





TI-NSPIRE CAS Reference Guide – Clickpad












It is imperative that your TI-Nspire CAS calculator have the latest operating system. We are currently using version 3.0.2.1719 released April 2011. (To determine your operating system press  Settings Status. Read the number beside the word Version.) If yours is not this version, come to my room during DC time to get your system updated.

Calculator Organization

Your calculator needs to be set up with a folder for calculus documents. To do that:


 *My Documents*  *New Folder* (then type out the word) *Calculus* 


Now create a document for Calculus class.


 *New Document* (it may ask you if you want to save your current document. Respond yes or no as you wish.) *Add Calculator*   move cursor to highlight the graphing icon (second from the left at the bottom of the screen) and press    *File Save* At the top of the page it will ask you what folder to save the file in. If it does not read *Save In My Documents*, then follow the instructions in the parentheses. Otherwise skip the parentheses. ( until you get to the icon that pictures an open folder with an upward arrow on it. Press  That should change it to read *Save In My Documents* and your list of folders should be on the screen.)  until you get to the first folder in the list of folders. Then use the down arrow to move down through the list until you get to *Calculus*. Press  to select it. Now type the name of the file. I suggest you name it *Main Calc* (meaning it is you main document for Calculus class). When finished typing the name, press  Now when you look at the top center of the calculator screen, it should read *Main Calc*.



I strongly suggest that you keep this document just for Calculus class and set up a different document for your science class. That way you can make the settings correspond to what you need for the particular course without having to constantly readjust the settings. When you come to Calculus class, just open your Calculus document and you will be ready to go with all the correct settings.

Once you have your *Main Calc* document saved, customize it with these settings.

 *Settings Settings General Display Digits: Fix 8* (NOT Float 8; scroll all the way down below the float numbers to find the fix numbers) *Angle: Radian Exponential format: Normal Real or Complex: Real Calculation Mode: Auto Vector Format: Rectangular Base: Decimal Unit System: Eng/US OK.*

The size of the font on the display can be altered by going to  *Settings Handheld Setup Font size.* Choose whichever size you prefer.

 *Settings Settings Graphs & Geometry Display Digits: Fix 5* (NOT Float 5) *Graphing Angle: Radian Geometry Angle: Degree Show axis end values Show tool tips for function manipulation Automatically find points of interest OK.* (To place a or remove a , press the round center click button.)

 *Current* (Move to the graphing page)  *View* *Hide Axes* *Show Grid* *Show Entry Line* *Hide Scale* *Hide Axes End Values* *Show Table* *Hide Object Selection Guides*
 (These selections are confusing because what you **read** is the **opposite** of what you **want**. When you see *Hide Axes*, it means that the axes are now showing and by clicking on this choice you will hide it. Conversely, *Show Grid* means that the grid is now hidden and by clicking on this choice you will show it. I have typed above how the menu list should read when you have the correct choices. I actually want the axes, scale, axes end points, and object selection guides to *show*, and the grid, entry line, and table to be *hidden*.)

Warnings

Good Habits:





- Delete all function entries in the graphing window before beginning a new graphing problem.
- Always work in your *Main Calc* document when doing Calculus work.

Bad Habits:





- Opening a new graphing window every time you want to do another graph. It is best to have just one graphing window.
- Doing all work in the Scratch Pad. Not all features used in class operate in the scratch pad. It is fine for a quick calculation, but in general it is better to use your *Main Calc* file in class and for homework.




Batteries

The calculator uses four AAA batteries. Before changing batteries, be sure that the calculator is turned off. Open the access panel in the back and remove *one* old battery. Replace it with *one* new battery. Remove the next old battery and replace it with a new battery. Repeat this process until all four batteries are replaced. Always replace all four batteries at one time, using four identical brand batteries.

To adjust the brightness of the screen, press   or  . In the upper right corner of the screen is a battery power indicator. Make a habit of checking it the night before every test.


Keyboard Shortcuts

Action	Shortcut
$\int d$	 
$\frac{d}{d}$ ()	 
Undo	<i>ctrl Z</i>
Redo	<i>ctrl Y</i>
Cut	<i>ctrl X</i>
Copy	<i>ctrl C</i>
Paste	<i>ctrl V</i>
\neq	<i>ctrl =</i>
\leq	<i>ctrl <</i>
\geq	<i>ctrl ></i>
∞	<i>ctrl i</i> (grey post)
\circ	<i>ctrl ' </i>
$\$$	<i>ctrl " </i>
$;$	<i>ctrl :</i>
Help	<i>ctrl ?</i>
Page Up	<i>ctrl 9</i>
Page Down	<i>ctrl 3</i>

