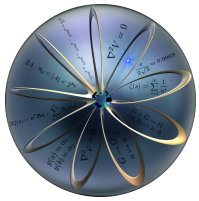

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lognormal random variable

Canonical name	LognormalRandomVariable
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Entry type	Definition
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Synonym	lognormal distribution

X is a *lognormal random variable* with parameters $\mu \in \mathbb{R}$ and $\sigma^2 > 0$ if its probability density function is given for $x > 0$ by

$$f_X(x) = \frac{1}{\sqrt{2\pi\sigma^2}} \frac{e^{-\frac{(\ln x - \mu)^2}{2\sigma^2}}}{x}.$$

To denote this, one usually writes $X \sim LogN(\mu, \sigma^2)$.
For a lognormal random variable X:

1. X is a random variable such that $\ln(X)$ is a normal random variable with mean μ and variance σ^2.
2. $E[X] = e^{\mu+\sigma^2/2}$
3. $Var[X] = e^{2\mu+\sigma^2}(e^{\sigma^2} - 1)$
4. $M_X(t)$ is not a useful quantity.