

# Help **GizmoCalc** Version 1.52

September 24, 2010



Figure 1: **GizmoCalc** Version 1.52

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# 1 What is the use of **GizmoCalc** ?

**GizmoCalc** is a graphics calculator: you type the function definition, eg,

for  $\frac{\cos(x)}{1+x^2}$ , we write:

$$\cos(x)/(1+x*x)$$

We choose the interval of definition ( $x_{min}$ ,  $x_{max}$ ) and the number of points N where the function is calculated. **GizmoCalc** calculates the table of the function at N equidistant points and trace the curve of the function in this interval. It is possible to trim the figure to examine the behavior of the curve in a particular field.

The list of operators and functions used is given below [4].

## 2 Installation of **GizmoCalc**

The package **GizmoCalc.tar.gz** is available at:

[Site GizmoCalc](http://web.mac.com/max.stirn/Gizmotique/Contents/GizmoCalc/English.html)

<http://web.mac.com/max.stirn/Gizmotique/Contents/GizmoCalc/English.html>

Under Linux, the unpacking of **GizmoCalc.tar.gz** can be done in any folder. One obtains the folder **GizmoCalc** that contains **GizmoCalc** application, folders **GizmoCalc Libs**, **Resources** and the icon **Icon256.png**. Make sure that the program **GizmoCalc** has permission to be executed and, optionally, associate the program icon.

## 3 Using **GizmoCalc**

### 3.1 Settings the preferences.

Preferences are accessed via the menu **Help**→**Preferences**.

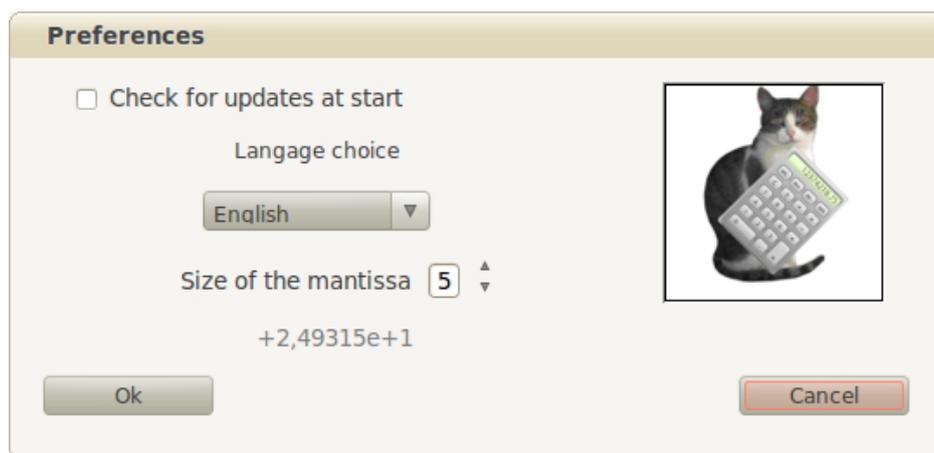


Figure 2: The Preferences dialog.

#### 3.1.1 Choosing the interface language.

Dialogue **Préférences** lets you choose among 3 languages: *German*, *English* or *French*. If you choose *Automatic*, **GizmoCalc** choose the language of your system if it is in these 3 languages.

### 3.1.2 Update of **GizmoCalc** .

By checking the box **Check for updates at startup**, **GizmoCalc** check each time it starts if an update is available. If this box is unchecked, you can manually check for an update using the menu **GizmoCalc**→**Check for updates**.

### 3.1.3 Size of the mantissa.

The size of the mantissa is the number of digits displayed after the decimalpoint in the results table.

