

Functions by category

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Date and time functions

<code>bofd("cal", e_d)</code>	the e_b business date corresponding to e_d
<code>Cdhms(e_d, h, m, s)</code>	the e_{tC} datetime (ms. with leap seconds since 01jan1960 00:00:00.000) corresponding to e_d, h, m, s
<code>Chms(h, m, s)</code>	the e_{tC} datetime (ms. with leap seconds since 01jan1960 00:00:00.000) corresponding to h, m, s on 01jan1960
<code>Clock(s_1, s_2 [, Y])</code>	the e_{tC} datetime (ms. with leap seconds since 01jan1960 00:00:00.000) corresponding to s_1 based on s_2 and Y
<code>clock(s_1, s_2 [, Y])</code>	the e_{tc} datetime (ms. since 01jan1960 00:00:00.000) corresponding to s_1 based on s_2 and Y
<code>Cmdyhms(M, D, Y, h, m, s)</code>	the e_{tC} datetime (ms. with leap seconds since 01jan1960 00:00:00.000) corresponding to M, D, Y, h, m, s
<code>Cofc(e_{tc})</code>	the e_{tC} datetime (ms. with leap seconds since 01jan1960 00:00:00.000) of e_{tc} (ms. without leap seconds since 01jan1960 00:00:00.000)
<code>cofC(e_{tC})</code>	the e_{tc} datetime (ms. without leap seconds since 01jan1960 00:00:00.000) of e_{tC} (ms. with leap seconds since 01jan1960 00:00:00.000)
<code>Cofd(e_d)</code>	the e_{tC} datetime (ms. with leap seconds since 01jan1960 00:00:00.000) of date e_d at time 00:00:00.000
<code>cofd(e_d)</code>	the e_{tc} datetime (ms. since 01jan1960 00:00:00.000) of date e_d at time 00:00:00.000
<code>daily(s_1, s_2 [, Y])</code>	a synonym for <code>date(s_1, s_2 [, Y])</code>
<code>date(s_1, s_2 [, Y])</code>	the e_d date (days since 01jan1960) corresponding to s_1 based on s_2 and Y
<code>day(e_d)</code>	the numeric day of the month corresponding to e_d
<code>dhms(e_d, h, m, s)</code>	the e_{tc} datetime (ms. since 01jan1960 00:00:00.000) corresponding to e_d, h, m, s
<code>dofb($e_b, "cal"$)</code>	the e_d datetime corresponding to e_b
<code>dofC(e_{tC})</code>	the e_d date (days since 01jan1960) of datetime e_{tC} (ms. with leap seconds since 01jan1960 00:00:00.000)

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<code>dofc(e_{tc})</code>	the e_d date (days since 01jan1960) of datetime e_{tc} (ms. since 01jan1960 00:00:00.000)
<code>dofh(e_h)</code>	the e_d date (days since 01jan1960) of the start of half-year e_h
<code>dofm(e_m)</code>	the e_d date (days since 01jan1960) of the start of month e_m
<code>dofq(e_q)</code>	the e_d date (days since 01jan1960) of the start of quarter e_q
<code>dofw(e_w)</code>	the e_d date (days since 01jan1960) of the start of week e_w
<code>dofy(e_y)</code>	the e_d date (days since 01jan1960) of 01jan in year e_y
<code>dow(e_d)</code>	the numeric day of the week corresponding to date e_d ; 0 = Sunday, 1 = Monday, \dots , 6 = Saturday
<code>doy(e_d)</code>	the numeric day of the year corresponding to date e_d
<code>halfyear(e_d)</code>	the numeric half of the year corresponding to date e_d
<code>halfyearly(s_1, s_2 [, Y])</code>	the e_h half-yearly date (half-years since 1960h1) corresponding to s_1 based on s_2 and Y ; Y specifies <i>topyear</i> ; see date()
<code>hh(e_{tc})</code>	the hour corresponding to datetime e_{tc} (ms. since 01jan1960 00:00:00.000)
<code>hhC(e_{tC})</code>	the hour corresponding to datetime e_{tC} (ms. with leap seconds since 01jan1960 00:00:00.000)
<code>hms(h, m, s)</code>	the e_{tc} datetime (ms. since 01jan1960 00:00:00.000) corresponding to h, m, s on 01jan1960
<code>hofd(e_d)</code>	the e_h half-yearly date (half years since 1960h1) containing date e_d
<code>hours(ms)</code>	$ms/3,600,000$
<code>mdy(M, D, Y)</code>	the e_d date (days since 01jan1960) corresponding to M, D, Y
<code>mdyhms(M, D, Y, h, m, s)</code>	the e_{tc} datetime (ms. since 01jan1960 00:00:00.000) corresponding to M, D, Y, h, m, s
<code>minutes(ms)</code>	$ms/60,000$
<code>mm(e_{tc})</code>	the minute corresponding to datetime e_{tc} (ms. since 01jan1960 00:00:00.000)
<code>mmC(e_{tC})</code>	the minute corresponding to datetime e_{tC} (ms. with leap seconds since 01jan1960 00:00:00.000)
<code>mofd(e_d)</code>	the e_m monthly date (months since 1960m1) containing date e_d
<code>month(e_d)</code>	the numeric month corresponding to date e_d
<code>monthly(s_1, s_2 [, Y])</code>	the e_m monthly date (months since 1960m1) corresponding to s_1 based on s_2 and Y ; Y specifies <i>topyear</i> ; see date()
<code>msofhours(h)</code>	$h \times 3,600,000$
<code>msofminutes(m)</code>	$m \times 60,000$
<code>msofseconds(s)</code>	$s \times 1,000$
<code>qofd(e_d)</code>	the e_q quarterly date (quarters since 1960q1) containing date e_d
<code>quarter(e_d)</code>	the numeric quarter of the year corresponding to date e_d
<code>quarterly(s_1, s_2 [, Y])</code>	the e_q quarterly date (quarters since 1960q1) corresponding to s_1 based on s_2 and Y ; Y specifies <i>topyear</i> ; see date()
<code>seconds(ms)</code>	$ms/1,000$
<code>ss(e_{tc})</code>	the second corresponding to datetime e_{tc} (ms. since 01jan1960 00:00:00.000)
<code>ssC(e_{tC})</code>	the second corresponding to datetime e_{tC} (ms. with leap seconds since 01jan1960 00:00:00.000)

<code>tC(l)</code>	convenience function to make typing dates and times in expressions easier
<code>tC(l)</code>	convenience function to make typing dates and times in expressions easier
<code>td(l)</code>	convenience function to make typing dates in expressions easier
<code>th(l)</code>	convenience function to make typing half-yearly dates in expressions easier
<code>tm(l)</code>	convenience function to make typing monthly dates in expressions easier
<code>tq(l)</code>	convenience function to make typing quarterly dates in expressions easier
<code>tw(l)</code>	convenience function to make typing weekly dates in expressions easier
<code>week(e_d)</code>	the numeric week of the year corresponding to date e_d , the %td encoded date (days since 01jan1960)
<code>weekly(s₁, s₂ [, Y])</code>	the e_w weekly date (weeks since 1960w1) corresponding to s_1 based on s_2 and Y ; Y specifies <i>topyear</i> ; see <code>date()</code>
<code>wofd(e_d)</code>	the e_w weekly date (weeks since 1960w1) containing date e_d
<code>year(e_d)</code>	the numeric year corresponding to date e_d
<code>yearly(s₁, s₂ [, Y])</code>	the e_y yearly date (year) corresponding to s_1 based on s_2 and Y ; Y specifies <i>topyear</i> ; see <code>date()</code>
<code>yh(Y, H)</code>	the e_h half-yearly date (half-years since 1960h1) corresponding to year Y , half-year H
<code>ym(Y, M)</code>	the e_m monthly date (months since 1960m1) corresponding to year Y , month M
<code>yofd(e_d)</code>	the e_y yearly date (year) containing date e_d
<code>yq(Y, Q)</code>	the e_q quarterly date (quarters since 1960q1) corresponding to year Y , quarter Q
<code>yw(Y, W)</code>	the e_w weekly date (weeks since 1960w1) corresponding to year Y , week W

