
Appendix E: Tip List programs and functions

This appendix lists the functions and programs used in the tip list. The files in the *tlcode.zip* file have the same names as those shown, but the file type may be .89p, .9xp, .89f and so on, depending on the original calculator file type. For some programs there are specific versions for the TI-89 and the TI-92 Plus, and these can be identified by the file types .89* and .9x*. Unless otherwise stated in the tip description, the routines will run on either calculator.

Name	Description	Tip
adjoint()	Matrix adjoint	[3.13]
aitkend2()	Accelerate series convergence with Aitken's method	[6.59]
apps()	Application launcher (DAB)	[7.18]
asympep()	Asymptotic expansion	[6.61]
atan2()	Arc-tangent, four-quadrant	[6.48]
autoexap()	Toggle Exact, Auto, Approx modes	[9.14]
bilinint()	Bilinear interpolation	[6.28]
bilinui()	Bilinear interpolation, user interface for bilinint()	[6.28]
bitclr()	Clear a bit in a word	[3.23]
bitnot()	Invert a bit in a word	[3.23]
bitset()	Set a bit in a word	[3.23]
bittst()	Test a bit in a word	[3.23]
bn()	Bernoulli number	[6.27]
bnpoly()	Bernoulli polynomial; table of polynomials	[6.27]
bnpolys()	Bernoulli polynomial of order n; single polynomial	[6.27]
bpo()	Bernoulli polynomial; recall polynomial, see bnpoly()	[6.27]
c2p()	Convert expression in rectangular coordinates to polar	[6.15]
casel()	Convert string to lower-case	[8.6]
caseu()	Convert string to upper-case	[8.6]
charcnt()	Count character occurrences in string	[8.4]
ci()	Cosine integral function	[6.33]
cnd()	Normal distribution, cumulative, with error function	[6.35]
cndi()	Normal distribution inverse, accurate version	[6.35]
cndif()	Normal distribution inverse, fast version	[6.35]
cndint()	Normal distribution, cumulative, by integral definition	[6.35]
coef()	See cubic() and quartic()	[6.10]
copyto_h()	Copy expression to home screen (Samuel Stearley)	[7.8]
corrhk()	Correlation coefficient for regression through fixed point	[6.6]
cubic()	Exact solution to cubic polynomial	[6.10]
datalist()	Write values to data variables	[3.8]
datamat()	Convert data variable to matrix	[3.29]
dbdemo()	Dialog box (dynamic) demonstration	[9.7]
dbdrd()	Dialog box (dynamic), drop-down menu	[9.7]
dbend()	Dialog box (dynamic), end	[9.7]
dbreq()	Dialog box (dynamic), Request	[9.7]
dbttl()	Dialog box (dynamic), title	[9.7]
dbtxt()	Dialog box (dynamic), text	[9.7]
delay()	Delay expression evaluation with constraints	[2.18]
deleqnv()	Delete variables in numeric solver equation	[6.54]
delvar1()	Delete locked, archived variables	[7.39]
det2a()	Fast symbolic matrix determinant	[3.27]
disprc()	Display text on program I/O screen	[9.4]
dms()	Convert angle in D.MS format to decimal degrees or radians	[6.17]
dmsi()	Convert angle in decimal degrees or radians to D.MS format	[6.17]

ei()	Exponential integral	[6.60]
eqlib()	Equation library; single-menu	[9.21]
eqlibx()	Equation library; multiple menus	[9.21]
erf()	Error function	[6.34]
evalrt()	See cubic() and quartic()	[6.10]
exprvars()	Extract variable names from expression	[7.42]
f1demo()	Evaluate function with expression, list or matrix argument	[6.40]
factrl()	Factorial; non-integer and complex arguments	[6.4]
fib()	Fibonacci number	[6.24]
fill_lm()	Fill list or matrix with a constant	[3.28]
fipoly()	Fast floating-point polynomial solution	[6.12]
frctst()	Test fractions for equality	[2.2]
gamma()	Gamma function	[6.4]
graphClr()	Clear graph screen completely	[4.14]
grpfrfc()	Group fraction digits	[9.10]
grpfrcan()	Group fraction digits of last ANS	[9.10]
iconex()	Toolbar icon example	[9.1]
im1a.9xm	Matrix used with intrpz9()	[6.28]
impdifn()	Implicit derivative	[6.53]
indexlst()	Return list indices for target element [TI Basic version]	[3.26]
indexmat()	Return matrix indices for target element	[3.26]
inlist()	Return list indices for target element (C version)	[3.26]
interp()	Linear interpolation	[6.22]
intrp9ui()	Nine-point 3-dimensional interpolation, user interface for intrpz9()	[6.28]
intrpz9()	Nine-point 3-dimensional interpolation	[6.28]
inv()	Matrix inverse, fast numeric	[6.63]
linreghk()	Linear regression through fixed point	[6.6]
linterp()	Linear interpolation with numeric solver	[6.22]
listrev()	Reverse list elements	[3.4]
listswap()	Swap list elements	[3.18]
lngamma()	Log-gamma function	[6.4]
loglist()	Make list with logarithmic element spacing	[3.22]
lstident()	Test list for identical elements	[3.19]
m3aind()	Return address of element of rank-3 array	[3.16]
m3rcl()	Recall element from 3-dimensional array	[3.16]
m3sto()	Store element to 3-dimensional array	[3.16]
m4aind()	Return address of element of rank-4 array	[3.16]
m4rcl()	Recall element from 4-dimensional array	[3.16]
m4sto()	Store element to 4-dimensional array	[3.16]
mantexp()	Extract mantissa and exponent from floating-point number	[6.58]
mat2cvec()	Convert matrix to single-column vector	[3.21]
mat2rvec()	Convert matrix to single-row vector	[3.21]
mid1()	Return string or list middle elements based on position limits	[8.7]
mminor()	Matrix minor	[3.13]
mnaind()	Return address of element of rank-n array	[3.16]
modcycl()	Cycle Mode setting to next option	[9.14]
model()	Calculator model	[7.14]
mrankni()	Return list index of element of n-dimensional array	[3.16]
mrowdel()	Delete matrix row	[3.3]
nder1()	Numerical derivative; Ridder's method	[6.26]
nder1p()	Numerical derivative; diagnostic routine for nder1()	[6.26]
nder2()	Numerical derivative; optimum accuracy from nDeriv()	[6.26]
nderui()	Numerical derivative; user interface for nder1()	[6.26]
nintx()	Numerical integration with intervals for better accuracy	[6.19]
p2c()	Convert expression in polar coordinates to rectangular	[6.15]
parcurve()	Convert equation to parameterized form	[6.39]

