



powerOne for iPhone/iPad/iPod Touch Help

This page includes help and information for version 3 of our powerOne calculator for iPhone, iPad and iPod touch product.

Requirements

iPhone, iPad or iPod touch running iOS4.3 or later

Documentation

The documentation for this product is online:

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This PDF version is intended for printing and all online hyperlinks have been removed.

Getting Started

Welcome to version 3 of powerOne!

Get Started

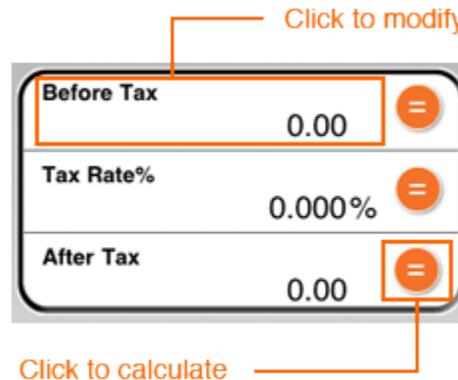
powerOne® combines an algebraic and RPN calculator with simple, customizable, spreadsheet-like templates.

Select a template or the calculator in the Template List to show it or use the search box at the top of the Template List. Generally the list is visible. On iPad in landscape orientation select "Template" in the top left to access it.

Always get help by selecting the "?" (Help) button. The calculator and templates include descriptions and examples.

Using Templates

Each template row consists of three elements: a label, a value and an equals button.



To perform a computation enter the data you know then select the equals button on the row you don't. Enter data by selecting the desired row and entering its data in the displayed editor. Read more about using templates.

Review History

powerOne automatically saves a history of calculations for you. Select the clock button in either the Template List or Template to see a history of calculations. Add names and notes, view complete details, send via email or re-calculate.

Change how long you want to retain your history. Options include none, 7, 14 or 30 days, with 30 as the default. After that only named history records are retained.

Share

Results can be shared by selecting the Send button from either a Template or History. The results are embedded in the email with any amortization tables attached.

In addition if a template is marked to be shared, the template itself is attached with the same data. Just tap the attachment on an iPhone, iPod or iPad to load it into a powerOne Pro edition.

Customize

[Pro Feature] Download additional calculation templates from the Library. Hundreds are available in categories ranging from business, finance, investing and real estate to mathematics, science, construction and engineering.

[Lite Feature] Purchase add-on template packs. We have prepared our most popular templates into bundles designed specifically for your everyday calculation needs. Packs include advanced math capabilities, business, conversions, graphing, finance and more.

[Pro/Lite Feature] Select "+" in the Template List to create a template. Templates can be as easy as entering a formula similar to HP Solve or harness the complete capabilities of powerOne's simple scripting language.

Template List

The Template List shows all of the templates you currently have on the device. This is the main, start-up view of the application on iPhone and iPod touch. On iPad it is either visible on the left-side of the screen in landscape mode or available by selecting the "Templates" button in the top, left corner in portrait mode. To display a template or the calculator, select it from the list.

Finding Templates

To find a template either scroll through the list or search. Search looks at the template's name, description and examples. For instance typing "loan" will show both the templates that have loan in its name (General Loan, Auto Loan) and those that are used to calculate loans but are not named as such (Time Value of Money, Mortgage).

Categories

Each template is in a category. To show that category, select the filter button to the right of the search field and select the desired category. All shows all templates and Favorites shows the templates you chose as your favorites. (The star button in each template.)

Re-Arranging & Deleting Templates

The list can be re-arranged and templates can be deleted. Select the "Edit" button in the Template List. To re-arrange, drag templates via the vertical drag box on the right side of each row. Delete templates with the standard iOS delete methods. The calculator can not be deleted. [Delete is a powerOne Pro feature.]

Get More!

There are lots of additional templates available beyond those bundled. In the Pro editions, select the Library button at the bottom of the Template List to find and download from over 300 templates, all at no additional charge. In the Lite editions, select the Cart icon to select from a wide array of popular templates bundles, including advanced math, finance, business, conversions, graphing, and more.

Create a New Template

powerOne gives you the ability to create your own templates. Select the '+' button in the top, right corner, enter a name and equation then save. See the Creating Templates section for details.

Getting Help

Select the '?' button in the lower, right corner to read the latest news, find online help or email support.