Action	Shortcut
Highlight an entire expression	<i>ctrl A</i>
Highlight one character at a time	  
Open a new document	<i>ctrl N</i>
Insert a new page into a document	<i>ctrl I</i>
Save a document	<i>ctrl S</i>
Jump to beginning of entry line	<i>ctrl 7</i>
Jump to end of entry line	<i>ctrl 1</i>
Jump to top of page	<i>ctrl 7 ctrl 7</i>
Jump to bottom of page	<i>ctrl 1 ctrl 1</i>
Jump between two halves of a split screen	<i>ctrl tab</i>
Move from one page to another	<i>ctrl ►</i> or <i>ctrl ◀</i>
Move up to page view and return	<i>ctrl ▲</i> followed by <i>ctrl ▼</i>
Move around a graphing page from entry line to graph	<i>tab</i>

Calculations - Starting from a CALCULATOR Page

Action Desired	Example Problem	Example Input	Example Output
Enter symbols such as: absolute value, piecewise function, integral, derivative, limit, summation	$ 8^2 - 100 $ or $\lim_{x \rightarrow 3}(x + 5)$	<i>ctrl</i> × or	36 or 8
Enter a floor or ceiling function. Remember that the greatest integer function is the same as the floor function.	$\lfloor 3.8 \rfloor$ or $\lceil 3.8 \rceil$	 2 <i>Number</i> <i>Number Tools</i> <i>Floor</i> or <i>Ceiling</i>	3 or 4
Approximate an expression.	Approximate $\sqrt{5}$.	<i>ctrl enter</i> after entering the expression	2.23607
Delete a <i>variable</i> value.	Suppose that a previous calculation has assigned the value 8 to <i>y</i> . Delete the value assigned to <i>y</i> .	<i>menu</i> <i>Action</i> <i>Delete Variable</i> <i>y enter</i>	Done
Clear the calculation page		<i>menu</i> <i>Action</i> <i>Clear History</i>	
Solve one equation in terms of <i>x</i> for a numerical solution in <i>exact</i> form.	Solve $x^3 - 2x = -1$.	<i>menu</i> <i>Algebra</i> <i>Solve</i> $x^3 - 2x = -1, x)$ <i>enter</i>	$x = \frac{-(\sqrt{5} + 1)}{2}$ or $x = \frac{(\sqrt{5} - 1)}{2}$ or $x = 1$
Solve one equation in terms of <i>x</i> for a numerical solution in <i>decimal</i> form.	Solve $x^3 - 2x = -1$.	<i>menu</i> <i>Algebra</i> <i>Solve</i> $x^3 - 2x = -1, x)$ <i>ctrl enter</i>	$x = 1$ or $x = .618034$ or $x = -1.61803$
Solve one equation with <i>multiple variables</i> for <i>y</i> .	Solve $2xy - y^2 = 8x$. Notice the multiplication sign in the entry line.	<i>menu</i> <i>Algebra</i> <i>Solve</i> $2x * y - y^2 = 8x, y)$ <i>enter</i>	$y = x - \sqrt{x}\sqrt{x-8}$ or $y = \sqrt{x}\sqrt{x-8} + x$

Solve a <i>system</i> of equations.	Solve the system $y - x^2 = -4$ and $2x - y = 1$.	<i>menu</i> <i>Algebra</i> <i>Solve System of Equations</i> <i>Solve System of Equations</i> Number of equations: 2 Variables: x, y <i>OK</i> Type one equation into each open box <i>enter</i> .	$x = 3$ and $y = 5$ or $x = -1$ and $y = -3$
Add (or subtract) two algebraic fractions .	$\frac{x-2}{x} + \frac{5}{x+3}$.	<i>menu</i> <i>Algebra</i> <i>Fraction Tools</i> <i>Common Denominator</i> Then type in the expression and press <i>enter</i>	$\frac{x^2 + 6x - 6}{x^2 + 3x}$
Convert an improper fraction into a mixed number	$\frac{2x^2 - 6x - 8}{2x}$ or $\frac{21}{5}$	<i>menu</i> <i>Algebra</i> <i>Fraction Tools</i> <i>Proper Fraction</i> Then type in the fraction and press <i>enter</i>	$x - \frac{4}{x} - 3$ or $4\frac{1}{5}$
Factor an expression in terms of x .	$x^2 - 5x + 6$.	<i>menu</i> <i>Algebra</i> <i>Factor</i> Then type in the expression and press <i>enter</i>	$(x-3)(x-2)$
Define and evaluate a function.	$f1(x) = 2x^2$ $f1(3) = 18$	Go to the graphing page and type in the function. Return to the calculation page. <i>var</i> Choose the function and press <i>enter</i> 3	$f1(3) = 18$
Enter a piecewise defined function.	Enter $y = \begin{cases} x+2 & x \leq 4 \\ x^2 & x > 4. \end{cases}$	<i>ctrl</i> \times Choose the desired format <i>enter</i>	$\begin{cases} x+2, & x \leq 4 \\ x^2, & x > 4 \end{cases}$
Find a difference quotient of a function over the interval $[x, x+h]$.	Find the difference quotient of $y = x^2$ over the interval $[0.9, 1.1]$.	 $\text{avgRC}(x^2, x, 0.2) x = 0.9$ <i>enter</i>	2