Mathematical functions

<code>abs(x)</code>	the absolute value of x
<code>ceil(x)</code>	the unique integer n such that $n - 1 < x \leq n$; x (not “.”) if x is missing, meaning that <code>ceil(.a) = .a</code>
<code>cloglog(x)</code>	the complementary log-log of x
<code>comb(n, k)</code>	the combinatorial function $n! / \{k!(n - k)!\}$
<code>digamma(x)</code>	the <code>digamma()</code> function, $d \ln \Gamma(x) / dx$
<code>exp(x)</code>	the exponential function e^x
<code>floor(x)</code>	the unique integer n such that $n \leq x < n + 1$; x (not “.”) if x is missing, meaning that <code>floor(.a) = .a</code>
<code>int(x)</code>	the integer obtained by truncating x toward 0 (thus, <code>int(5.2) = 5</code> and <code>int(-5.8) = -5</code>); x (not “.”) if x is missing, meaning that <code>int(.a) = .a</code>
<code>invcloglog(x)</code>	the inverse of the complementary log-log function of x

<code>invlogit(x)</code>	the inverse of the logit function of x
<code>ln(x)</code>	the natural logarithm, $\ln(x)$
<code>lnfactorial(n)</code>	the natural log of n factorial = $\ln(n!)$
<code>lngamma(x)</code>	$\ln\{\Gamma(x)\}$
<code>log(x)</code>	the natural logarithm, $\ln(x)$; thus, a synonym for <code>ln(x)</code>
<code>log10(x)</code>	the base-10 logarithm of x
<code>logit(x)</code>	the log of the odds ratio of x , $\text{logit}(x) = \ln\{x/(1-x)\}$
<code>max(x_1, x_2, \dots, x_n)</code>	the maximum value of x_1, x_2, \dots, x_n
<code>min(x_1, x_2, \dots, x_n)</code>	the minimum value of x_1, x_2, \dots, x_n
<code>mod(x, y)</code>	the modulus of x with respect to y
<code>reldif(x, y)</code>	the “relative” difference $ x - y /(y + 1)$; 0 if both arguments are the same type of extended missing value; <i>missing</i> if only one argument is missing or if the two arguments are two different types of <i>missing</i>
<code>round(x, y)</code> or <code>round(x)</code>	x rounded in units of y or x rounded to the nearest integer if the argument y is omitted; x (not “.”) if x is missing (meaning that <code>round(.a) = .a</code> and that <code>round(.a, y) = .a</code> if y is not missing) and if y is missing, then “.” is returned
<code>sign(x)</code>	the sign of x : -1 if $x < 0$, 0 if $x = 0$, 1 if $x > 0$, or <i>missing</i> if x is missing
<code>sqrt(x)</code>	the square root of x
<code>sum(x)</code>	the running sum of x , treating missing values as zero
<code>trigamma(x)</code>	the second derivative of <code>lngamma(x)</code> = $d^2 \ln\Gamma(x)/dx^2$
<code>trunc(x)</code>	a synonym for <code>int(x)</code>

Matrix functions

<code>cholesky(M)</code>	the Cholesky decomposition of the matrix: if $R = \text{cholesky}(S)$, then $RR^T = S$
<code>coleqnumb(M, s)</code>	the equation number of M associated with column equation s ; <i>missing</i> if the column equation cannot be found
<code>colnfreeparms(M, s)</code>	the number of free parameters in columns of M
<code>colnumb(M, s)</code>	the column number of M associated with column name s ; <i>missing</i> if the column cannot be found
<code>colsof(M)</code>	the number of columns of M
<code>corr(M)</code>	the correlation matrix of the variance matrix
<code>det(M)</code>	the determinant of matrix M
<code>diag(v)</code>	the square, diagonal matrix created from the row or column vector
<code>diag0cnt(M)</code>	the number of zeros on the diagonal of M
<code>el(s, i, j)</code>	$s[\text{floor}(i), \text{floor}(j)]$, the i, j element of the matrix named s ; <i>missing</i> if i or j are out of range or if matrix s does not exist
<code>get(systemname)</code>	a copy of Stata internal system matrix <i>systemname</i>
<code>hadamard(M, N)</code>	a matrix whose i, j element is $M[i, j] \cdot N[i, j]$ (if M and N are not the same size, this function reports a conformability error)

<code>I(n)</code>	an $n \times n$ identity matrix if n is an integer; otherwise, a <code>round(n) × round(n)</code> identity matrix
<code>inv(M)</code>	the inverse of the matrix M
<code>invsym(M)</code>	the inverse of M if M is positive definite
<code>issymmetric(M)</code>	1 if the matrix is symmetric; otherwise, 0
<code>J(r,c,z)</code>	the $r \times c$ matrix containing elements z
<code>matmissing(M)</code>	1 if any elements of the matrix are missing; otherwise, 0
<code>matuniform(r,c)</code>	the $r \times c$ matrices containing uniformly distributed pseudorandom numbers on the interval (0, 1)
<code>mreldif(X,Y)</code>	the relative difference of X and Y , where the relative difference is defined as $\max_{i,j} \{ x_{ij} - y_{ij} / (y_{ij} + 1)\}$
<code>nullmat(matname)</code>	use with the row-join (<code>,</code>) and column-join (<code>\</code>) operators in programming situations
<code>roweqnumb(M,s)</code>	the equation number of M associated with row equation s ; <i>missing</i> if the row equation cannot be found
<code>rownfreesparms(M,s)</code>	the number of free parameters in rows of M
<code>rownumb(M,s)</code>	the row number of M associated with row name s ; <i>missing</i> if the row cannot be found
<code>rowsof(M)</code>	the number of rows of M
<code>sweep(M,i)</code>	matrix M with i th row/column swept
<code>trace(M)</code>	the trace of matrix M
<code>vec(M)</code>	a column vector formed by listing the elements of M , starting with the first column and proceeding column by column
<code>vecdiag(M)</code>	the row vector containing the diagonal of matrix M

Programming functions

<code>autocode(x,n,x0,x1)</code>	partitions the interval from x_0 to x_1 into n equal-length intervals and returns the upper bound of the interval that contains x
<code>byteorder()</code>	1 if your computer stores numbers by using a hilo byte order and evaluates to 2 if your computer stores numbers by using a lohi byte order
<code>c(name)</code>	the value of the system or constant result <code>c(name)</code> (see [P] creturn)
<code>_caller()</code>	version of the program or session that invoked the currently running program; see [P] version
<code>chop(x, ε)</code>	<code>round(x)</code> if $ \text{abs}(x - \text{round}(x)) < \epsilon$; otherwise, x ; or x if x is missing
<code>clip(x,a,b)</code>	x if $a < x < b$, b if $x \geq b$, a if $x \leq a$, or <i>missing</i> if x is missing or if $a > b$; x if x is missing
<code>cond(x,a,b[,c])</code>	a if x is <i>true</i> and nonmissing, b if x is <i>false</i> , and c if x is <i>missing</i> ; a if c is not specified and x evaluates to <i>missing</i>
<code>e(name)</code>	the value of stored result <code>e(name)</code> ; see [U] 18.8 Accessing results calculated by other programs
<code>e(sample)</code>	1 if the observation is in the estimation sample and 0 otherwise