Calculator

powerOne calculator works in both algebraic and RPN input modes. It includes input and output of numbers in real (decimal), scientific, engineering, fraction and feet-inch formats and includes a wide array of math functions, from basic math, powers, and trig to programmer's math, matrices and complex numbers. Details about input modes, number types and math functions is available by selecting the '?' Help icon in the top, right corner of the calculator and then choosing "Examples".

The calculator is available by selecting "Calculator" in the Template List. On the iPhone there is also a landscape version of the calculator. Rotate to landscape orientation from the Template List, Calculator or any template to access it.

Keypads

On the iPhone and iPod touch there are four keypads: primary, math, advanced and history. (Primary is always visible in landscape calculator.) Select each icon below the calculator frame to move between keypads. The math keypad includes power and log functions. The advanced keypad includes a customizable keypad and access to all advanced math functions via the "more" button. The history keypad includes both a calculation log and memory locations. The advanced keypad, history and memory are described below.

On the iPad there are four tabs and the primary keypad is always visible. The four tabs, from left to right, are history, memory, math and advanced. Math tab displays power and log functions while the advanced tab displays a customizable keypad and access to all advanced math functions via the "more" button. Advanced math keypad, history and memory are described below.

Math Functions

powerOne includes over 150 math functions that can be used with the calculator, and even more that can be used with template creation. See the Math Functions section for details on all available math functions.

View Window, Moving the Cursor & Copy/Paste

The view window is where numbers, math functions and symbols appear as you select buttons. In algebraic mode it displays the entire expression and, when you select '=', the result. In RPN mode it displays the stack of results, which can be scrolled to show stack items that have scrolled off the top.

To adjust a number either use the backspace key or select down on the cursor and drag to the desired location. In algebraic mode you can move the cursor anywhere within the equation or result. In RPN mode the cursor can be moved within the currently entered stack item only.

Selecting down on the cursor and releasing will display a menu for copy and paste. In algebraic mode, copy copies the entire view window's contents and paste inserts the clipboard's contents at the cursor position. In RPN mode, copy copies the bottom item on the stack while paste creates a new stack item. Copy and paste are available in the calculator and the template's number editor. The clipboard functions across the iOS device so copy and paste work within and outside powerOne.

Advanced Keypad

The advanced keypad is customizable. Select the "more" button and choose a keypad at the top. In addition, all math functions are listed below the keypads in the "more" list. Select any one to perform its function. This list also includes a brief description for how to enter each function. While the display is designed for algebraic notation, it also indicates the correct order of entry for RPN mode. Push values

onto the stack in left-to-right order. For instance, 3^4 in algebraic mode is pushed as 3 [ENT] 4 [^] in RPN.

The function list and keypads include functions ranging from powers, logs and trig to programmer's math, complex numbers and matrices. All functions are included with the Pro editions of powerOne. The Lite editions include powers, logs, trig and hyperbolic. All functions can be purchased by selecting the cart button in the lower, left corner of the template list.

History & Memory

The calculator includes two types of storage. History (calculation log) includes a log of previous entries and calculations while memory includes 10 locations to store any numbers or equations. See the Keypad section above for details on accessing them.

Select a row to recall it to the cursor position in view window (algebraic mode) or create a new stack item (RPN mode). To store to a memory location, select the STO button on the desired row. Algebraic mode will store the contents of the view window, whether equation or results. RPN mode will store the last stack item.

LAST is a special variable used in algebraic input mode. Since Algebraic input mode evaluates based on what is actually displayed on the screen, rounded results create inaccurate follow-on results. For instance, $1/3 = .333$ but the rounded result means multiplying by 3 will leave a result of .999 instead of 1. LAST retains the full precision of the previous result, which is more complete than the history result or the result displayed in the view window. LAST can be returned by selecting its button in the history keypad.

To clear the history and/or memory locations, select the grey 'x' button in the history keypad on the iPhone or iPod touch or select either the history or memory tab twice on the iPad.

Settings

Select the gear icon (button) in the top, right corner to change the calculator settings. Settings include:

- Input Mode: swap between algebraic and RPN modes.
- Keyboard: impacts the buttons available by default on the math keypad. All additional functions available in the advanced keypad by selecting the "more" button.
- Display Mode: displayed output format for each result type. See Toggle section for more information.
- Precision: real, scientific, engineering and complex number precision includes Float (see as many decimal places as possible) and 0 through 10 places. Fraction rounds the denominator to 1 through 4 places (x, xx, xxx, xxxx), 2, 4, 8, 16, 32, 64, 10, 100 or 1000. Feet-inch rounds the denominator for the fractional inches to 2, 4, 8, 16, 32 or 64. For fractions and feet-inches, powerOne will round to the desired setting and then reduce to the lowest common denominator.
- Trig Mode: choose between degrees and radians mode for trigonometric math functions.
- Key Clicks: turn on or off the keypad key click noise for the calculator, number editor and table editor.