Find a derivative of a function with respect to x and evaluate the derivative at a <i>particular point</i> .	Find the derivative of $y = 3x^2$ at the point $(1, 3)$.	<i>ctrl</i> × $\frac{d}{dx}(3x^2) _{x=1}$ <i>enter</i> (Note that the vertical bar is a post-key to the right of =)	6
Find a derivative of a function y defined <i>implicitly</i> in terms of x .	Find the derivative implicitly of the relation $xy^2 - 4x = 5y$.	<i>menu</i> <i>Calculus</i> <i>Implicit Differentiation</i> $\frac{d}{dx}(x \bullet y^2 - 4x = 5y, x, y)$	$\frac{-(y^2 - 4)}{2xy - 5}$
Find the x value where a function has an absolute maximum .	Find the x value of the absolute maximum of the function $y = -x^2 + x$.	<i>menu</i> <i>Calculus</i> <i>Function Maximum</i> $-x^2 + x, x)$ <i>enter</i>	$x = \frac{1}{2}$
Find the x value where a function has a relative maximum .	Find the x value of the relative maximum of the function $y = x^3 - x$. Note that first you must determine an interval on which the relative maximum is an absolute maximum, such as in the interval $[-1, 1]$.	<i>menu</i> <i>Calculus</i> <i>Function Maximum</i> $x^3 - x^2, x) -1 \leq x \leq 1$ <i>enter</i> (Note: Press Ctrl < to get ≤)	$x = 0$ or $x = 1$
Find the x value where a function has an absolute minimum .	Find the x value of the absolute minimum of the function $y = x^2 + x$.	<i>menu</i> <i>Calculus</i> <i>Function Minimum</i> $x^2 + x, x)$ <i>enter</i>	$x = -\frac{1}{2}$
Find the x value where a function has a relative minimum .	Find the x value of the relative minimum of the function $y = x^3 - x$. Note that first you must determine an interval on which the relative minimum is an absolute minimum, such as in the interval $(0, 3)$.	<i>menu</i> <i>Calculus</i> <i>Function Minimum</i> $x^3 - x^2, x) 0 < x < 3$ <i>enter</i>	$x = 4/3$
Solve a <i>differential equation</i> where y is a function of x , to obtain a <i>general solution</i> .	Solve $y' = 5y$. Note: The symbol \int is	<i>menu</i> <i>Calculus</i> <i>Differential Equation Solver</i> $y' = 5y, x, y)$ <i>enter</i> (Note that the symbol \int is a post-key to the right of G.	$y = c1 \bullet e^{5x}$ Note the expression $c1$ represents a constant C_1 . Each time it displays a new constant it chooses the next integer value, so it may give you $c2$, meaning C_2 .

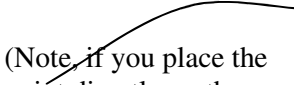
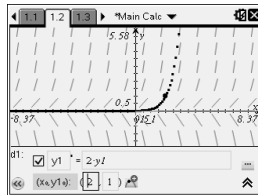
<p>Solve a differential equation where y is a function of x, to obtain a <i>particular</i> solution.</p>	<p>Solve $y' = 5y$ where $y(2) = 4$.</p> <p>Note: The expression y' is only meaningful when using the deSolve command.</p>	<p><i>menu</i> <i>Calculus</i> <i>Differential Equation Solver</i> $y' = 5y$ and $y(2) = 4, x, y)$ <i>enter</i> (Just type in the letters of the word <i>and</i>, with a space before and after the word).</p>	$y = 4e^{5x-10}$
<p>Generate a Taylor polynomial of degree n centered at c.</p>	<p>Find a third order Taylor polynomial for $y = e^x$ centered at 0.</p>	<p><i>menu</i> <i>Calculus</i> <i>Series</i> <i>Taylor Polynomial</i> $e^x, x, 3, 0)$ <i>enter</i></p>	$1 + x + \frac{x^2}{2!} + \frac{x^3}{3!}$
<p>Generate a Taylor polynomial of degree n centered at c and evaluate it at x.</p>	<p>Find a third order Taylor polynomial for $y = e^x$ centered at 0 and evaluate it at $x = 0.5$</p>	<p><i>menu</i> <i>Calculus</i> <i>Series</i> <i>Taylor Polynomial</i> $e^x, x, 3, 0) x = 0.5$ <i>enter</i></p>	1.6458333