<code>epsdouble()</code>	the machine precision of a double-precision number
<code>epsfloat()</code>	the machine precision of a floating-point number
<code>fileexists(<i>f</i>)</code>	1 if the file specified by <i>f</i> exists; otherwise, 0
<code>fileread(<i>f</i>)</code>	the contents of the file specified by <i>f</i>
<code>filereaderror(<i>f</i>)</code>	0 or positive integer, said value having the interpretation of a return code
<code>filewrite(<i>f</i>,<i>s</i>[,<i>r</i>])</code>	writes the string specified by <i>s</i> to the file specified by <i>f</i> and returns the number of bytes in the resulting file
<code>float(<i>x</i>)</code>	the value of <i>x</i> rounded to <code>float</code> precision
<code>fmtwidth(<i>fmtstr</i>)</code>	the output length of the <code>%fmt</code> contained in <i>fmtstr</i> ; <i>missing</i> if <i>fmtstr</i> does not contain a valid <code>%fmt</code>
<code>has_eprop(<i>name</i>)</code>	1 if <i>name</i> appears as a word in <code>e(properties)</code> ; otherwise, 0
<code>inlist(<i>z</i>,<i>a</i>,<i>b</i>,...)</code>	1 if <i>z</i> is a member of the remaining arguments; otherwise, 0
<code>inrange(<i>z</i>,<i>a</i>,<i>b</i>)</code>	1 if it is known that $a \leq z \leq b$; otherwise, 0
<code>irecode(<i>x</i>,<i>x</i>₁,...,<i>x</i>_{<i>n</i>})</code>	<i>missing</i> if <i>x</i> is missing or <i>x</i> ₁ , ..., <i>x</i> _{<i>n</i>} is not weakly increasing; 0 if $x \leq x_1$; 1 if $x_1 < x \leq x_2$; 2 if $x_2 < x \leq x_3$; ...; <i>n</i> if $x > x_n$
<code>matrix(<i>exp</i>)</code>	restricts name interpretation to scalars and matrices; see <code>scalar()</code>
<code>maxbyte()</code>	the largest value that can be stored in storage type <code>byte</code>
<code>maxdouble()</code>	the largest value that can be stored in storage type <code>double</code>
<code>maxfloat()</code>	the largest value that can be stored in storage type <code>float</code>
<code>maxint()</code>	the largest value that can be stored in storage type <code>int</code>
<code>maxlong()</code>	the largest value that can be stored in storage type <code>long</code>
<code>mi(<i>x</i>₁,<i>x</i>₂,...,<i>x</i>_{<i>n</i>})</code>	a synonym for <code>missing(<i>x</i>₁,<i>x</i>₂,...,<i>x</i>_{<i>n</i>})</code>
<code>minbyte()</code>	the smallest value that can be stored in storage type <code>byte</code>
<code>mindouble()</code>	the smallest value that can be stored in storage type <code>double</code>
<code>minfloat()</code>	the smallest value that can be stored in storage type <code>float</code>
<code>minint()</code>	the smallest value that can be stored in storage type <code>int</code>
<code>minlong()</code>	the smallest value that can be stored in storage type <code>long</code>
<code>missing(<i>x</i>₁,<i>x</i>₂,...,<i>x</i>_{<i>n</i>})</code>	1 if any <i>x</i> _{<i>i</i>} evaluates to <i>missing</i> ; otherwise, 0
<code>r(<i>name</i>)</code>	the value of the stored result <code>r(name)</code> ; see [U] 18.8 Accessing results calculated by other programs
<code>recode(<i>x</i>,<i>x</i>₁,...,<i>x</i>_{<i>n</i>})</code>	<i>missing</i> if <i>x</i> ₁ , <i>x</i> ₂ , ..., <i>x</i> _{<i>n</i>} is not weakly increasing; <i>x</i> if <i>x</i> is missing; <i>x</i> ₁ if $x \leq x_1$; <i>x</i> ₂ if $x \leq x_2$, ...; otherwise, <i>x</i> _{<i>n</i>} if $x > x_1$, <i>x</i> ₂ , ..., <i>x</i> _{<i>n</i>-1} . $x_i \geq \cdot$ is interpreted as $x_i = +\infty$
<code>replay()</code>	1 if the first nonblank character of local macro '0' is a comma, or if '0' is empty
<code>return(<i>name</i>)</code>	the value of the to-be-stored result <code>r(name)</code> ; see [P] return
<code>s(<i>name</i>)</code>	the value of stored result <code>s(name)</code> ; see [U] 18.8 Accessing results calculated by other programs
<code>scalar(<i>exp</i>)</code>	restricts name interpretation to scalars and matrices
<code>smallestdouble()</code>	the smallest double-precision number greater than zero

Random-number functions

<code>rbeta(a,b)</code>	beta(a,b) random variates, where a and b are the beta distribution shape parameters
<code>rbinomial(n,p)</code>	binomial(n,p) random variates, where n is the number of trials and p is the success probability
<code>rcauchy(a,b)</code>	Cauchy(a,b) random variates, where a is the location parameter and b is the scale parameter
<code>rchi2(df)</code>	chi-squared, with df degrees of freedom, random variates
<code>rexponential(b)</code>	exponential random variates with scale b
<code>rgamma(a,b)</code>	gamma(a,b) random variates, where a is the gamma shape parameter and b is the scale parameter
<code>rhypergeometric(N,K,n)</code>	hypergeometric random variates
<code>rigaussian(m,a)</code>	inverse Gaussian random variates with mean m and shape parameter a
<code>rlaplace(m,b)</code>	Laplace(m,b) random variates with mean m and scale parameter b
<code>rlogistic()</code>	logistic variates with mean 0 and standard deviation $\pi/\sqrt{3}$
<code>rlogistic(s)</code>	logistic variates with mean 0, scale s , and standard deviation $s\pi/\sqrt{3}$
<code>rlogistic(m,s)</code>	logistic variates with mean m , scale s , and standard deviation $s\pi/\sqrt{3}$
<code>rnbinomial(n,p)</code>	negative binomial random variates
<code>rnormal()</code>	standard normal (Gaussian) random variates, that is, variates from a normal distribution with a mean of 0 and a standard deviation of 1
<code>rnormal(m)</code>	normal($m,1$) (Gaussian) random variates, where m is the mean and the standard deviation is 1
<code>rnormal(m,s)</code>	normal(m,s) (Gaussian) random variates, where m is the mean and s is the standard deviation
<code>rpoisson(m)</code>	Poisson(m) random variates, where m is the distribution mean
<code>rt(df)</code>	Student's t random variates, where df is the degrees of freedom
<code>runiform()</code>	uniformly distributed random variates over the interval $(0,1)$
<code>runiform(a,b)</code>	uniformly distributed random variates over the interval (a,b)
<code>runiformint(a,b)</code>	uniformly distributed random integer variates on the interval $[a,b]$
<code>rweibull(a,b)</code>	Weibull variates with shape a and scale b
<code>rweibull(a,b,g)</code>	Weibull variates with shape a , scale b , and location g
<code>rweibullph(a,b)</code>	Weibull (proportional hazards) variates with shape a and scale b
<code>rweibullph(a,b,g)</code>	Weibull (proportional hazards) variates with shape a , scale b , and location g

