Function Plotter>About (Plug-In TSFUNC1)

This plug-in can only be used if you have purchased a personal unlock code. You can order the unlock code for this plug-in directly from TommySoftware®. For further information see Order & Unlock.

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Function Plotter>Create Graph (Plug-In TSFUNC1)

After leaving the dialogbox "Function Parameters" by pressing the OK button, the Y-range of the function is calculated and the program awaits an area in which the function is generated. The grid or the snap functions may be used to define this area. An area is entered in the same way a rectangle is made:

1. *Enter corner point 1*
   The first corner point of the rectangle can be entered by clicking the mouse at any point within the drawing.

   Alternatively, specific coordinates can be entered. Press the F8 key or press ENTER. Absolute or polar coordinates can then be entered. For further information on coordinate entry, see Coordinate Entry (F8).

2. *Enter corner point 2*
   The first corner point of the rectangle can be entered by clicking the mouse at any point within the drawing.

   Alternatively, specific coordinates can be entered. Press the F8 key or press ENTER. Absolute, relative or polar coordinates can then be entered. Relative coordinates are based on the previously entered corner point. By using relative coordinates, a rectangle of a specific size can easily be drawn. For further information on coordinate entry, see Coordinate Entry (F8).

The two other corners are positioned automatically so that the adjacent sides form right angles.

If the insert mode 'Proportional' in the dialogbox "Function Parameters" is active, only an area with a predefined height/width can be entered. This area is given by the maximum and minimum X- and Y-values.

The generated curve or function is assigned to the layer defined in the dialogbox "Function Parameters". Here also the pen for the graph is determined.

Introduction (Plug-In TSFUNC1)

The TommySoftware Functionplotter lets the user generate mathematical functions and multivariable functions as marks, polylines or spline curves in TommySoftware CAD/DRAW. The user can easily enhance these curves by adding a X- and Y-axis and a fully configurable coordinate system with text.

In the first step the function data has to be entered in the dialogbox "Function Parameters". If X- and Y-axis are needed their parameters can be edited in the dialogbox "Axis Parameters". If the user wants to generate a multi variable function the additional parameters for the second variable have to be edited in the dialogbox "a-Parameters". Now the function can be generated in TommySoftware CAD/DRAW (see also Create Graph).
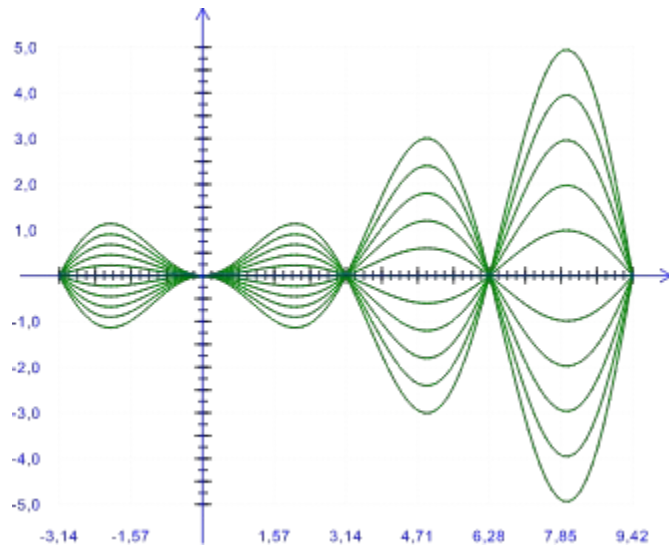

More information is available in the detailed descriptions of the dialogboxes.

We are interested in your opinion about this function plotter. If you have additional ideas concerning this program please do not hesitate to contact us. We value your input as this helps us to make a better product for the future.

Thank you.

Dialog Window "Function Parameters" (Plug-In TSFUNC1)