Graphing - Starting from a GRAPHS page

Action	Menu Location
Enter (or edit) a function in the graphing window	<i>tab</i> to see the entry line Move cursor up or down to desired entry line Type function <i>enter</i>
Hide a label on a graphed function with its equation	Move cursor to the label <i>ctrl menu</i> <i>Hide</i>
Unhide a label on a graphed function with its equation	Move cursor to the function <i>ctrl menu</i> <i>Label</i>
Delete a particular function and its graph in the graphing window	Move cursor to the graph <i>ctrl menu</i> <i>Delete</i>
Delete all functions and their graphs from the graphing page	<i>menu</i> <i>Action</i> <i>Delete All</i>
See the coordinates of a point in the graphing window	<i>ctrl menu</i> <i>Coordinates and Equations</i>
Slide the axes up/down or left/right without changing proportions	Move cursor to a blank place on the screen Press center button on cursor. Use arrows to move axes
Stretch or shrink the axes in all directions	Move cursor to the axes Press center button on cursor Use ◀▶▲▼ to move the axes
Turn a particular graph off/on	<i>tab</i> until the double arrow on the bottom right of the screen is highlighted. <i>enter</i> Move cursor to the desired function line and then over to the far left of the entry until the on/off symbol is highlighted (it looks like an eye) <i>enter</i>
Turn grid on/off on graph	<i>menu</i> <i>view</i> <i>Hide/Show Grid</i>
Turn axes on/off on graph	<i>menu</i> <i>view</i> <i>Hide/Show Axes</i>
Use the pointer as a device to turn on/off anything it points to in the graphing window	<i>menu</i> <i>Action</i> <i>Hide/Show</i> Now anything you click on will turn to grey to signify that it is to be hidden. Click on it again and it comes back to normal Press <i>esc</i> when finished. Then anything that was grey will be hidden and cursor will return to normal
Rectangular Function/Parametric Equations/Polar Functions/Sequences	<i>menu</i> <i>Graph Type</i> <i>Function or Parametric or Polar or Sequence</i>

Action Desired	Example Problem	Example Input	Example Output
Find a zero , maximum , minimum , or inflection point on a graphed curve.	Find a zero (or max, or min, or inflection) on the graphed curve $y = x^3 - 2x^2$. Problems: Does not find inflection points where the tangent line would be vertical.	<i>menu</i> <i>Analyze Graph</i> <i>Zero (or Max, or Min or Inflec)</i> Use ◀▶ to set the left boundary <i>enter</i> Use ▶ to set the right boundary <i>enter</i>	(2, 0) (zero) (0, 0) (maximum) (1.3333, -1.1852) (minimum) (0.66667, -0.59259) (inflection)
Find multiple zeros at once on a graphed curve.	Find all zeros on the graphed curve $y = x^3 - 5x^2 + 6$.	First, enter and graph the function $f_2(x) = 0$. <i>menu</i> <i>Points&Lines</i> <i>Intersection Points</i> Move cursor close to graphed curve <i>enter</i> Move cursor close x -axis <i>enter</i> <i>enter</i> <i>esc</i>	(-1, 0), (1.26795, 0), (4.73205, -0) (zeros)
Find points of intersection on two graphed curves.	Find the intersection of the graphed curves $y = x^2 - 4$ and $y = 2x - 1$. Note this method finds <i>all</i> points of intersection that occur in the visible window.	<i>menu</i> <i>Points&Lines</i> <i>Intersection Points</i> Move cursor close to one curve <i>enter</i> Move cursor close to other curve <i>enter</i> <i>enter</i> <i>esc</i>	(3, 5) (-1, -3)
Find a point of intersection on two graphed curves. (alternate method)	Find the intersection of the graphed curves $y = x^2 - 4$ and $y = 2x - 1$. Note you must repeat the process for each point of intersection.	<i>menu</i> <i>Analyze Graph</i> <i>Intersection</i> Use ◀▶ to set the left boundary <i>enter</i> Use ▶ to set the right boundary <i>enter</i>	(3, 5) (-1, -3)