In addition there are application wide settings in Apple's Settings app. Numbers can either be displayed in 1,000.00 or 1.000,00 format and the noise made by selecting buttons in the calculator (called Key Clicks) can be turned off.

Toggle

Toggle (\leftrightarrow button) rotates between different display modes for various results. Find the toggle button in the math tab for each keyboard mode. Options include:

- Numbers: real (3.5) and fraction ($3\frac{1}{2}$)
- Lengths: feet-inch as fractions ($3'6\frac{1}{2}"$), decimal feet (3.5417'), fractional inches ($42\frac{1}{2}"$) and decimal inches (42.5")
- Areas: feet (3.5ft^2) and inches (504in^2)
- Volumes: feet (2.3ft^3) and inches (3974.4in^3)
- Integer: binary (101_b), octal (17_o), decimal (43_d) and hexadecimal (0A5_h or 5F_h)
- Complex: rectangular (3;4) and polar (3;@4)

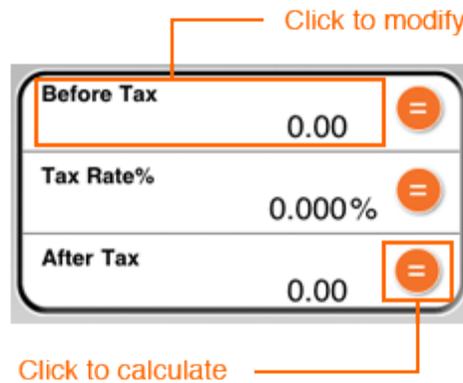
For instance, to see the result of $3.125 + 3.5$ as a fraction, perform the math then select the toggle button until a result of $3\frac{5}{8}$ appears. Note that the toggle setting will retain the last used output until you select the toggle button again.

Calculator-Template Integration

The number editor and landscape calculator are integrated together. When the number editor is displayed, rotate your iPhone or iPod to landscape mode to access the calculator. The template row's result is available via the "T" memory location and any calculations are automatically inserted back in the number editor when rotating back to portrait mode. This feature is not available on the iPad. Instead either use copy/paste or the math capabilities built into the number editor.

Templates

Templates combine the what-if scenario analysis power of a calculator with the visual effect and easy entry of a simple spreadsheet. Each row of a template consists of three elements: a label, a value and an equals button (if the row can be computed).



Each template is available by selecting its title in the Template List.

Basic Functionality

To perform a computation enter the data you know then select the equals button on the row you don't. Enter data by selecting the desired row and entering its data in the displayed editor.

To calculate select the equals button on the desired row. In some cases, however, powerOne can successfully predict what needs to be calculated. As each row is entered the equals button turns gray to indicate that it is known data. If enough data is known it will calculate automatically. (If powerOne is wrong you can override the calculator by selecting a grayed out equals button.)

Also note that some rows have beige backgrounds. This indicates that these rows are read-only.

Data Types

There are six kinds of data available: Numbers, Tables, Dates, Lists, Text and Equations. Number rows can either be decimal numbers, fractions or feet-inch.

Each type has its own editor. Enter a number then select Save to save to the template. In addition on iPad you can select outside the editor to save. Cancel will throw out any changes. See the Data Types section for additional details on data entry.

The number editor -- for decimal, fraction and feet-inch entry -- also offers basic math capabilities. It uses the same input mode as the calculator (algebraic or RPN input). Select the "math" button to see available functions. In addition the number editor also has a button labeled "show". This button displays the full precision of calculated, rounded results. See Calculation Accuracy section below for details. Finally on an iPhone or iPod touch, the landscape calculator and number editor are integrated. See calculator for details.

Amortization Tables

Some templates, such as Time Value of Money and Mortgages, includes an Amortization Table row. Select it to display a full amortization table. When a template is shared, the amortization table is included as an attachment.