## 3.2 Main window.

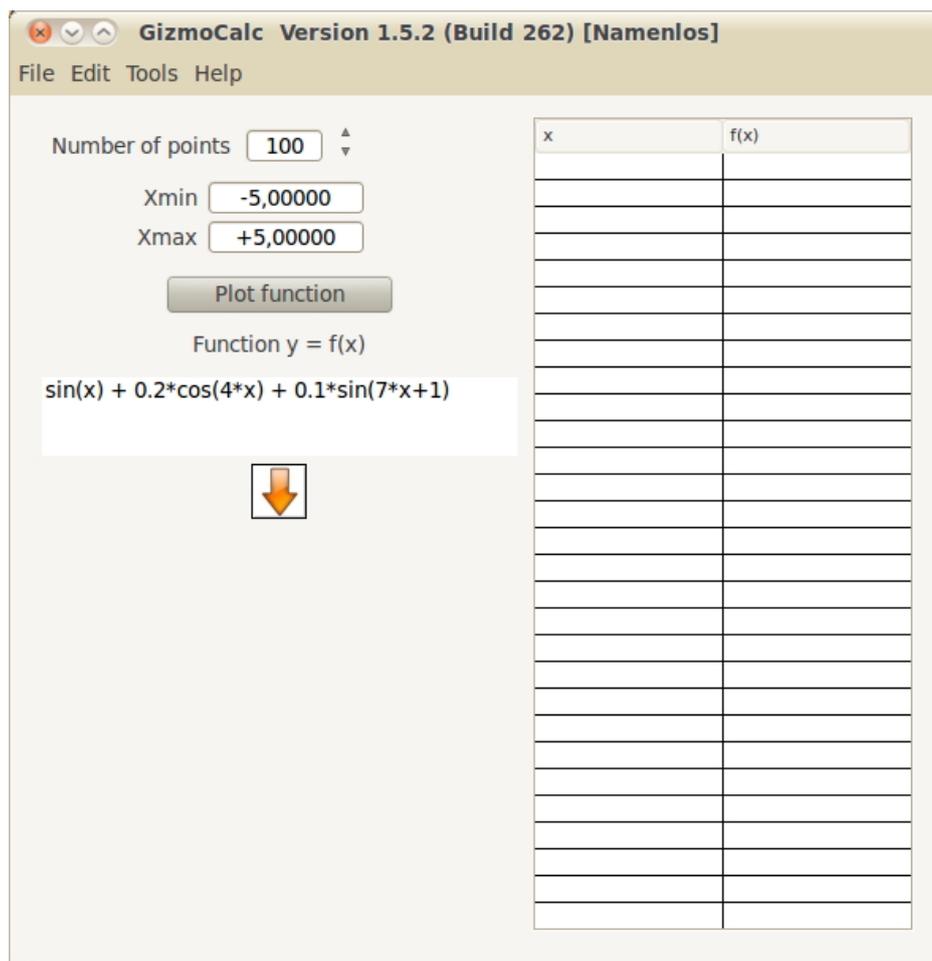


Figure 3: Main window. At left is defining the parameters of the application: the number of points  $N$ , the interval of definition  $(X_{\min}, X_{\max})$  and the definition of the function. To the right was the location of the table  $(x, f(x))$  where will be reported values of the calculation. **Note** that labels **Xmin** and **Xmax** have context menus (accessible by right click) to *simplify data entry*. By clicking the button **Plot the function**, the calculation is started. The results are shown in Figure [4].