<p>Find and graph a tangent line to a graphed curve.</p>	<p>Find and graph the line tangent to the graphed curve $y = 3x^2$ at $(1, 3)$.</p>	<p><i>menu</i> <i>Points&Lines</i> <i>Tangent</i> Move cursor to the curve. <i>enter</i> <i>enter</i> <i>esc</i> Move cursor to tangent line until “line” appears. <i>ctrl menu</i> <i>Coordinates and Equations</i> Move cursor to point of tangency until “point” appears. <i>ctrl menu</i> <i>Coordinates and Equations</i> Move cursor to x-coordinate of label on point until “text” appears. <i>enter</i> <i>enter</i> Delete the value there and replace it with a 1 <i>enter</i></p>	<p>Tangent line is graphed and its equation, $y = 6x + 3$, is printed on the screen. Note that the slope of the curve will be the slope of the tangent line to the curve at the desired point.</p>
<p>Find the slope of a curve at a given point.</p>	<p>Find the slope of the graphed curve $y = 3x^2$ at $(1, 3)$.</p>	<p><i>menu</i> <i>Analyze Graph</i> <i>dy/dx</i> Move the cursor to the approximate location <i>enter</i> <i>esc</i> Move cursor to the point <i>ctrl menu</i> <i>Coordinates and Equations</i> Move cursor to the x-coordinate of the point label <i>enter</i> <i>enter</i> Type in the desired x-value <i>enter</i></p>	<p>The slope is the single number 6 that appears beside the point.</p>

<p>View the area under a graphed curve and find the integral over that interval.</p>	<p>View the area under the graphed curve $y = x^3$ and find the integral on $[-1, 1]$.</p> <p>(Note, if you place the point directly on the x-axis, it is possible to get exact integer values for the endpoints.)</p> 	<p>First graph the desired function. <i>menu</i> <i>Analyze Graph</i> <i>Integral</i> Move cursor to left endpoint <i>enter</i> Move cursor to right endpoint <i>enter</i></p> <p>To get more exact endpoints it may be necessary to: Move cursor to one endpoint of the region on the x-axis, until “point” appears. <i>ctrl menu</i> <i>Coordinates and Equations</i> Move cursor to x-coordinate of point label <i>enter</i> <i>enter</i> Type in desired x-value. Repeat for other endpoint.</p>	<p>0</p>
<p>Create a slope field for a differential equation and draw a particular solution.</p>	<p>Draw a slope field for the differential equation $\frac{dy}{dx} = 2y$ and the solution passing through the point $(2, 1)$</p>	<p><i>menu</i> <i>Graph Type</i> <i>Diff Eq</i> Beside $y1$ type $2 \times y1$ In the parentheses just below type $2 \quad 1$</p>	

Menu Choices from Any Page

CTRL HOME

File

- New Document
- Open Document
- Close
- Save
- Save As.
- Send
- View copyright information

Edit

- Undo
- Redo
- Cut
- Copy
- Paste
- Delete
- Color

View

- Back
- Forward
- Page Sorter

Insert

- Problem
- Page
- Calculator
- Graphs
- Geometry
- Lists and Spreadsheet
- Data & Statistics
- Notes
- Program Editor
 - New
 - Open
 - Import
 - View
- Data Collection

Page Layout

- Custom Split
- Select Layout
- Select App
- Swap Applications
- Delete Application
- Delete Page
- Group
- Ungroup

Refresh Libraries

Settings & Status

- Change Language
- Settings
 - General
 - Display Digits
 - Angle
 - Exponential Format
 - Real or Complex
 - Auto or Approx
 - Vector Format
 - Base
 - Unit System

Graphs & Geometry

- Display Digits
- Graphing Angle
- Geometry Angle
- Automatically hide plot labels
- Show axis end values
- Show tool tips for function manipulation
- Automatically find points of interest

Handheld Setup

- Font Size
- Power Standby
- Hibernate
- Pointer Speed

Status

- Batteries
- Version
- Available Space
- Network
- Login status
- About

Login

- Product ID Number

Login

HOME

Scratchpad

- Calculate
- Graph

Documents

- New Document
- My Documents
- Recent
- Current

Add Page to:

Calculation

Graphs

Geometry

Lists & Spreadsheet

Data & Statistics

Notes

Settings & Status

- Change Language
- Settings

General

- Display Digits
- Angle
- Exponential Format
- Real or Complex
- Auto or Approx
- Vector Format
- Base
- Unit System

