Defined for x > 0, a ≥ 0 (*upperTail* = zero or absent) or a > 0 (*upperTail* = 0).

See Also

The **gamma**, **gammp**, and **gammq** functions.

gammaNoise

`gammaNoise(a [, b])`

The gammaNoise function returns a pseudo-random value from the gamma distribution

$$f(x) = \frac{x^{a-1}\exp\left(-\frac{x}{b}\right)}{b^a\Gamma(a)}, \qquad x>0,\ a>0,\ b>0,$$

whose mean is *ab* and variance is ab^2. For backward compatibility you can omit the parameter *b* in which case its value is set to 1. When $a \to 1$ gammaNoise reduces to **expNoise**.

The random number generator initializes using the system clock when Igor Pro starts. This almost guarantees that you will never repeat a sequence. For repeatable “random” numbers, use **SetRandomSeed**. The algorithm uses the Mersenne Twister random number generator.

References

Marsaglia, G., and W. W. Tsang, *ACM*, 26, 363-372, 2000.

See Also

The **SetRandomSeed** operation.

Noise Functions on page III-390.

Chapter III-12, **Statistics** for a function and operation overview.

gammln

`gammln(num [, accuracy])`

The gammln function returns the natural log of the gamma function of *num*, where *num* > 0. If *num* is complex, it returns a complex result. Optionally, *accuracy* can be used to specify the desired fractional accuracy. If *num* is complex, it returns a complex result. In this case, *accuracy* is ignored.

Details

The *accuracy* parameter specifies the fractional accuracy that you desire. That is, if you set *accuracy* to 10^{-7}, that means that you wish that the absolute value of $(f_{actual} - f_{returned})/f_{actual}$ be less than 10^{-7}.

For backward compatibility, if you don’t include *accuracy*, gammln uses older code that achieves an accuracy of about $2x10^{-10}$.

With *accuracy*, newer code is used that is both faster and more accurate. The output has fractional accuracy better than $1x10^{-15}$ except for values near zero, where the absolute accuracy $(f_{actual} - f_{returned})$ is better than $2x10^{-16}$.

The speed of calculation depends only weakly on accuracy. Higher accuracy is significantly slower than lower accuracy only for *num* between 6 and about 10.

See Also

The **gamma** function.

gammp

`gammp(a, x [, accuracy])`

The gammp function returns the regularized incomplete gamma function P(*a*,*x*), where *a* > 0, *x* ≥ 0. Optionally, *accuracy* can be used to specify the desired fractional accuracy. Same as `gammaInc(a, x, 0)/gamma(a)`.

Details

The *accuracy* parameter specifies the fractional accuracy that you desire. That is, if you set *accuracy* to 10^{-7}, that means that you wish that the absolute value of $(f_{actual} - f_{returned})/f_{actual}$ be less than 10^{-7}.