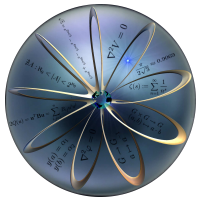

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Pareto random variable

Canonical name	ParetoRandomVariable
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Author	alozano (2414)
Entry type	Definition
Classification	msc 62E15
Synonym	Pareto distribution

X is a **Pareto random variable** with parameters a, b if
$f_X(x) = \frac{ab^a}{x^{a+1}}$, $x \in [b, \infty)$
Parameters:

- $a \in (0, \infty)$
- $b \in (0, \infty)$

Syntax:
$X \sim Pareto(a, b)$
Notes:

1. X represents a random variable with shape parameter a and scale parameter b.
2. The expected value of X is noted as $E[X] = \frac{ab}{a-1}$ with $a \in \{2, 3, \ldots\}$
3. The variance of X is noted as $Var[X] = \frac{ab^2}{(a-1)^2(a-2)}$, $a \in \{3, 4, ...\}$
4. The cumulative distribution function of X is noted as $F(x) = 1 - (\frac{b}{x})^a$
5. The moments of X around 0 are noted as $E[X^n] = \frac{ab^n}{a-n}$, $n \in \{1, 2, ..., a-1\}$