Graphs & Geometry

- Display Digits
- Graphing Angle

Geometry Angle

- Automatically hide plot labels
- Show axis end values
- Show tool tips for function manipulation
- Automatically find points of interest

Handheld Setup

- Font Size
- Power Standby
- Hibernate
- Pointer Speed

Status

- Batteries
- Version
- Available Space
- Network
- Login status
- About

Product ID Number

Login

Menu Choices from Calculator Page

CTRL MENU

Clear History
Cut
Copy
Paste
Delete
Select Variable
Symbols
Math Templates

MENU

Actions

Define
 Recall Definition
 Delete Variable
 Clear a – z
 Clear History
 Insert Comment
 Library
 Refresh Libraries
 Insert \ character
 Create Library Shortcut
 Define LibPriv
 Define LibPub
 Lock
 Lock Variable
 Unlock Variable
 Get Lock Info

Number

Convert to Decimal
 Approximate to Fraction
 Factor
 Least Common Multiple
 Greatest Common Factor
 Remainder
 Fraction Tools
 Proper Fraction
 Get Numerator
 Get Denominator
 Common Denominator
 Number Tools
 Round
 Integer Part
 Fractional Part
 Sign
 Mod
 Floor
 Ceiling
 Complex Number Tools
 Complex Conjugate
 Real Part
 Imaginary Part
 Polar Angle
 Magnitude
 Convert to Polar
 Convert to Rectangular

Algebra

Solve
 Factor
 Expand
 Zeros
 Numerical Solve
 Solve System of Equations
 Solve System of Equations
 Solve System of Linear Equations
 Polynomial Tools
 Find Roots of Polynomial
 Real Roots of Polynomial
 Complex Roots of Polynomial
 Remainder of Polynomial
 Quotient of Polynomial
 Greatest Common Divisor
 Coefficients of Polynomial
 Degree of Polynomial
 Fraction Tools
 Proper Fraction
 Get Numerator
 Get Denominator
 Common Denominator
 Convert expression
 Convert to ln
 Convert to logbase
 Convert to exp
 Convert to sin
 Convert to cos
 Trigonometry
 Expand
 Collect
 Complex
 Solve
 Factor
 Zeros
 Extract
 Left
 Right

Calculus

Derivative
 Derivative at a Point
 Integral
 Limit
 Sum
 Product
 Function Minimum
 Function Maximum
 Tangent Line
 Normal Line
 Arc Length
 Series
 Taylor Polynomial
 Generalized Series
 Dominant Term
 Remainder of Polynomial
 Quotient of Polynomial
 Greatest Common Divisor

Coefficients of Polynomial
 Degree of Polynomial
 Differential Equation Solver
 Implicit Differentiation
 Numerical Calculations
 Numerical Derivative at a Point
 Central Difference Quotient with Step
 Numerical Integral
 Numerical Function Min
 Numerical Function Max

Probability

Factorial
 Permutations
 Combinations
 Random
 Number
 Integer
 Binomial
 Normal
 Sample
 Seed
 Distributions
 Normal Pdf
 Normal Cdf
 Inverse Normal
 t Pdf
 t Cdf
 Inverse t
 X² Pdf
 X² Cdf
 Inverse X²
 F Pdf
 F Cdf
 Inverse F
 Binomial Pdf
 Binomial Cdf
 Geometric Pdf
 Geometric Cdf
 Poisson Pdf
 Poisson Cdf

Statistics

Stat Calculations
 One-Variable Statistics
 Two-Variable Statistics
 Linear Regression (mx+b)
 Linear Regression (a+bx)
 Median-Median Line
 Quadratic Regression
 Cubic Regression
 Quartic Regression
 Power Regression
 Exponential Regression
 Logarithmic Regression
 Sinusoidal Regression
 Logistic Regression (d=0)
 Logistic Regression (d≠0)
 Multiple Linear Regression

MENU (continued)**Statistics (continued)**

Correlation Matrix
 Stat Results
 List Math
 Minimum
 Maximum
 Mean
 Median
 Sum of Elements
 Product of Elements
 Sample Standard Deviation
 Sample Variance
 Population Standard Deviation
 Population Variance
 List Operations
 Sort Ascending
 Sort Descending
 Cumulative Sum List
 Fill
 Sequence
 Difference List
 Augment
 Convert List to Matrix
 Convert Matrix to List
 Left
 Mid
 Right
 Distributions
 Normal Pdf
 Normal Cdf
 Inverse Normal
 T Pdf
 T Cdf
 Inverse t
 X² Pdf
 X² Cdf
 Inverse X²
 F Pdf
 F Cdf
 Inverse F
 Binomial Pdf
 Binomial Cdf
 Geometric Pdf
 Geometric Cdf
 Poisson Pdf
 Poisson Cdf
 Confidence Intervals
 z interval
 t interval
 2-Sample z Interval
 2-Sample t Interval
 1-Prop z Interval
 2-Prop z Interval
 Linear Reg t Intervals
 Multiple Reg Intervals
 Stat Tests
 z Tes
 t Test
 1-Sample z Test
 2-Sample z Test
 1-Prop z Test
 2-Prop z Test