pid()	Calculator product ID	[7.14]
plotdemo()	Plot data and functions simultaneously	[4.4]
plotintg()	Fast integral function plot	[4.10]
plotinui()	Fast integral function plot; user interface	[4.10]
plotxy()	Fast function plot	[4.9]
pntrrian()	Determine if a point is inside a triangle	[6.45]
polar()	Convert polar vector to rectangular	[6.25]
polyc()	Extract polynomial coefficients from expression	[6.61]
polyroot()	Polynomial roots with Laguerre's method	[6.61]
prooti()	Polynomial roots, coefficient inversion	[6.61]
roots()	Polynomial roots with eigenvalue method	[6.61]
proot_t1()	Polynomial root sign test	[6.61]
quadint()	Quadratic interpolation	[6.31]
quadratic()	Quadratic equation; accurate solution with large coefficients	[6.32]
quartic()	Exact solution to quartic polynomial	[6.10]
r2coef()	Find coefficient of determination for all regression equations	[6.13]
r2coefdf()	r2coef() with degree-of-freedom correction	[6.13]
randlist()	List of random unique integers	[3.14]
rclexpr()	Recall expression without variable value substitution	[7.40]
rect()	Convert rectangular vector to polar	[6.25]
req2var()	Get two variables from one dialog box Request	[9.12]
req3var()	Get three variables from one dialog box Request	[9.12]
right1()	Return string or list right elements based on position limits	[8.7]
rms()	RMS statistic for list or matrix	[6.14]
rq2v()	Convert "a,b" to {a,b}	[9.12]
rq3v()	Convert "a,b,c" to {a,b,c}	[9.12]
ruler()	On-screen ruler and protractor	[1.16]
savage()	Savage floating-point benchmark, C version	[6.50]
savage2()	Savage floating-point benchmark, TI Basic version	[6.50]
scatterf()	Random scatter plot of function	[4.12]
sgn()	Sign function, compatible with other programming languages	[7.30]
si()	Sine integral function	[6.33]
sigdig()	Round number to significant digits	[6.5]
simulti()	Simultaneous equation solution with improved accuracy	[6.3]
solvebug()	Demonstrate nsolve() Questionable Accuracy message	[11.9]
solvemul()	Solve multiple equations in a program	[11.4]
spli4de()	4th-order splice; derivatives	[6.56]
spli4in()	4th-order splice; integrals	[6.56]
spli4inv()	4th-order splice; inverse function	[6.56]
spli4ui()	4th-order splice; user interface	[6.56]
spli4x()	4th-order splice; inverse function at a point	[6.56]
ssplice4()	4th-order splice; find splice function coefficients	[6.56]
stddevp()	Standard deviation, population (not sample)	[6.42]
stddevpf()	Standard deviation, population, with frequencies	[6.42]
stoexact()	Convert floating-point number to exact fraction	[6.9]
str2var()	Convert 2-element string "x,y" to list {x,y}	[6.31]
strcompr()	Compare 2 strings; return character code differences	[5.8]
strsub()	String substitution	[8.2]
svd()	Singular value decomposition of matrix	[3.30]
TI Basic Extension Template.c	Demo template to add TI Basic extension to SDK flash app	[12.3]
tohome()	Copy expression to home screen (Timite Hassan)	[7.8]
toolbar()	Custom toolbar menu with key traps; demo	[7.46]
transpos()	Transpose rank-3 array	[3.16]
truth()	Truth plot	[4.3]

truthd()	Truth plot with control arguments	[4.3]
units()	Add units to built-in Units menu	[10.6]
variancp()	Variance for population, not sample	[6.42]
varianpf()	Variance for population, not sample, with frequencies	[6.42]
version()	Calculator AMS version	[7.14]
vfts120()	Used in solvebug() demo	[11.19]