Selecting time-span functions

<code>tin(d₁,d₂)</code>	<i>true</i> if $d_1 \leq t \leq d_2$, where t is the time variable previously <code>tsset</code>
<code>twithin(d₁,d₂)</code>	<i>true</i> if $d_1 < t < d_2$, where t is the time variable previously <code>tsset</code>

Statistical functions

<code>betaden(<i>a, b, x</i>)</code>	the probability density of the beta distribution, where <i>a</i> and <i>b</i> are the shape parameters; 0 if $x < 0$ or $x > 1$
<code>binomial(<i>n, k, θ</i>)</code>	the probability of observing <code>floor(<i>k</i>)</code> or fewer successes in <code>floor(<i>n</i>)</code> trials when the probability of a success on one trial is θ ; 0 if $k < 0$; or 1 if $k > n$
<code>binomialp(<i>n, k, p</i>)</code>	the probability of observing <code>floor(<i>k</i>)</code> successes in <code>floor(<i>n</i>)</code> trials when the probability of a success on one trial is <i>p</i>
<code>binomialtail(<i>n, k, θ</i>)</code>	the probability of observing <code>floor(<i>k</i>)</code> or more successes in <code>floor(<i>n</i>)</code> trials when the probability of a success on one trial is θ ; 1 if $k < 0$; or 0 if $k > n$
<code>binormal(<i>h, k, ρ</i>)</code>	the joint cumulative distribution $\Phi(h, k, \rho)$ of bivariate normal with correlation ρ
<code>cauchy(<i>a, b, x</i>)</code>	the cumulative Cauchy distribution with location parameter <i>a</i> and scale parameter <i>b</i>
<code>cauchyden(<i>a, b, x</i>)</code>	the probability density of the Cauchy distribution with location parameter <i>a</i> and scale parameter <i>b</i>
<code>cauchytail(<i>a, b, x</i>)</code>	the reverse cumulative (upper tail or survivor) Cauchy distribution with location parameter <i>a</i> and scale parameter <i>b</i>
<code>chi2(<i>df, x</i>)</code>	the cumulative χ^2 distribution with <i>df</i> degrees of freedom; 0 if $x < 0$
<code>chi2den(<i>df, x</i>)</code>	the probability density of the chi-squared distribution with <i>df</i> degrees of freedom; 0 if $x < 0$
<code>chi2tail(<i>df, x</i>)</code>	the reverse cumulative (upper tail or survivor) χ^2 distribution with <i>df</i> degrees of freedom; 1 if $x < 0$
<code>dgammapda(<i>a, x</i>)</code>	$\frac{\partial P(a, x)}{\partial a}$, where $P(a, x) = \text{gammap}(a, x)$; 0 if $x < 0$
<code>dgammapdada(<i>a, x</i>)</code>	$\frac{\partial^2 P(a, x)}{\partial a^2}$, where $P(a, x) = \text{gammap}(a, x)$; 0 if $x < 0$
<code>dgammapdadx(<i>a, x</i>)</code>	$\frac{\partial^2 P(a, x)}{\partial a \partial x}$, where $P(a, x) = \text{gammap}(a, x)$; 0 if $x < 0$
<code>dgammapdx(<i>a, x</i>)</code>	$\frac{\partial P(a, x)}{\partial x}$, where $P(a, x) = \text{gammap}(a, x)$; 0 if $x < 0$
<code>dgammapdxdx(<i>a, x</i>)</code>	$\frac{\partial^2 P(a, x)}{\partial x^2}$, where $P(a, x) = \text{gammap}(a, x)$; 0 if $x < 0$
<code>dunnettprob(<i>k, df, x</i>)</code>	the cumulative multiple range distribution that is used in Dunnett's multiple-comparison method with <i>k</i> ranges and <i>df</i> degrees of freedom; 0 if $x < 0$
<code>exponential(<i>b, x</i>)</code>	the cumulative exponential distribution with scale <i>b</i>
<code>exponentialden(<i>b, x</i>)</code>	the probability density function of the exponential distribution with scale <i>b</i>
<code>exponentialtail(<i>b, x</i>)</code>	the reverse cumulative exponential distribution with scale <i>b</i>
<code>F(<i>df₁, df₂, f</i>)</code>	the cumulative <i>F</i> distribution with <i>df₁</i> numerator and <i>df₂</i> denominator degrees of freedom: $F(df_1, df_2, f) = \int_0^f Fden(df_1, df_2, t) dt$; 0 if $f < 0$
<code>Fden(<i>df₁, df₂, f</i>)</code>	the probability density function of the <i>F</i> distribution with <i>df₁</i> numerator and <i>df₂</i> denominator degrees of freedom; 0 if $f < 0$
<code>Ftail(<i>df₁, df₂, f</i>)</code>	the reverse cumulative (upper tail or survivor) <i>F</i> distribution with <i>df₁</i> numerator and <i>df₂</i> denominator degrees of freedom; 1 if $f < 0$

<code>gammaden(<i>a,b,g,x</i>)</code>	the probability density function of the gamma distribution; 0 if $x < g$
<code>gammap(<i>a,x</i>)</code>	the cumulative gamma distribution with shape parameter a ; 0 if $x < 0$
<code>gammaptail(<i>a,x</i>)</code>	the reverse cumulative (upper tail or survivor) gamma distribution with shape parameter a ; 1 if $x < 0$
<code>hypergeometric(<i>N,K,n,k</i>)</code>	the cumulative probability of the hypergeometric distribution
<code>hypergeometricp(<i>N,K,n,k</i>)</code>	the hypergeometric probability of k successes out of a sample of size n , from a population of size N containing K elements that have the attribute of interest
<code>ibeta(<i>a,b,x</i>)</code>	the cumulative beta distribution with shape parameters a and b ; 0 if $x < 0$; or 1 if $x > 1$
<code>ibetatail(<i>a,b,x</i>)</code>	the reverse cumulative (upper tail or survivor) beta distribution with shape parameters a and b ; 1 if $x < 0$; or 0 if $x > 1$
<code>igaussian(<i>m,a,x</i>)</code>	the cumulative inverse Gaussian distribution with mean m and shape parameter a ; 0 if $x \leq 0$
<code>igaussianden(<i>m,a,x</i>)</code>	the probability density of the inverse Gaussian distribution with mean m and shape parameter a ; 0 if $x \leq 0$
<code>igaussiantail(<i>m,a,x</i>)</code>	the reverse cumulative (upper tail or survivor) inverse Gaussian distribution with mean m and shape parameter a ; 1 if $x \leq 0$
<code>invbinomial(<i>n,k,p</i>)</code>	the inverse of the cumulative binomial; that is, θ (θ = probability of success on one trial) such that the probability of observing <code>floor(k)</code> or fewer successes in <code>floor(n)</code> trials is p
<code>invbinomialtail(<i>n,k,p</i>)</code>	the inverse of the right cumulative binomial; that is, θ (θ = probability of success on one trial) such that the probability of observing <code>floor(k)</code> or more successes in <code>floor(n)</code> trials is p
<code>invcauchy(<i>a,b,p</i>)</code>	the inverse of <code>cauchy()</code> : if <code>cauchy(a,b,x) = p</code> , then <code>invcauchy(a,b,p) = x</code>
<code>invcauchytail(<i>a,b,p</i>)</code>	the inverse of <code>cauchytail()</code> : if <code>cauchytail(a,b,x) = p</code> , then <code>invcauchytail(a,b,p) = x</code>
<code>invchi2(<i>df,p</i>)</code>	the inverse of <code>chi2()</code> : if <code>chi2(df,x) = p</code> , then <code>invchi2(df,p) = x</code>
<code>invchi2tail(<i>df,p</i>)</code>	the inverse of <code>chi2tail()</code> : if <code>chi2tail(df,x) = p</code> , then <code>invchi2tail(df,p) = x</code>
<code>invdunnettprob(<i>k,df,p</i>)</code>	the inverse cumulative multiple range distribution that is used in Dunnett's multiple-comparison method with k ranges and df degrees of freedom
<code>invexponential(<i>b,p</i>)</code>	the inverse cumulative exponential distribution with scale b : if <code>exponential(b,x) = p</code> , then <code>invexponential(b,p) = x</code>
<code>invexponentialtail(<i>b,p</i>)</code>	the inverse reverse cumulative exponential distribution with scale b : if <code>exponentialtail(b,x) = p</code> , then <code>invexponentialtail(b,p) = x</code>
<code>invF(<i>df1,df2,p</i>)</code>	the inverse cumulative F distribution: if <code>F(df_1,df_2,f) = p</code> , then <code>invF(df_1,df_2,p) = f</code>
<code>invFtail(<i>df1,df2,p</i>)</code>	the inverse reverse cumulative (upper tail or survivor) F distribution: if <code>Ftail(df_1,df_2,f) = p</code> , then <code>invFtail(df_1,df_2,p) = f</code>
<code>invgammap(<i>a,p</i>)</code>	the inverse cumulative gamma distribution: if <code>gammap(a,x) = p</code> , then <code>invgammap(a,p) = x</code>