Graphing

Some templates, such as Summary Data, Two-Variable Statistics, and Savings, include graphing. Others, such as Function Graph, are designed specifically for that purpose. Enter in the appropriate equations or data, calculate, then select the graph row to see data visually. See the Graphing section for details.

Calculation Accuracy

The decimal places displayed in the template is different from the decimal places stored in the application to ensure calculation accuracy.

For many template results you can see the full precision. Display it in the number editor then click 'show' once to show the full precision of the displayed value. Click it again to revert back to the displayed row's precision. (In fact, this button will also act as an undo, taking you back to the previously stored result.)

Buttons

- **New:** returns the template results to its default values. Also stores the previously entered and calculated data to history.
- **Favorite:** select the empty star to designate this template as a Favorite. See the Categories section for additional information.
- **Sync:** manually updates the currency data. See below for details.
- **History:** access the calculation history for this template.
- **Send:** email the template and its results.
- **Edit:** edit or review the template's source code.
- **Help:** view template descriptions and examples.

The Edit button may not be visible depending on the template author's wishes. Templates you create or receive via email can be edited. However, templates included in powerOne or downloaded from the Library are read-only. The template creator has the option of sharing source code or not.

Sync also may not be visible if the template does not use currency data. The sync option is available for manual update if the application's setting for Update Data is OFF. (This setting is available in the device's Settings app.) Normally powerOne will automatically check for and update currencies once per day. The data is provided by the Bank of Canada and updated around noon EST.

Template Library

There is a library of add-on templates available with powerOne Pro. This library includes both the templates included with powerOne and additional templates available for download developed by Infinity Softworks and others who wish to contribute.

The Template Library is available by selecting the "Library" button at the bottom of the Template List.

Finding Templates

Find templates by searching, browsing or reviewing by category. To search, type a term into the box at the top and select "GO" or the arrow on screen. Search looks at names, descriptions and examples to find matches. Unlike searching in the Template List, however, searching in the Library treats each entered word separately. A search for "Time Value of Money" without quotes, for instance, searches all four words. A search for the same with quotes will search for that specific phrase.

In addition you can browse or review by category. Select "Browse Templates" to page through all available templates. Select "Browse Categories" to see and select a list of template categories.

Downloading Templates

Once you find a template you want select "Download" next to the template's title to add it to a download queue. When you have completed selections, close the Library ("Done" button in the top, right corner) and the selected templates will download. A notice will appear when completed.

Most templates, once downloaded, will appear at the bottom of the Template List. However, duplicate templates and those that have been deleted previously will appear in their previous location.

As an aside, you can also remove templates from your queue before closing the Library. Select "In Queue" to remove it and tell the Library not to download that template.

Graphing

There are three types of graphs: function graphs, scatter plots and bar graphs. Each graph includes the ability to zoom, pan and trace. In addition function graphs can evaluate at a desired point.

Some templates, such as Summary Data, Two-Variable Statistics, and Savings, include graphing. Others, such as Function Graph, are designed specifically for that purpose. Enter in the appropriate equations or data, calculate, then select the graph row to see data visually.

Zoom and Pan

To zoom, pinch or expand with two fingers on the screen. To pan, drag a finger across the screen. Bar graphs require that you start dragging in a location where the graph is not drawn.

Tracing and Evaluating

To trace a function graph, select and hold for a second until the trace box and line appear then drag. To trace a scatter plot, select and hold near the desired data point. For bar graphs, select a bar. To evaluate a function graph, select "Eval" on the toolbar and enter in the x data point.

Window

There are two methods for drawing the default window coordinates. The first, or squared mode, is that powerOne takes your x-minimum and x-maximum data (set in the template or defined by the template author) and calculates the minimum and maximum y points. It then uses that data to ensure that the x-scale and y-scale are the same (or squared).

The second approach, or standard mode, is to treat x-minimum and x-maximum as the minimum and maximum window coordinates and draw as much y as possible.

Function graphs default to squared but can be changed by selecting the gear. Bar graphs are set to standard and cannot be changed. Scatter plots default to standard but can be changed by selecting the gear button.

Legend

Select the gear button to see a legend correlating color to data set or equation.

Template History

powerOne automatically saves a history of your template calculations. A history record is created each time you perform a computation (or powerOne auto calculates for you), you ask for a New template or exit a template. These calculations can be viewed, named and annotated, shared via email or recalled to the template for further calculation.

Generally, history records are retained for a maximum of 30 days. To keep records for longer than 30 days just name the ones you want to retain.