How can I access information on this dialog?
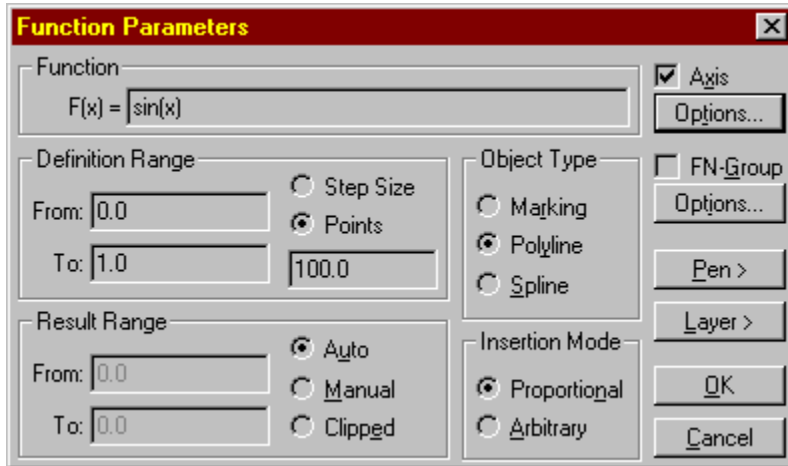
After selecting the command Draw>Functionplotter>Function the above shown dialogbox "Function Parameters" appears. Here the function term is entered, the definition range is set and the object type for the generated function is selected. The function term must include the *variable x*. A multi variable function also requires the second *variable a*. To generate a multi variable function the checkbox "FN-Group" must be active. The text display in the function edit field changes accordingly from F(x) to F(x,a).

The defined basic functions are listed in the chapter Functions. To simplify editing omit the multiplication operator * between a number and a variable.

Example   `35*x`   can be entered as   `35x`
                     `3*x*a`   can be entered as   `3xa`

To generate a graph it is necessary to define a range on the X-axis. This range is called the definition range. This range can exist of up to 1999 points. The user can either edit the number of desired points (setting "Points"), or define the distance between two points (setting "Step Size"). Depending on the size of the definition range the amount of points needed is calculated automatically.

For every x-value from the definition range the resulting values are calculated. The program can find the maximum and minimum value in the resulting range itself. The Y-axis is scaled accordingly. This is achieved by activating the radio button "Auto".

If the resulting Y-range exceeds 200 times the definition range it is necessary to switch to the setting "Clipped".This can be important when a function contains undefined points, pole points or extreme values. If the setting "Clipped" is active all values that exceed the range are ignored and not used for the display of the graph.

If the setting 'Manual' is active the values defined in the field 'From' and 'To' are used to calculate the resulting range of the graph. If a value exceeds the area for the resulting range it is taken automatically.

In the following picture the three different insertion modes are presented. The graph shows the function `F(x)=x^3` in the definition range from -2 to 2. The area displayed in red is the rectangle entered by the user. The resulting range is always -4 to 4. If "Auto" is active this range is calculated by the program. If

the setting "Manual" is active the complete resulting range is used to display the graph. The setting "Clipped" cuts the graph at the borders of the defined range.

Auto   Manual   Clipped
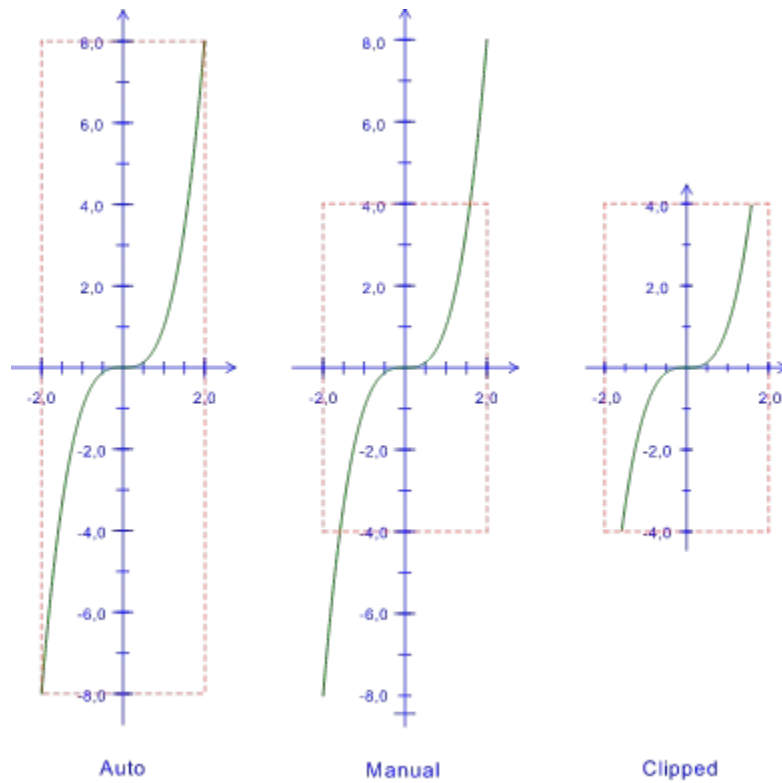
The selected insertion mode defines whether a unit on the X-axis equals one unit on the Y-axis. If the user wants these units to be the same the mode "Proportional" has to be chosen. If independent unit sizes for the axis are needed the mode "Arbitrary" is recommended. The red frame displays the rectangle, the user defines where to insert the graph.