<code>invgammaptail(a,p)</code>	the inverse reverse cumulative (upper tail or survivor) gamma distribution: if <code>gammaptail(a,x) = p</code> , then <code>invgammaptail(a,p) = x</code>
<code>invibeta(a,b,p)</code>	the inverse cumulative beta distribution: if <code>ibeta(a,b,x) = p</code> , then <code>invibeta(a,b,p) = x</code>
<code>invibetatail(a,b,p)</code>	the inverse reverse cumulative (upper tail or survivor) beta distribution: if <code>ibetatail(a,b,x) = p</code> , then <code>invibetatail(a,b,p) = x</code>
<code>invgaussian(m,a,p)</code>	the inverse of <code>igaussian()</code> : if <code>igaussian(m,a,x) = p</code> , then <code>invgaussian(m,a,p) = x</code>
<code>invgaussiantail(m,a,p)</code>	the inverse of <code>igaussiantail()</code> : if <code>igaussiantail(m,a,x) = p</code> , then <code>invgaussiantail(m,a,p) = x</code>
<code>invlaplace(m,b,p)</code>	the inverse of <code>laplace()</code> : if <code>laplace(m,b,x) = p</code> , then <code>invlaplace(m,b,p) = x</code>
<code>invlaplacetail(m,b,p)</code>	the inverse of <code>laplacetail()</code> : if <code>laplacetail(m,b,x) = p</code> , then <code>invlaplacetail(m,b,p) = x</code>
<code>invlogistic(p)</code>	the inverse cumulative logistic distribution: if <code>logistic(x) = p</code> , then <code>invlogistic(p) = x</code>
<code>invlogistic(s,p)</code>	the inverse cumulative logistic distribution: if <code>logistic(s,x) = p</code> , then <code>invlogistic(s,p) = x</code>
<code>invlogistic(m,s,p)</code>	the inverse cumulative logistic distribution: if <code>logistic(m,s,x) = p</code> , then <code>invlogistic(m,s,p) = x</code>
<code>invlogistictail(p)</code>	the inverse reverse cumulative logistic distribution: if <code>logistictail(x) = p</code> , then <code>invlogistictail(p) = x</code>
<code>invlogistictail(s,p)</code>	the inverse reverse cumulative logistic distribution: if <code>logistictail(s,x) = p</code> , then <code>invlogistictail(s,p) = x</code>
<code>invlogistictail(m,s,p)</code>	the inverse reverse cumulative logistic distribution: if <code>logistictail(m,s,x) = p</code> , then <code>invlogistictail(m,s,p) = x</code>
<code>invnbinomial(n,k,q)</code>	the value of the negative binomial parameter, p , such that $q = \text{nbinomial}(n,k,p)$
<code>invnbinomialtail(n,k,q)</code>	the value of the negative binomial parameter, p , such that $q = \text{nbinomialtail}(n,k,p)$
<code>invnchi2(df,np,p)</code>	the inverse cumulative noncentral χ^2 distribution: if <code>nchi2(df,np,x) = p</code> , then <code>invnchi2(df,np,p) = x</code>
<code>invnchi2tail(df,np,p)</code>	the inverse reverse cumulative (upper tail or survivor) noncentral χ^2 distribution: if <code>nchi2tail(df,np,x) = p</code> , then <code>invnchi2tail(df,np,p) = x</code>
<code>invnF(df1,df2,np,p)</code>	the inverse cumulative noncentral F distribution: if <code>nF(df1,df2,np,f) = p</code> , then <code>invnF(df1,df2,np,p) = f</code>
<code>invnFtail(df1,df2,np,p)</code>	the inverse reverse cumulative (upper tail or survivor) noncentral F distribution: if <code>nFtail(df1,df2,np,x) = p</code> , then <code>invnFtail(df1,df2,np,p) = x</code>
<code>invnibeta(a,b,np,p)</code>	the inverse cumulative noncentral beta distribution: if <code>nibeta(a,b,np,x) = p</code> , then <code>invnibeta(a,b,np,p) = x</code>
<code>invnormal(p)</code>	the inverse cumulative standard normal distribution: if <code>normal(z) = p</code> , then <code>invnormal(p) = z</code>