### 3.3 Results windows.

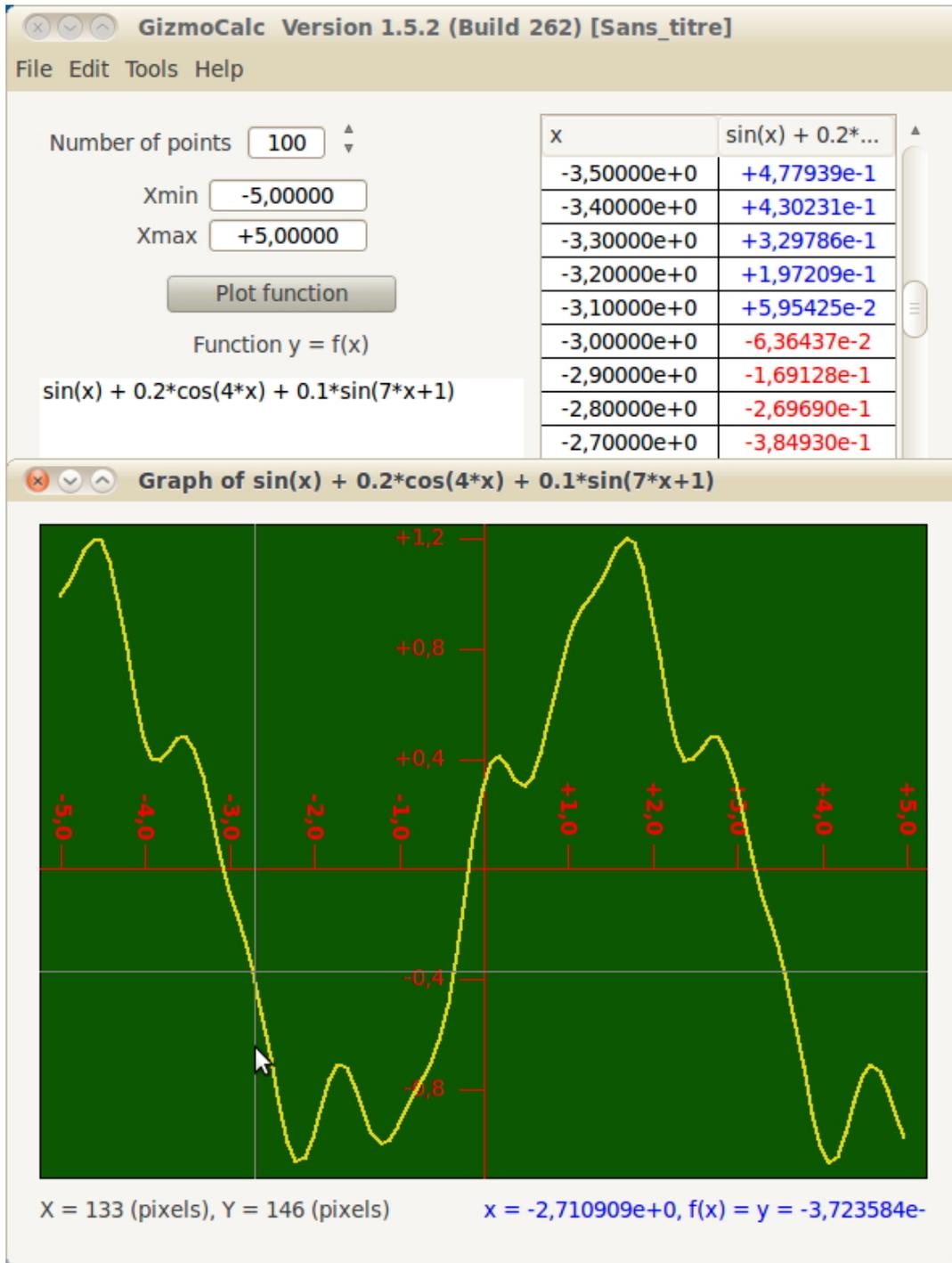


Figure 4: The results: the main window there is the table of the function. The first column corresponds to the values of  $x$  and the second column the values of  $f(x)$ . The values of  $x$  are in black. Cells of  $f(x)$  are blue for positive values and red for negative values. A second window appeared: the graphics window. The mouse pointer becomes a pointing finger when it hovers over the graphic. Bottom left is the mouse position in pixels (black numbers). Bottom right, the data in blue show the values of  $x$  and  $f(x)$  whose position is indicated by the crosshairs following the curve and the mouse.

### 3.4 Changing the graphic appearance.

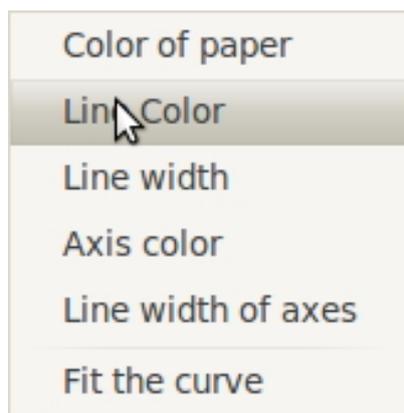


Figure 5: The graphic contextual menu (accessible by right click on the graphic).