X² GOF
 X² 2-way Test
 2-Sample F Test
 Linear Reg t Test
 Multiple Reg Tests
 ANOVA
 ANOVA 2-way Test

Matrix & Vector

Create
 Matrix
 Zero Matrix
 Identity
 Diagonal
 Random Matrix
 Fill
 Submatrix
 Augment
 Column Matrix
 Construct Matrix
 Transpose
 Determinant
 Row-Echelon Form
 Reduced Row-Echelon Form
 Simultaneous
 Norms
 Norm
 Row
 Column
 Dimensions
 Matrix
 Row
 Column
 Row Operations
 Swap Rows
 Row Add
 Multiply Row
 Multiply Row & Add
 Element Operations
 Dot Add
 Dot Subtract
 Dot Multiply
 Dot Divide
 Dot Power
 Advanced
 Trace
 LU decomposition
 QR Decomposition
 Eigenvalues
 Eigenvectors
 Characteristic Polynomial
 Vector
 Unit Vector
 Cross Product
 Dot Product
 Convert to Polar
 Convert to Rectangular
 Convert to Cylindrical
 Convert to Spherical

Finance

Finance Solver
 TVM Functions
 Number of Periods
 Interest rate Per Year

Present Value
 Payment Amount
 Future Value
 Amortization
 Amortization Table
 Balance
 Interest Paid
 Principal Paid
 Cash Flow
 Net Present Value
 Internal Rate of Return
 Modified Internal Rate Return
 Interest Conversion
 Normal Interest rate
 Effective Interest rate

Days between Dates**Functions & Programs**

Program Editor
 New
 Open
 Import
 View
 Func...EndFunc
 Prgm...EndPrgm
 Local
 Control
 If
 If...Then...Endif
 If...Then...Else...Endif
 Elseif...Then
 For...EndFor
 While...EndWhile
 Loop...EndLoop
 Try...Else...EndTry
 ClrErr
 PassErr
 Transfer
 Return
 Cycle
 Exit
 Lbl
 Go To Lbl
 Stop
 I/O
 Disp
 Request
 Request Str
 Text
 Mode
 Display Digits
 Angle
 Exponential Format
 Real or Complex
 Auto or Approx
 Vector Format
 Base
 Unit System
 Get Mode
 Get Language Info
 Add New Line

Hints

Menu Choices from Graphs Page

CTRL MENU on a function entry line

Expand Entry Line

Graph Type

Function
Parametric
Polar
Scatter Plot
Sequence

Attributes

Arrows: Positive/All/No
Zoom: User/Quadrant 1/
Trig/Data/
Standard/Decimal
Tic labels: Shown/Hidden
End Value: Shown/Hidden

Show Table

CTRL MENU on a graphed function

Recent

Label

Attributes

Line weight:
Thin/Medium/Thick
Line style: Continuous/Dotted/
Dashed
Label style: $f / f() / f() = / y=f() /$
 $y =$
Graph: Continuous/Discrete

Hide/Show

Delete

Edit Relation

Trace

Graph Trace
Trace All
Trace Step

Analyze Graph

Zero
Minimum
Maximum
Intersection
Inflection
 dy/dx
Integral

Show Table

Pin

Color

Line color
Fill Color
Text Color

CTRL MENU on an axis

Recent

Attributes

Arrows: Positive/All/No
Zoom: User/Quadrant 1/
Trig/Data/
Standard/Decimal
Tic labels: Shown/Hidden
End Value: Shown/Hidden

Hide/Show

Hide Axes

Show Grid

Window Zoom

Window Settings
XMin
XMax
XScale
YMin
YMax
YScale

Zoom Box
Zoom In
Zoom Out
Zoom Standard
Zoom Quadrant 1
Zoom User
Zoom Trig
Zoom Data
Zoom Fit
Zoom Square
Zoom Decimal

Pin

Color

Line color
Fill Color
Text Color

CTRL MENU on a point

Recent

Label

Attributes

Shape: Circle/Empty
Circle/Square/Empty
Square/Cross/Plus/
Thin/Large/ Empty
Large
Animation speed:
Unidirectional/ Alternating