<code>invnt(df, np, p)</code>	the inverse cumulative noncentral Student's t distribution: if $\text{nt}(df, np, t) = p$, then $\text{invnt}(df, np, p) = t$
<code>invnttail(df, np, p)</code>	the inverse reverse cumulative (upper tail or survivor) noncentral Student's t distribution: if $\text{nttail}(df, np, t) = p$, then $\text{invnttail}(df, np, p) = t$
<code>invpoisson(k, p)</code>	the Poisson mean such that the cumulative Poisson distribution evaluated at k is p : if $\text{poisson}(m, k) = p$, then $\text{invpoisson}(k, p) = m$
<code>invpoisontail(k, q)</code>	the Poisson mean such that the reverse cumulative Poisson distribution evaluated at k is q : if $\text{poisontail}(m, k) = q$, then $\text{invpoisontail}(k, q) = m$
<code>invt(df, p)</code>	the inverse cumulative Student's t distribution: if $\text{t}(df, t) = p$, then $\text{invt}(df, p) = t$
<code>invttail(df, p)</code>	the inverse reverse cumulative (upper tail or survivor) Student's t distribution: if $\text{ttail}(df, t) = p$, then $\text{invttail}(df, p) = t$
<code>invtukeyprob(k, df, p)</code>	the inverse cumulative Tukey's Studentized range distribution with k ranges and df degrees of freedom
<code>invweibull(a, b, p)</code>	the inverse cumulative Weibull distribution with shape a and scale b : if $\text{weibull}(a, b, x) = p$, then $\text{invweibull}(a, b, p) = x$
<code>invweibull(a, b, g, p)</code>	the inverse cumulative Weibull distribution with shape a , scale b , and location g : if $\text{weibull}(a, b, g, x) = p$, then $\text{invweibull}(a, b, g, p) = x$
<code>invweibullph(a, b, p)</code>	the inverse cumulative Weibull (proportional hazards) distribution with shape a and scale b : if $\text{weibullph}(a, b, x) = p$, then $\text{invweibullph}(a, b, p) = x$
<code>invweibullph(a, b, g, p)</code>	the inverse cumulative Weibull (proportional hazards) distribution with shape a , scale b , and location g : if $\text{weibullph}(a, b, g, x) = p$, then $\text{invweibullph}(a, b, g, p) = x$
<code>invweibullphtail(a, b, p)</code>	the inverse reverse cumulative Weibull (proportional hazards) distribution with shape a and scale b : if $\text{weibullphtail}(a, b, x) = p$, then $\text{invweibullphtail}(a, b, p) = x$
<code>invweibullphtail(a, b, g, p)</code>	the inverse reverse cumulative Weibull (proportional hazards) distribution with shape a , scale b , and location g : if $\text{weibullphtail}(a, b, g, x) = p$, then $\text{invweibullphtail}(a, b, g, p) = x$
<code>invweibulltail(a, b, p)</code>	the inverse reverse cumulative Weibull distribution with shape a and scale b : if $\text{weibulltail}(a, b, x) = p$, then $\text{invweibulltail}(a, b, p) = x$
<code>invweibulltail(a, b, g, p)</code>	the inverse reverse cumulative Weibull distribution with shape a , scale b , and location g : if $\text{weibulltail}(a, b, g, x) = p$, then $\text{invweibulltail}(a, b, g, p) = x$
<code>laplace(m, b, x)</code>	the cumulative Laplace distribution with mean m and scale parameter b
<code>laplaceden(m, b, x)</code>	the probability density of the Laplace distribution with mean m and scale parameter b
<code>laplacetail(m, b, x)</code>	the reverse cumulative (upper tail or survivor) Laplace distribution with mean m and scale parameter b
<code>lncauchyden(a, b, x)</code>	the natural logarithm of the density of the Cauchy distribution with location parameter a and scale parameter b

<code>lnigammaden(a, b, x)</code>	the natural logarithm of the inverse gamma density, where a is the shape parameter and b is the scale parameter
<code>lnigaussianden(m, a, x)</code>	the natural logarithm of the inverse Gaussian density with mean m and shape parameter a
<code>lniwishartden(df, V, X)</code>	the natural logarithm of the density of the inverse Wishart distribution; missing if $df \leq n - 1$
<code>lnlaplaceden(m, b, x)</code>	the natural logarithm of the density of the Laplace distribution with mean m and scale parameter b
<code>lnmvnormalden(M, V, X)</code>	the natural logarithm of the multivariate normal density
<code>lnnormal(z)</code>	the natural logarithm of the cumulative standard normal distribution
<code>lnnormalden(z)</code>	the natural logarithm of the standard normal density, $N(0, 1)$
<code>lnnormalden(x, σ)</code>	the natural logarithm of the normal density with mean 0 and standard deviation σ
<code>lnnormalden(x, μ, σ)</code>	the natural logarithm of the normal density with mean μ and standard deviation σ , $N(\mu, \sigma^2)$
<code>lnwishartden(df, V, X)</code>	the natural logarithm of the density of the Wishart distribution; missing if $df \leq n - 1$
<code>logistic(x)</code>	the cumulative logistic distribution with mean 0 and standard deviation $\pi/\sqrt{3}$
<code>logistic(s, x)</code>	the cumulative logistic distribution with mean 0, scale s , and standard deviation $s\pi/\sqrt{3}$
<code>logistic(m, s, x)</code>	the cumulative logistic distribution with mean m , scale s , and standard deviation $s\pi/\sqrt{3}$
<code>logisticden(x)</code>	the density of the logistic distribution with mean 0 and standard deviation $\pi/\sqrt{3}$
<code>logisticden(s, x)</code>	the density of the logistic distribution with mean 0, scale s , and standard deviation $s\pi/\sqrt{3}$
<code>logisticden(m, s, x)</code>	the density of the logistic distribution with mean m , scale s , and standard deviation $s\pi/\sqrt{3}$
<code>logistictail(x)</code>	the reverse cumulative logistic distribution with mean 0 and standard deviation $\pi/\sqrt{3}$
<code>logistictail(s, x)</code>	the reverse cumulative logistic distribution with mean 0, scale s , and standard deviation $s\pi/\sqrt{3}$
<code>logistictail(m, s, x)</code>	the reverse cumulative logistic distribution with mean m , scale s , and standard deviation $s\pi/\sqrt{3}$
<code>nbetaden(a, b, np, x)</code>	the probability density function of the noncentral beta distribution; 0 if $x < 0$ or $x > 1$
<code>nbinomial(n, k, p)</code>	the cumulative probability of the negative binomial distribution
<code>nbinomialp(n, k, p)</code>	the negative binomial probability
<code>nbinomialtail(n, k, p)</code>	the reverse cumulative probability of the negative binomial distribution
<code>nchi2(df, np, x)</code>	the cumulative noncentral χ^2 distribution; 0 if $x < 0$
<code>nchi2den(df, np, x)</code>	the probability density of the noncentral χ^2 distribution; 0 if $x < 0$
<code>nchi2tail(df, np, x)</code>	the reverse cumulative (upper tail or survivor) noncentral χ^2 distribution; 1 if $x < 0$

<code>nF(df₁,df₂,np,f)</code>	the cumulative noncentral F distribution with df_1 numerator and df_2 denominator degrees of freedom and noncentrality parameter np ; 0 if $f < 0$
<code>nFden(df₁,df₂,np,f)</code>	the probability density function of the noncentral F distribution with df_1 numerator and df_2 denominator degrees of freedom and noncentrality parameter np ; 0 if $f < 0$
<code>nFtail(df₁,df₂,np,f)</code>	the reverse cumulative (upper tail or survivor) noncentral F distribution with df_1 numerator and df_2 denominator degrees of freedom and noncentrality parameter np ; 1 if $f < 0$
<code>nibeta(a,b,np,x)</code>	the cumulative noncentral beta distribution; 0 if $x < 0$; or 1 if $x > 1$
<code>normal(z)</code>	the cumulative standard normal distribution
<code>normalden(z)</code>	the standard normal density, $N(0,1)$
<code>normalden(x,σ)</code>	the normal density with mean 0 and standard deviation σ
<code>normalden(x,μ,σ)</code>	the normal density with mean μ and standard deviation σ , $N(\mu,\sigma^2)$
<code>npnchi2(df,x,p)</code>	the noncentrality parameter, np , for noncentral χ^2 : if $\text{nchi2}(df,np,x) = p$, then $\text{npnchi2}(df,x,p) = np$
<code>npnF(df₁,df₂,f,p)</code>	the noncentrality parameter, np , for the noncentral F : if $\text{nF}(df_1,df_2,np,f) = p$, then $\text{npnF}(df_1,df_2,f,p) = np$
<code>npnt(df,t,p)</code>	the noncentrality parameter, np , for the noncentral Student's t distribution: if $\text{nt}(df,np,t) = p$, then $\text{npnt}(df,t,p) = np$
<code>nt(df,np,t)</code>	the cumulative noncentral Student's t distribution with df degrees of freedom and noncentrality parameter np
<code>ntden(df,np,t)</code>	the probability density function of the noncentral Student's t distribution with df degrees of freedom and noncentrality parameter np
<code>nttail(df,np,t)</code>	the reverse cumulative (upper tail or survivor) noncentral Student's t distribution with df degrees of freedom and noncentrality parameter np
<code>poisson(m,k)</code>	the probability of observing <code>floor(k)</code> or fewer outcomes that are distributed as Poisson with mean m
<code>poissonp(m,k)</code>	the probability of observing <code>floor(k)</code> outcomes that are distributed as Poisson with mean m
<code>poisontail(m,k)</code>	the probability of observing <code>floor(k)</code> or more outcomes that are distributed as Poisson with mean m
<code>t(df,t)</code>	the cumulative Student's t distribution with df degrees of freedom
<code>tdden(df,t)</code>	the probability density function of Student's t distribution
<code>ttail(df,t)</code>	the reverse cumulative (upper tail or survivor) Student's t distribution; the probability $T > t$
<code>tukeyprob(k,df,x)</code>	the cumulative Tukey's Studentized range distribution with k ranges and df degrees of freedom; 0 if $x < 0$
<code>weibull(a,b,x)</code>	the cumulative Weibull distribution with shape a and scale b
<code>weibull(a,b,g,x)</code>	the cumulative Weibull distribution with shape a , scale b , and location g
<code>weibullden(a,b,x)</code>	the probability density function of the Weibull distribution with shape a and scale b
<code>weibullden(a,b,g,x)</code>	the probability density function of the Weibull distribution with shape a , scale b , and location g