Select the History button in either the Template List or a template to view the history. History from the template list shows results from all templates; history from an individual template shows only that template's results.

Views

History is displayed in two views: an overview and a details view. The overview shows the name, date created and some details of the template itself.

- Select a record to view the details.
- Select the Edit button in any row to name and annotate the record.
- Search the name and notes.
- Swipe or edit to delete individual records manually.

The details view displays the record name, results of the template, date created and notes. On the toolbar at the bottom of the view (from left to right):

- Edit: name and annotate the record.
- Send: email the template's results.
- Re-Calculate: recall the results to the template.
- Delete: delete the current history record.

Deleting Records

While you can manually delete individual history records it is easier to let powerOne do it for you. By default unnamed records are stored for 30 days and then are deleted. Name a record to retain it beyond the 30 days.

This day count can be changed in Apple's Settings app. "Save History For" can be 30, 14 or 7 days. In addition it can be set to not save history.

Sharing

Sharing occurs via email. You can share both the results of a template and include the template source.

Share from a Template

To share a template and its results, perform a computation then select the Send button in the template. This will embed the results in an email and attach any amortization tables associated with the template.

In addition, the template itself may be attached to the email. Select this attachment from any iOS or Android device to open it in powerOne. The attached template includes both the template code and the results also embedded in the email.

Whether the template is attached is a choice made by each developer. Templates marked as "Sharable" by the template creator are automatically attached to any email sent. Only powerOne Pro editions can open attached templates.

Share from History

One alternative way of sharing the template's results is via the History. Select the Send button at the bottom of the history detail view. No attachments are included when sending from the history.

Template Source File

The attached template is a special file called a .p1t file (for powerOne Template). This file is not encrypted and can be viewed in any text editor. This means that email applications, web browsers and other applications on an iOS or desktop computer can show the contents of the file. It also means that the attached file can be saved and stored independent of the email. For instance, DropBox can be used to store and backup your templates as well as makes it possible to recover powerOne templates via the DropBox iOS application [powerOne Pro Feature].

Entering Data

There are seven basic data types: numbers, tables, matrices, dates, lists, text and equations.

Numbers

There are six types of numbers: real (decimal) numbers, fractions, feet-inches, integers, complex numbers, and DMS.

Real Numbers

Real numbers -- also known as whole, decimal or floating point numbers -- are entered in standard numerical format using a decimal point (.) or comma (,) as a separator between whole and fractional portions of the number (changed in the Settings App). In addition, exponential notation is also available using the symbol 'E'.

Examples:

3.5 or 3,5 or 45
1,000.55 or 1.000,55
-1,000.55 or -1.000,55
3E55 or -3E55
3.25E-25 or 3,25E-25
-3.25E-25 or -3,25E-25

Use the Setting for the desired output. Alternatively, use the toggle (\leftrightarrow) button to rotate between output formats. The toggle button is available in the math tab on the calculator. Real/fraction rotation is as follows: decimal (3.5), fraction ($3\frac{1}{2}$), scientific notation and engineering notation.

Fractions

Fractions include a numerator and denominator with an optional whole portion. They use ampersand (&) to separate the whole portion from fractional portion and forward slash (/) to separate numerator from denominator. Fractional numbers are stored as real numbers and converted on display.

Examples:

$1\frac{3}{4}$ or $-1\frac{3}{4}$
 $\frac{3}{5}$ or $-\frac{3}{5}$

Use the Setting for the desired output. Alternatively, use the toggle (\leftrightarrow) button to rotate between output formats. The toggle button is available in the math tab on the calculator. Real/fraction rotation is as follows: decimal (3.5), fraction ($3\frac{1}{2}$), scientific notation and engineering notation.

Feet-Inches

Feet-inch numbers are entered with an apostrophe (') separating the feet and inch portions of the number and quote mark (") to denote inches. If the feet marker (') is included then the inch marker (") is optional.

Feet-inch numbers retain their dimensions. For instance, multiplying two linear measurements together will result in an area; multiplying a linear measurement by an area will result in a volume.

Examples:

3'4" or 3'4
3'4 $\frac{1}{2}$ " or 3'4&1/2
3'4.5" or 3'4.5
5'
5.25'
45"

4&1/2"
3.5in² [area]
3.5ft² [area]
10.5in³ [volume]
10.5ft³ [volume]

Use the Setting for the desired output. Alternatively and on iOS only, use the toggle (↔) button to rotate between output formats. The toggle button is available in the math tab on the calculator.