Proportional   Arbitrary
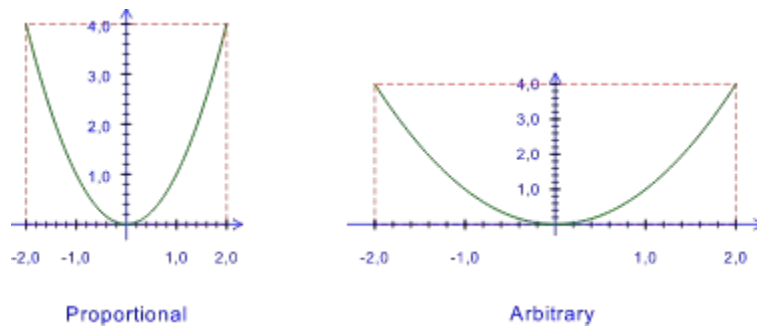
To define a specific relation between X-axis values and Y-axis values it is recommended to set the resulting range mode to "Manual". The relation can easily be entered by using the grid, snap functions, direct entry and the orthogonal mode. See next picture:

Proportional

Arbitrary
Resultig Range 0-2 (Man)

Arbitrary
Resultig Range 0-8 (Man)
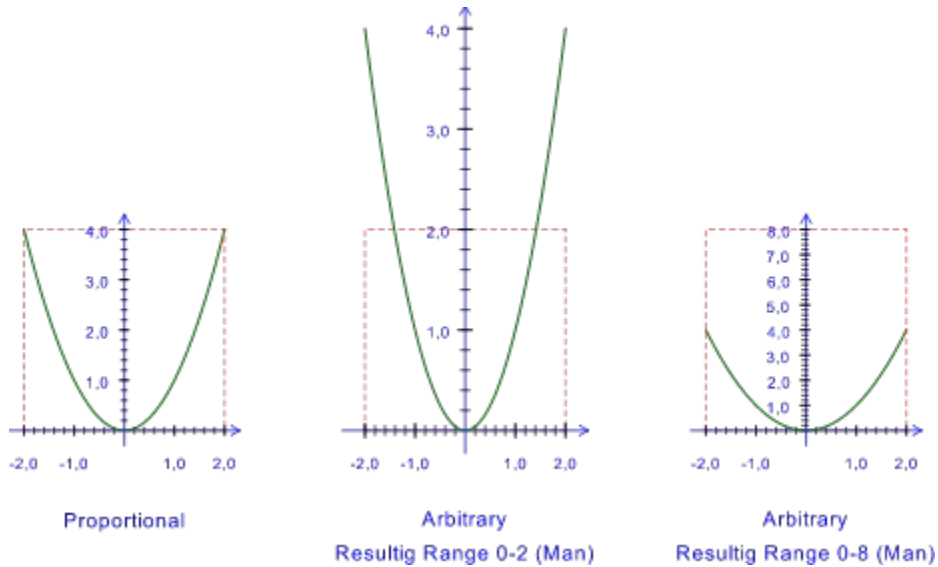
In the example the function `F(x)=x^2` is displayed with the mode "Proportional". To be able to compare the values the second corner point of the rectangle is entered with the direct entry and relative coordinates (e.g: `dx=50 dy=50`). The resulting area is displayed in red in the example shown. To double the scale of the Y-axis in the right picture switch to the mode "Manual" and define the resulting range from 0 to 2. The second corner point is entered again with relative coordinates (`dx=50 dy=50`). The third example is generated the same way except the resulting range is extended from 0 to 8.
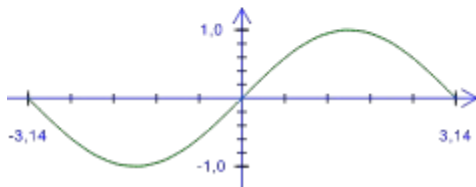
The user can select the object type for the graph. It can be either a polyline, a spline or simple markings. Markings are inserted at the calculated base points. The spline curve allows to generate a smooth graph with few base points.
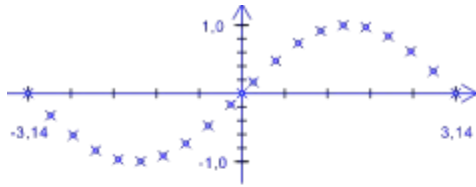
Markings
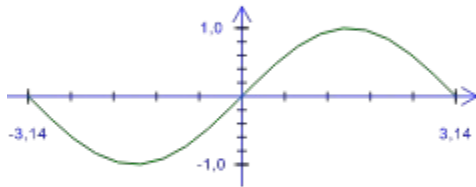
Polyline