<code>weibullph(a,b,x)</code>	the cumulative Weibull (proportional hazards) distribution with shape a and scale b
<code>weibullph(a,b,g,x)</code>	the cumulative Weibull (proportional hazards) distribution with shape a , scale b , and location g
<code>weibullphden(a,b,x)</code>	the probability density function of the Weibull (proportional hazards) distribution with shape a and scale b
<code>weibullphden(a,b,g,x)</code>	the probability density function of the Weibull (proportional hazards) distribution with shape a , scale b , and location g
<code>weibullphtail(a,b,x)</code>	the reverse cumulative Weibull (proportional hazards) distribution with shape a and scale b
<code>weibullphtail(a,b,g,x)</code>	the reverse cumulative Weibull (proportional hazards) distribution with shape a , scale b , and location g
<code>weibulltail(a,b,x)</code>	the reverse cumulative Weibull distribution with shape a and scale b
<code>weibulltail(a,b,g,x)</code>	the reverse cumulative Weibull distribution with shape a , scale b , and location g

String functions

<code>abbrev(s,n)</code>	name s , abbreviated to a length of n
<code>char(n)</code>	the character corresponding to ASCII or extended ASCII code n ; "" if n is not in the domain
<code>collatorlocale(loc,type)</code>	the most closely related locale supported by ICU from loc if $type$ is 1; the actual locale where the collation data comes from if $type$ is 2
<code>collatorversion(loc)</code>	the version string of a collator based on locale loc
<code>indexnot(s₁,s₂)</code>	the position in ASCII string s_1 of the first character of s_1 not found in ASCII string s_2 , or 0 if all characters of s_1 are found in s_2
<code>plural(n,s)</code>	the plural of s if $n \neq \pm 1$
<code>plural(n,s₁,s₂)</code>	the plural of s_1 , as modified by or replaced with s_2 , if $n \neq \pm 1$
<code>real(s)</code>	s converted to numeric or <i>missing</i>
<code>regexpr(s, re)</code>	performs a match of a regular expression and evaluates to 1 if regular expression re is satisfied by the ASCII string s ; otherwise, 0
<code>regexpr(s₁, re, s₂)</code>	replaces the first substring within ASCII string s_1 that matches re with ASCII string s_2 and returns the resulting string
<code>regexprs(n)</code>	subexpression n from a previous <code>regexpr()</code> match, where $0 \leq n < 10$
<code>soundex(s)</code>	the soundex code for a string, s
<code>soundex_nara(s)</code>	the U.S. Census soundex code for a string, s
<code>strcat(s₁,s₂)</code>	there is no <code>strcat()</code> function; instead the addition operator is used to concatenate strings
<code>strdup(s₁,n)</code>	there is no <code>strdup()</code> function; instead the multiplication operator is used to create multiple copies of strings
<code>string(n)</code>	a synonym for <code>stroofreal(n)</code>
<code>string(n,s)</code>	a synonym for <code>stroofreal(n,s)</code>

<code>stritrim(<i>s</i>)</code>	<i>s</i> with multiple, consecutive internal blanks (ASCII space character <code>char(32)</code>) collapsed to one blank
<code>strlen(<i>s</i>)</code>	the number of characters in ASCII <i>s</i> or length in bytes
<code>strlower(<i>s</i>)</code>	lowercase ASCII characters in string <i>s</i>
<code>strltrim(<i>s</i>)</code>	<i>s</i> without leading blanks (ASCII space character <code>char(32)</code>)
<code>strmatch(<i>s</i>₁,<i>s</i>₂)</code>	1 if <i>s</i> ₁ matches the pattern <i>s</i> ₂ ; otherwise, 0
<code>stroofreal(<i>n</i>)</code>	<i>n</i> converted to a string
<code>stroofreal(<i>n</i>,<i>s</i>)</code>	<i>n</i> converted to a string using the specified display format
<code>strpos(<i>s</i>₁,<i>s</i>₂)</code>	the position in <i>s</i> ₁ at which <i>s</i> ₂ is first found; otherwise, 0
<code>strproper(<i>s</i>)</code>	a string with the first ASCII letter and any other letters immediately following characters that are not letters capitalized; all other ASCII letters converted to lowercase
<code>strreverse(<i>s</i>)</code>	reverses the ASCII string <i>s</i>
<code>strrpos(<i>s</i>₁,<i>s</i>₂)</code>	the position in <i>s</i> ₁ at which <i>s</i> ₂ is last found; otherwise, 0
<code>strrtrim(<i>s</i>)</code>	<i>s</i> without trailing blanks (ASCII space character <code>char(32)</code>)
<code>strtoname(<i>s</i>[,<i>p</i>])</code>	<i>s</i> translated into a Stata 13 compatible name
<code>strtrim(<i>s</i>)</code>	<i>s</i> without leading and trailing blanks (ASCII space character <code>char(32)</code>); equivalent to <code>strltrim(strrtrim(<i>s</i>))</code>
<code>strupper(<i>s</i>)</code>	uppercase ASCII characters in string <i>s</i>
<code>subinstr(<i>s</i>₁,<i>s</i>₂,<i>s</i>₃,<i>n</i>)</code>	<i>s</i> ₁ , where the first <i>n</i> occurrences in <i>s</i> ₁ of <i>s</i> ₂ have been replaced with <i>s</i> ₃
<code>subinword(<i>s</i>₁,<i>s</i>₂,<i>s</i>₃,<i>n</i>)</code>	<i>s</i> ₁ , where the first <i>n</i> occurrences in <i>s</i> ₁ of <i>s</i> ₂ as a word have been replaced with <i>s</i> ₃
<code>substr(<i>s</i>,<i>n</i>₁,<i>n</i>₂)</code>	the substring of <i>s</i> , starting at <i>n</i> ₁ , for a length of <i>n</i> ₂
<code>tobytes(<i>s</i>[,<i>n</i>])</code>	escaped decimal or hex digit strings of up to 200 bytes of <i>s</i>
<code>uchar(<i>n</i>)</code>	the Unicode character corresponding to Unicode code point <i>n</i> or an empty string if <i>n</i> is beyond the Unicode code-point range
<code>udstrlen(<i>s</i>)</code>	the number of display columns needed to display the Unicode string <i>s</i> in the Stata Results window
<code>udsubstr(<i>s</i>,<i>n</i>₁,<i>n</i>₂)</code>	the Unicode substring of <i>s</i> , starting at character <i>n</i> ₁ , for <i>n</i> ₂ display columns
<code>uisdigit(<i>s</i>)</code>	1 if the first Unicode character in <i>s</i> is a Unicode decimal digit; otherwise, 0
<code>uisletter(<i>s</i>)</code>	1 if the first Unicode character in <i>s</i> is a Unicode letter; otherwise, 0
<code>ustrcompare(<i>s</i>₁,<i>s</i>₂[,<i>loc</i>])</code>	compares two Unicode strings
<code>ustrcompareex(<i>s</i>₁,<i>s</i>₂,<i>loc</i>,<i>st</i>,<i>case</i>,<i>cslv</i>,<i>norm</i>,<i>num</i>,<i>alt</i>,<i>fr</i>)</code>	compares two Unicode strings
<code>ustrfix(<i>s</i>[,<i>rep</i>])</code>	replaces each invalid UTF-8 sequence with a Unicode character
<code>ustrfrom(<i>s</i>,<i>enc</i>,<i>mode</i>)</code>	converts the string <i>s</i> in encoding <i>enc</i> to a UTF-8 encoded Unicode string
<code>ustrinvalidcnt(<i>s</i>)</code>	the number of invalid UTF-8 sequences in <i>s</i>
<code>ustrleft(<i>s</i>,<i>n</i>)</code>	the first <i>n</i> Unicode characters of the Unicode string <i>s</i>
<code>ustrlen(<i>s</i>)</code>	the number of characters in the Unicode string <i>s</i>
<code>ustrlower(<i>s</i>[,<i>loc</i>])</code>	lowercase all characters of Unicode string <i>s</i> under the given locale <i>loc</i>