Rotation is as follows:

- Lengths: feet-inch as fractions (3'6&1/2"), decimal feet (3.5417'), fractional inches (42&1/2") and decimal inches (42.5")
- Areas: feet (3.5ft²) and inches (504in²)
- Volumes: feet (2.3ft³) and inches (3974.4in³)

Integers

Integer numbers start with a number and end with `_d` for decimal numbers, `_b` for binary numbers, `_o` for octal numbers, or `_h` for hexadecimal numbers. All hexadecimal letters are available on the custom programmer's keypad or in the math list. Select "more" button in the advanced math tab for both options.

Examples:

34`_d`
1011`_b`
71`_o`
0A8`_h`
8F`_h`

Use the Setting for the desired output. Alternatively and on iOS only, use the toggle (↔) button to rotate between output formats.

Complex

Complex numbers start with a parenthesis followed by the real number, a semi-colon, optional polar indicator (@), imaginary portion and ending parenthesis.

Examples:

(3;`@4`) [polar]
(15;30) [rectangular]

Complex numbers are only available in the calculator.

DMS

DMS numbers are in the form dd.mmss where dd is one- or two-digit degrees, mm is two-digit minutes, and ss is two-digit seconds.

Examples:

35.4515 is 35 degrees, 45 minutes, 15 seconds

Tables

Tables are a collection of real numbers entered and displayed in a single field. Use semi-colons to separate columns and return to separate rows.

Tables are restricted to 256 total elements. To calculate total elements, multiply your number of rows by your number of columns. In addition, row and column indexes start at 1.

Tables are either one-variable with optional occurrences or two-variable with optional occurrences. The required type is usually indicated in the template or variable help available from the extras menu.

Table Examples

A. One-Variable Table, No Occurrences

A one-variable table could be entered like this:

125.67
2,000
5,000

B. One-Variable Table with Occurrences

One-variable tables with occurrences would be entered as such:

125.67;3
2,000;2
5,000

Note that the occurrences in each row is optional. If it is left out, 1 occurrence is assumed.

C. Two-Variable Table with Occurrences

Two-variable tables with occurrences would be entered as such:

5;25;2
3;15
4.5;22;2

Note that the occurrences in each row is optional. If it is left out, 1 occurrence is assumed.

Tables in the Engine and Calculator:

When reviewing math functions, tables are represented using braces { } for simplicity (and because this is how they are used in the math engine.) Braces define rows and columns. Each example from above:

A: {125.67; 2000; 5000}
B: {{125.67;3};{2000;2};{5000;1}}
C: {{5;25;2};{3;15;1};{4.5;22;2}}

Note that all rows must have the same dimensions so either always include or always exclude the occurrences column.

Matrices

While not available in templates, matrix math is available in the calculator. Matrices are represented using brackets []. Brackets define rows and columns. For example, a one-column matrix (called a vector):

5
-2
3

would be entered as follows:

[5; -2; 3] A multi-column matrix:

5 1 -1
-2 0 3
3 2 4

would be entered as follows:

[[5;1;-1];[-2;0;3];[3;2;4]]

Dates

Select the month, day and year from the list and select Save.

Dates in the Engine:

When reviewing math functions, dates are represented in dd.mmyyyy format where dd is days, mm is two-digit month (01 to 12) and yyyy is the four-digit year.

Lists

Select the desired option from the list and select Save.

Text

Enter the desired text and select Save.

Equations

On iOS only, enter an equation for function graphs. Equations are generally in the form $y=\text{equation}$ where the variable in the equation is 'x'. Examples include $y=\sin(x)$ or $y=x^2$. 'x' is the independent variable and 'y' is the dependent variable. Equations can be created with a wide variety of mathematical functions. Use the keypad to enter the desired equation and select Save.

Math Functions

Alphabetical

Review a complete list of documented functions:

- Alphabetical by Name
- Alphabetical by Function

Categorical

Review all documented functions related to a functional area. In some cases, these category designations are arbitrary. They are not meant as a comprehensive guide to which functions work with which data types. See individual functions for details:

- Number
- Powers & Logarithms
- Trigonometric & Hyperbolic
- Complex
- Programmer's
- DMS
- If (Logic)
- Looping
- Tables & Matrices
- Dates
- Finance
- Statistics, Distribution & Probability
- Calculus
- Other