Hide/Show

Delete

Redefine

Coordinates and Equations

Measurement

Length
Area

Geometry Trace

Pin

Color

Line color
Fill Color
Text Color

MENU

Actions

Pointer
Select
Hide/Show
Attributes
Delete All
Text
Coordinates and Equations
Calculate
Redefine
Insert Slider

View

Graphing View
Plane Geometry View
Show/Hide Analytic Window
Show/Hide Axes
Show/Hide Grid
Show/Hide Entry Line
Show/Hide Scale
Show/Hide Axes End Values
Show/Hide Table
Show/Hide Object Selection
Guides

Graph Type

Function
Parametric
Polar
Scatter Plot
Sequence
Sequence
Custom

Window

Window Settings
XMin
XMax
XScale
YMin
YMax
YScale
Zoom Box
Zoom In
Zoom Out
Zoom Standard
Zoom Quadrant 1
Zoom User
Zoom Trig
Zoom Data
Zoom Fit
Zoom Square
Zoom decimal

Trace

Graph Trace
Trace All
Trace Step
Geometry Trace
Erase Geometry Trace

Analyze Graph

Zero

Minimum
Maximum
Intersection
Inflection
 dy/dx
Integral
Points & Lines
Point
Point On
Intersection Points
Line
Segment
Ray
Tangent
Vector
Circle Arc

Measurement
Length
Area
Slope (line only)
Angle
Shapes
Circle
Triangle
Rectangle
Polygon
Regular Polygon
Construction
Perpendicular
Parallel
Perpendicular Bisector
Angle Bisector

Midpoint
Locus
Compass
Measurement transfer
Transformation
Symmetry
Reflection
Translation
Rotation
Dilation
Hints

Menu Choices from Lists & Spreadsheets Page

CTRL MENU in a Table

Copy
Delete Column
Choose
Edit Expression
Resize
 Resize Column Width
 Maximize Column Width
 Minimize Column Width

MENU in a Table

Actions
 Resize
 Resize Column Width
 Maximize Column Width
 Minimize Column Width
 Resize Row Height
 Auto-size

Function Table

 Switch to Lists & Spreadsheets
 Delete Column
 Choose
 Edit Expression
 Edit Table Settings
 Table Start
 Table Step
 Independent
 Dependent

Hints

CTRL MENU in a Spreadsheet

Cut
Copy
Paste
Insert Cell
Delete Cell
Fill Down
Variables
 Store Variable
 Unlink
 Link To

Resize
 Resize Column Width
 Maximize Column Width
 Minimize Column Width

Frequency Plot

Quick Graph

Color
 Line Color
 Fill Color
 Text Color

MENU in a Spreadsheet

Actions
 Move Column
 Resize
 Resize Column Width
 Maximize Column Width
 Minimize Column Width
 Resize Row Height
 Auto-size
 Select
 Select Row
 Select Column
 Select Range
 Go To
 Recalculate
 Sort

Insert

 Insert Cell
 Insert Row
 Insert Column

Data

 Generate Sequence
 Data Capture
 Automated Data Capture
 Manual Data Capture
 Fill Down
 Clear Data
 Frequency Plot
 Quick Graph

Statistics

 Stat Calculations
 One-Variable Statistics
 Two-Variable Statistics
 Linear Regression (mx+b)
 Linear Regression (a+bx)
 Median-Median Line
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 Cubic Regression
 Quartic Regression
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 Logarithmic Regression
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 Logistic Regression (d≠0)
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 Correlation Matrix

Distributions

 Normal Pdf
 Normal Cdf
 Inverse Normal
 t Pdf
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 Inverse t
 X² Pdf
 X² Cdf
 Inverse X²
 F Pdf
 F Cdf

 Inverse F
 Binomial Pdf
 Binomial Cdf
 Geometric Pdf
 Geometric Cdf
 Poisson Pdf
 Poisson Cdf

Confidence Intervals

 z interval
 t interval
 2-Sample z Interval
 2-Sample t Interval
 1-Prop z Interval
 2-Prop z Interval
 Linear Reg t Intervals
 Multiple Reg Intervals

Stat Tests

 z Tes
 t Test
 1-Sample z Test
 2-Sample z Test
 1-Prop z Test
 2-Prop z Test
 X² GOF
 X² 2-way Test
 2-Sample F Test
 Linear Reg t Test
 Multiple Reg Tests
 ANOVA
 ANOVA 2-way Test

Function Table

 Switch to Table
 Delete Column
 Choose
 Edit Expression
 Edit Table Settings

Hints