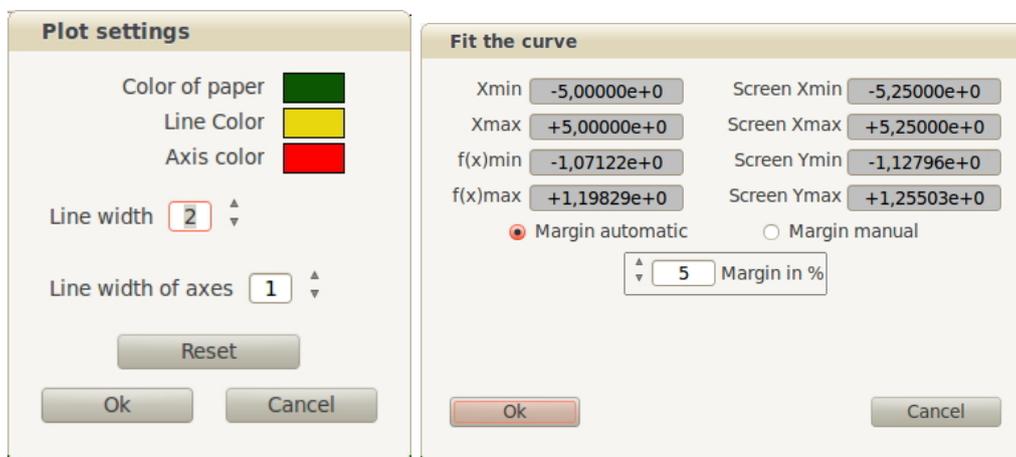


Figure 6: The dialogues obtained by the contextual menu. At left are the dialog settings that can change the appearance of the drawing. At right there is the dialogue that can crop the graphic. For cropping you can choose between two modes: *Margin automatic* or *Margin manual*. In *Margin automatic* mode you can set a percentage fixing the value of the margin around the rectangle containing all the values of  $[x, f(x)]$ . In *Margin manual* mode, we can arbitrarily fix the coordinates of the graphics window  $[X_{min}, X_{max}, Y_{min}, Y_{max}]$ . Note that when the numerical data are on a gray background, they cannot be changed.

### 3.5 Saving, recalling and printing results.

#### 3.5.1 With menus File→Save or File→Save As....

It is possible to save the formula you have studied.

#### 3.5.2 With menus File→Open ou File→Open recents...

It is possible to load a formula already studied.

#### 3.5.3 With menu File→Save table As CSV file....

It is possible to save the table as a CSV file. The CSV format can be read especially by Excel.

### 3.5.4 With menu File→Save picture As (.jpg)....

It is possible to save the image in JPG format.

### 3.5.5 With menu File→Print the picture.

It is possible to print the image.

### 3.5.6 With menu File→Print the table.

It is possible to print the table.

## 4 List of operators and basic functions available.

<b>Operators</b>		
<b>Symbol</b>	<b>Example</b>	<b>Operation</b>
+	a + b	addition
-	a - b	subtraction
*	a*b	multiplication
/	a/b	division
Mod	a Mod b	rest of the division a/b
\	a\b	integer division
^	a^b	a to power b

Figure 7: List of operators available.

<b>Functions</b>			
<b>Name</b>	<b>return type</b>	<b>argument type</b>	<b>Description</b>
Abs(x)	double	x:double	absolut value of x
Acos(x)	double	x:double	arc cosinus of x in radians
Asin(x)	double	x:double	arc sinus of x in radians
Atan(x)	double	x:double	arc tangent of x in radians
Atan2(y,x)	double	x:double	arc tangent of (x,y)
Bin(l)	string	l:integer	return the binary version of l
CDbl(S)	double	S:string	converti S in double
CLong(S)	double	S:string	converti S in int64
Cell(x)	double	x:double	rounded up, of x vers l'entier le plus proche
Cos(x)	double	x:double	cosinus of x in radian
Exp(x)	double	x:double	exponential of x
Floor(x)	double	x:double	arrondi vers le bas, of x vers l'entier le plus proche
Hex(l)	string	l:integer	return the hexadecimal version of l
Log(x)	double	x:double	natural logarithme of x
Max(x1,...,xn)	double	x1...xn:double	maximum of x
Min(x1,...,xn)	double	x1...xn:double	minimum of x
Oct(x)	string	x:integer	return the octale version of x
Pow(x,y)	double	x, y:double	return x to power y
Rnd	double	aucun	retourn a random double number between 0 et 1
Round(x)	double	x:double	return the nearest integer of x
Sign(x)	Integer	x:double	return the sign of x (-1, 0 ou 1)
Sin(x)	double	x:double	sinus of x in radians
Sqrt(x)	double	x:double	square root of x
Tan(x)	double	x:double	tangent of x in radians
Val(S)	double	S:string	return the numerical version of S

Figure 8: List of basic functions available.