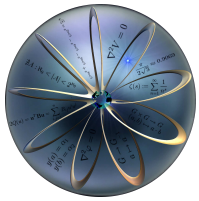

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exponential random variable

Canonical name	ExponentialRandomVariable
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Classification	msc 62E15
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Synonym	exponential distribution

X is a *exponential random variable* with parameter $\lambda > 0$ if its probability density function is given for $x > 0$ by

$$f_X(x) = \lambda e^{-\lambda x}.$$

To denote this, one usually writes $X \sim Exp(\lambda)$.
For an exponential random variable X:

1. X is commonly used to model lifetimes and duration between Poisson events.
2. The expected value of X is given by $E[X] = \frac{1}{\lambda}$
3. The variance of X is given by $Var[X] = \frac{1}{\lambda^2}$
4. The moments of X are given by $M_X(t) = \frac{\lambda}{\lambda - t}$
5. It is interesting to note that X is a gamma random variable with an α parameter of 1.