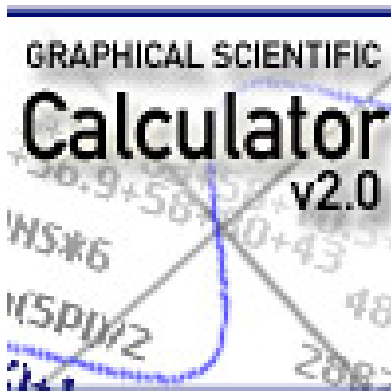


18.3.2006

## Graphical Scientific CALCULATOR



## USER'S MANUAL

File size: 23 K

Application Version: 2.0

Models: All Nokia Java compatible mobile phones

Supported languages: English, German, Finnish, Swedish, Italian and Spanish

## 1 Abstract

This is a “Must-Have” -tool for students, professionals and others who need to make calculations in everyday life.

This graphical scientific calculator is easy to use and calculates full equations in easily readable way like it is done in most of today's advanced graphical calculators.

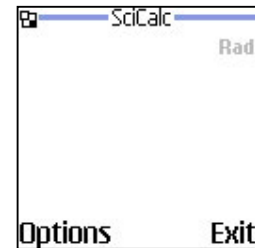
Editable multi-line interface shows also previous equations and their answers. This is great help in most calculation tasks. You can also use last calculated answer (ANS) in your following equation. This calculator provides basic arithmetic operations (+, -, /, \*, ^, sqrt) and most used advanced ones (ln, log, sin, cos, tan, arcsin, arccos, arctan) plus some constants (Pi, e). There is also option to switch between radian and degree angle.

For graphical purpose this calculator has also variable "X". You can easily draw, zoom, move and trace mathematical functions to visualize complex function's behaviour and zero-points.



## 2 Getting started

When you have downloaded this calculator, you are ready to run it. When you run it, you should see empty white screen with degree indicator (RAD). Now you are ready to make your first calculation.



## 3 Using basic calculator functions

### TYPING EQUATION

You can use number pad to insert numbers on the editing line. You get decimal-point by pressing #.

Use \* -button to navigate operators. You can select operator by pressing the same key (number) that is shown in front of the operator. For example number 1 gives you + operator.



You can erase character from editing line by pressing **Clear**. You can also edit your equation by pressing left and right arrow keys to move cursor to other editing point.

### SOLVING EQUATION

When you have equation ready, you can solve it by pressing **Options-Equals**. (In some models only **Equals**.)

### DEG/RAD

There are two modes for angle presentation: Radians and Degrees. To change this mode, go to **Options-Angle** and **Select** new option and press **OK** to continue back to main screen. This mode is saved to your mobile phone's memory, so when you exit program and start it again, same mode will be present as earlier.

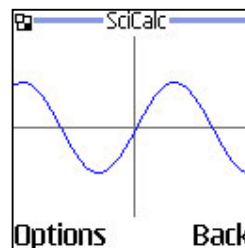
## 4 Using graphics

### DRAWING FUNCTION

When you want to draw a function, use variable **X** in your equation.

*Example:*  $\sin(X)$ .

Drawing starts when you select **Options-Equals**. Drawing is finished when a little gray box disappears from right-bottom corner.



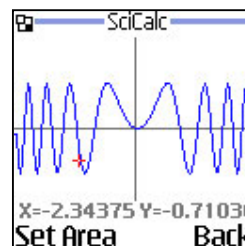
### SETTING AREA FOR DRAWING

After you have your function on screen, you can set ranges for drawing area by selecting **Options-Set area**. Graph will be redrawn after you set these values. Default min and max values for X and Y - axis are -2 and 2. If you can not see anything on the screen, use this feature to locate your function by setting values small and big enough.



### TRACING YOUR FUNCTION

You can trace your function by selecting **Options-Trace**. Use left and right arrow to move a cursor. Also numbers 4 and 6 moves cursor.



### SHORTCUTS FOR MOVING AND ZOOM YOUR FUNCTION

**Arrow keys** – move function **left, right, up** and **down**

**2** – move **up**

**4** – move **left**

**6** – move **right**

**8** – move **down**

**1** – zoom **in X**

**3** – zoom **in Y**

**7** – zoom **out X**

**9** – zoom **out Y**

### OTHER SHORTCUTS

**5** – turn on **background light**

Note: Shortcuts do not work when you are tracing function.

## 5 Examples

Here are some examples how to type equations to this calculator.

Original equation	What to type
$\frac{5 + 6 + 4 + 8 + 21 + 35}{4}$	<code>(5+6+4+8+21+35)/4</code>
$\sqrt{2}$	<code>sqrt(2)</code>
$5\sqrt[3]{2}$	<code>5*(2^(1/3))</code>
$\sin(2\pi)$	<code>sin(2pi)</code>
$1.656 \cdot 10^{-5}$	<code>1.656E-5</code>
$\tan^{-1}(5)$	<code>atan(5)</code>
$e^2$	<code>e^2</code>

## 6 Useful Tips

### ANS

ANS-variable remembers last equation's answer. You can use this variable in your next equation like it would be a number. This helps you to continue from the previous calculation and solving complex equations. If you start your new equation with +, \*, / or ^ operator then ANS-variable will be added in the front of this operator.

### ENDING BRACKETS

If you have an equation where you have brackets in the end, you don't have to type those. This calculator adds missing ending brackets at the end of equation so that equation's syntax becomes correct.

### LAST EQUATION

You can edit last calculated equation by pressing arrow-up

## 7 Technical details

**File size:** 36 K

**Application Version:** 2.0

**Supported Models:**

- All Nokia Java compatible mobile phones (MIDP 1.0) Series 40 upwards
- Nokia Communicator
- Other models may work as well

**Number format:** Float - floating point: 64 bit for base and 64 bit for mantissa

**Supported languages:** English, German, Finnish, Swedish, Italian and Spanish

## 8 More info

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