

**Scalar** — Scalar mathematical functions

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[M-5] Manual entry	Function	Purpose
<b>Complex</b>		
<b>Re()</b>	Re()	real part
	Im()	imaginary part
<b>C()</b>	C()	make complex
<b>Sign related</b>		
<b>abs()</b>	abs()	absolute value (length if complex)
<b>sign()</b>	sign()	sign function
	quadrant()	quadrant of value
<b>dsign()</b>	dsign()	FORTRAN-like DSIGN function
<b>conj()</b>	conj()	complex conjugate
<b>Transcendental &amp; square root</b>		
<b>exp()</b>	exp()	exponentiation
	ln(), log()	natural logarithm
	log10()	base-10 logarithm
	expm1()	$\exp() - 1$
	ln1p(), log1p()	natural logarithm of $(1 + x)$
	ln1m(), log1m()	natural logarithm of $(1 - x)$
<b>sqrt()</b>	sqrt()	square root

### Transcendental & square root, continued

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<b>sin()</b>	<code>sin()</code>	sine
	<code>cos()</code>	cosine
	<code>tan()</code>	tangent
	<code>asin()</code>	arcsine
	<code>acos()</code>	arccosine
	<code>atan()</code>	arctangent
	<code>arg()</code>	arctangent of complex
	<code>atan2()</code>	two-argument arctangent
	<code>sinh()</code>	hyperbolic sine
	<code>cosh()</code>	hyperbolic cosine
	<code>tanh()</code>	hyperbolic tangent
	<code>asinh()</code>	inverse-hyperbolic sine
	<code>acosh()</code>	inverse-hyperbolic cosine
	<code>atanh()</code>	inverse-hyperbolic tangent
	<code>pi()</code>	value of $\pi$

### Factorial & gamma

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<b>factorial()</b>	<code>factorial()</code>	factorial
	<code>lnfactorial()</code>	natural logarithm of factorial
	<code>gamma()</code>	gamma function
	<code>lngamma()</code>	natural logarithm of gamma function
	<code>digamma()</code>	derivative of <code>lngamma()</code>
	<code>trigamma()</code>	second derivative of <code>lngamma()</code>

### Modulus & integer rounding

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<b>mod()</b>	<code>mod()</code>	modulus
<b>trunc()</b>	<code>trunc()</code>	truncate to integer
	<code>floor()</code>	round down to integer
	<code>ceil()</code>	round up to integer
	<code>round()</code>	round to closest integer or multiple

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## Description

With a few exceptions, the above functions are what most people would consider scalar functions, although in fact all will work with matrices, in an element-by-element fashion.

## Remarks and examples

[stata.com](https://www.stata.com)

For other mathematical functions, see

[M-4] <b>Matrix</b>	Matrix functions
[M-4] <b>Mathematical</b>	Important mathematical functions
[M-4] <b>Statistical</b>	Statistical functions

## Also see

[M-4] **Intro** — Categorical guide to Mata functions