Math

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Beta

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ML_Core.Math |

DESCRIPTIONS

FUNCTION Beta

	Beta
(REAL8 x, REAL8 y)	

Return the beta value of two positive real numbers, x and y

PARAMETER x the value of the first number

PARAMETER y the value of the second number

RETURN the beta value

Distributions

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IMPORTS

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DESCRIPTIONS

MODULE Distributions

	Distributions

Children

1. Normal_CDF : Cumulative Distribution of the standard normal distribution, the probability that a normal random variable will be smaller than x standard deviations above or below the mean
2. Normal_PPF : Normal Distribution Percentage Point Function
3. T_CDF : Students t distribution integral evaluated between negative infinity and x
4. T_PPF : Percentage point function for the T distribution
5. Chi2_CDF : The cumulative distribution function for the Chi Square distribution
6. Chi2_PPF : The Chi Squared PPF function

FUNCTION Normal_CDF

Distributions \

REAL8	**Normal_CDF**
(REAL8 x)	

Cumulative Distribution of the standard normal distribution, the probability that a normal random variable will be smaller than x standard deviations above or below the mean. Taken from C/C++ Mathematical Algorithms for Scientists and Engineers, n. Shammas, McGraw-Hill, 1995

PARAMETER **x** the number of standard deviations

FUNCTION Normal_PPF

Distributions \

REAL8	**Normal_PPF**
(REAL8 x)	

Normal Distribution Percentage Point Function. Translated from C/C++ Mathematical Algorithms for Scientists and Engineers, N. Shammas, McGraw-Hill, 1995

PARAMETER **x** probability

FUNCTION T_CDF

Distributions \

REAL8	**T_CDF**
(REAL8 x, REAL8 df)	

Students t distribution integral evaluated between negative infinity and x. Translated from NIST SEL DATAPAC Fortran TCDF.f source

PARAMETER **x** value of the evaluation

PARAMETER **df** degrees of freedom

FUNCTION T_PPF

Distributions \

REAL8	**T_PPF**
(REAL8 x, REAL8 df)	

Percentage point function for the T distribution. Translated from NIST SEL DATAPAC Fortran TPPF.f source

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FUNCTION Chi2_CDF

Distributions \

REAL8	**Chi2_CDF**
(REAL8 x, REAL8 df)	

The cumulative distribution function for the Chi Square distribution. the CDF for the specfied degrees of freedom. Translated from the NIST SEL DATAPAC Fortran subroutine CHSCDF.

FUNCTION Chi2_PPF

Distributions \

REAL8	**Chi2_PPF**
(REAL8 x, REAL8 df)	

The Chi Squared PPF function. Translated from the NIST SEL DATAPAC Fortran subroutine CHSPPF.

DoubleFac

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DESCRIPTIONS

EMBED DoubleFac

REAL8	**DoubleFac**
(INTEGER2 i)	

The 'double' factorial is defined for ODD n and is the product of all the odd numbers up to and including that number. We are extending the meaning to even numbers to mean the product of the even numbers up to and including that number. Thus DoubleFac(8) = 8*6*4*2 We also defend against i < 2 (returning 1.0)

PARAMETER **i** the value used in the calculation

RETURN the factorial of the sequence, declining by 2

Fac

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DESCRIPTIONS

EMBED Fac

REAL8	**Fac**
(UNSIGNED2 i)	

Factorial function

PARAMETER **i** the value used, (i)(i-1)(i-2)...(2)

RETURN the factorial i!

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gamma

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DESCRIPTIONS

EMBED gamma

REAL8	**gamma**
(REAL8 x)	

Return the value of gamma function of real number x A wrapper for the standard C tgamma function.

PARAMETER **x** the input x

RETURN the value of GAMMA evaluated at x

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log_gamma

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DESCRIPTIONS

EMBED log_gamma

REAL8	**log_gamma**
(REAL8 x)	

Return the value of the log gamma function of the absolute value of X. A wrapper for the standard C lgamma function. Avoids the race condition found on some platforms by taking the absolute value of the of the input argument.

PARAMETER **x** the input x

RETURN the value of the log of the GAMMA evaluated at ABS(x)

---

lowerGamma

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DESCRIPTIONS

EMBED lowerGamma

REAL8	**lowerGamma**
(REAL8 x, REAL8 y)	

Return the lower incomplete gamma value of two real numbers, x and y

PARAMETER **x** the value of the first number

PARAMETER **y** the value of the second number

RETURN the lower incomplete gamma value

NCK

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IMPORTS

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DESCRIPTIONS

FUNCTION NCK

REAL8	NCK
(INTEGER2 N, INTEGER2 K)	

Poly

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DESCRIPTIONS

EMBED Poly

REAL8	**Poly**
(REAL8 x, SET OF REAL8 Coeffs)	

Evaluate a polynomial from a set of co-effs. Co-effs 1 is assumed to be the HIGH order of the equation. Thus for axˆ2+bx+c - the set would need to be Coef := [a,b,c];

PARAMETER **x** the value of x in the polynomial

PARAMETER **Coeffs** a set of coefficients forthe polynomial. The ALL set is considered to be all zero values

RETURN value of the polynomial at x

StirlingFormula

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DESCRIPTIONS

FUNCTION StirlingFormula

	StirlingFormula
(REAL x)	

Stirling's formula

PARAMETER **x** the point of evaluation

RETURN evaluation result

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upperGamma

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DESCRIPTIONS

EMBED upperGamma

REAL8	**upperGamma**
(REAL8 x, REAL8 y)	

Return the upper incomplete gamma value of two real numbers, x and y.

PARAMETER **x** the value of the first number

PARAMETER **y** the value of the second number

RETURN the upper incomplete gamma value