<code>ustrltrim(s)</code>	removes the leading Unicode whitespace characters and blanks from the Unicode string <i>s</i>
<code>ustrnormalize(s,norm)</code>	normalizes Unicode string <i>s</i> to one of the five normalization forms specified by <i>norm</i>
<code>ustrpos(s₁,s₂[,n])</code>	the position in <i>s</i> ₁ at which <i>s</i> ₂ is first found; otherwise, 0
<code>ustrregexm(s,re[,noc])</code>	performs a match of a regular expression and evaluates to 1 if regular expression <i>re</i> is satisfied by the Unicode string <i>s</i> ; otherwise, 0
<code>ustrregextra(s₁,re,s₂[,noc])</code>	replaces all substrings within the Unicode string <i>s</i> ₁ that match <i>re</i> with <i>s</i> ₂ and returns the resulting string
<code>ustrregextrf(s₁,re,s₂[,noc])</code>	replaces the first substring within the Unicode string <i>s</i> ₁ that matches <i>re</i> with <i>s</i> ₂ and returns the resulting string
<code>ustrregexts(n)</code>	subexpression <i>n</i> from a previous <code>ustrregexm()</code> match
<code>ustrreverse(s)</code>	reverses the Unicode string <i>s</i>
<code>ustrright(s,n)</code>	the last <i>n</i> Unicode characters of the Unicode string <i>s</i>
<code>ustrrpos(s₁,s₂[,n])</code>	the position in <i>s</i> ₁ at which <i>s</i> ₂ is last found; otherwise, 0
<code>ustrrtrim(s)</code>	remove trailing Unicode whitespace characters and blanks from the Unicode string <i>s</i>
<code>ustrsortkey(s[,loc])</code>	generates a null-terminated byte array that can be used by the <code>sort</code> command to produce the same order as <code>ustrcompare()</code>
<code>ustrsortkeyex(s,loc,st,case,cslv,norm,num,alt,fr)</code>	generates a null-terminated byte array that can be used by the <code>sort</code> command to produce the same order as <code>ustrcompare()</code>
<code>ustrtitle(s[,loc])</code>	a string with the first characters of Unicode words titlecased and other characters lowercased
<code>ustrto(s,enc,mode)</code>	converts the Unicode string <i>s</i> in UTF-8 encoding to a string in encoding <i>enc</i>
<code>ustrtohex(s[,n])</code>	escaped hex digit string of <i>s</i> up to 200 Unicode characters
<code>ustrtoname(s[,p])</code>	string <i>s</i> translated into a Stata name
<code>ustrtrim(s)</code>	removes leading and trailing Unicode whitespace characters and blanks from the Unicode string <i>s</i>
<code>ustrunescape(s)</code>	the Unicode string corresponding to the escaped sequences of <i>s</i>
<code>ustrupper(s[,loc])</code>	uppercase all characters in string <i>s</i> under the given locale <i>loc</i>
<code>ustrword(s,n[,noc])</code>	the <i>n</i> th Unicode word in the Unicode string <i>s</i>
<code>ustrwordcount(s[,loc])</code>	the number of nonempty Unicode words in the Unicode string <i>s</i>
<code>usubinstr(s₁,s₂,s₃,n)</code>	replaces the first <i>n</i> occurrences of the Unicode string <i>s</i> ₂ with the Unicode string <i>s</i> ₃ in <i>s</i> ₁
<code>usubstr(s,n₁,n₂)</code>	the Unicode substring of <i>s</i> , starting at <i>n</i> ₁ , for a length of <i>n</i> ₂
<code>word(s,n)</code>	the <i>n</i> th word in <i>s</i> ; <i>missing</i> ("") if <i>n</i> is missing
<code>wordbreaklocale(loc,type)</code>	the most closely related locale supported by ICU from <i>loc</i> if <i>type</i> is 1, the actual locale where the word-boundary analysis data come from if <i>type</i> is 2; or an empty string is returned for any other <i>type</i>
<code>wordcount(s)</code>	the number of words in <i>s</i>

Trigonometric functions

<code>acos(x)</code>	the radian value of the arccosine of x
<code>acosh(x)</code>	the inverse hyperbolic cosine of x
<code>asin(x)</code>	the radian value of the arcsine of x
<code>asinh(x)</code>	the inverse hyperbolic sine of x
<code>atan(x)</code>	the radian value of the arctangent of x
<code>atan2(y, x)</code>	the radian value of the arctangent of y/x , where the signs of the parameters y and x are used to determine the quadrant of the answer
<code>atanh(x)</code>	the inverse hyperbolic tangent of x
<code>cos(x)</code>	the cosine of x , where x is in radians
<code>cosh(x)</code>	the hyperbolic cosine of x
<code>sin(x)</code>	the sine of x , where x is in radians
<code>sinh(x)</code>	the hyperbolic sine of x
<code>tan(x)</code>	the tangent of x , where x is in radians
<code>tanh(x)</code>	the hyperbolic tangent of x

Also see

[FN] [Functions by name](#)

[D] [egen](#) — Extensions to generate

[D] [generate](#) — Create or change contents of variable

[M-4] [intro](#) — Categorical guide to Mata functions

[U] [13.3 Functions](#)