Spline Curve

Caution: The smoothness of a spline curve is not based on mathematical precision of the entered function. Spline curves are built of the same base points like a polyline or markings. The resulting smoothness is a part of the mathematical way the spline curve is calculated and has no relationship to the way the entered function is defined!

Caution: It is highly recommended not to use the spline curve when the function is not constant. For example the absolute function (`ABS( )`) at the point 0.

To add axis and texts to the graph activate the checkbox "Axis". The "Option"-button below allows the user to specify the additional parameters in the dialogbox "Axis Parameters". More details can be found in the description of this dialogbox.

To generate a multi variable function plot the user has to activate the checkbox "FN-Group". A multi variable function needs the additional parameter a beside variable x. The parameter is set to the next defined value after each completed calculation for the variable x in the definition range. This value is used to calculate a new graph with the updated a value. Up to 100 parameters are allowed. So up to 100 function graphs can be generated. The values for the parameter a can be edited in the dialogbox "a-Parameters". The dialog field is opened with the "Option"-button below the checkbox "a-Parameters". More details can be found in the description of this dialogbox.

After all parameters are edited the graph has to be generated (See Create Graph).

Clicking on this button will close the dialog accepting all changes. Any changes or operations specified will be carried out.

Clicking on this button will close the dialog, without accepting any changes. Any following operation will not be carried out.

The function F(x) or multi-variable function F(x,a) has to be entered in this field. To generate a multi variable function also the checkbox FN-Group has to be active. Parameter for a multi variable function can be entered in the dialogbox "a-Parameters". It appears after pressing the "Option"-button below the checkbox "FN-Group".

Start value of the definition range.

End value of the definition range.

If this field is active the value in the edit field below defines the distance between two calculated values in the definition range (x-values). This value has to be greater than 0 and smaller than the selected definition range. The maximum number of points cannot exceed 1999.

If this field is active the value in the edit field below defines the number of points in the definition range. This number has to be greater than 1 and smaller than 2000.

This edit field contains, depending on the active radio button above, either the step size between two definition values or the number of points per generated graph. Independent from the setting of the radio buttons the maximum number of 1999 points per curve cannot be exceeded.

Start value of the resulting range. This edit field is only active if the range is not calculated automatically.

End value of the resulting range. This edit field is only active if the range is not calculated automatically.

If the setting "Auto" is active the resulting range for the graph is calculated by the plug-in automatically. This setting can only be used if the ratio of definition range to resulting range does not exceed 200.

If the setting "Manual" is active, the resulting range defined in the edit fields on the left is taken to calculate the input area for the graph. If the function values should exceed the defined range they are used anyway.

If the setting "Clipped" is active, the resulting range defined in the edit fields on the left is taken to calculate the input area for the graph. If the function values should exceed the defined range they are not used.

If this radio button is active each calculated point is inserted as a marking.

If this radio button is active each calculated point is used as another point for a polyline section. The graph is inserted as a polyline.

If this radio button is active each calculated point is used as another point for a spline curve section. The graph is inserted as a spline curve.

This radio button indicates that both axis are inserted with the same scaling factor. The height/width ratio is correct. One unit on the X-axis equals one unit on the Y-axis.

This radio button indicates that the graph can be inserted with any user defined height/width scale. One unit on the X-axis can be different from one unit on the Y-axis.

If this checkbox is set axis and text at the axis are added to the graph. The appearance of the axis can be changed in the dialogbox "Axis Parameters".

This button displays the dialogbox "Axis Parameters" The settings in this dialogbox define the appearance of axis and text at the axis.

If this checkbox is set a multi variable function, depending on the parameter a can be generated. The description of the function in the function-field changes accordingly. Parameters for the multi variable function can be entered in the "a-Parameters" dialogbox. This box can be reached by pressing the option button below.
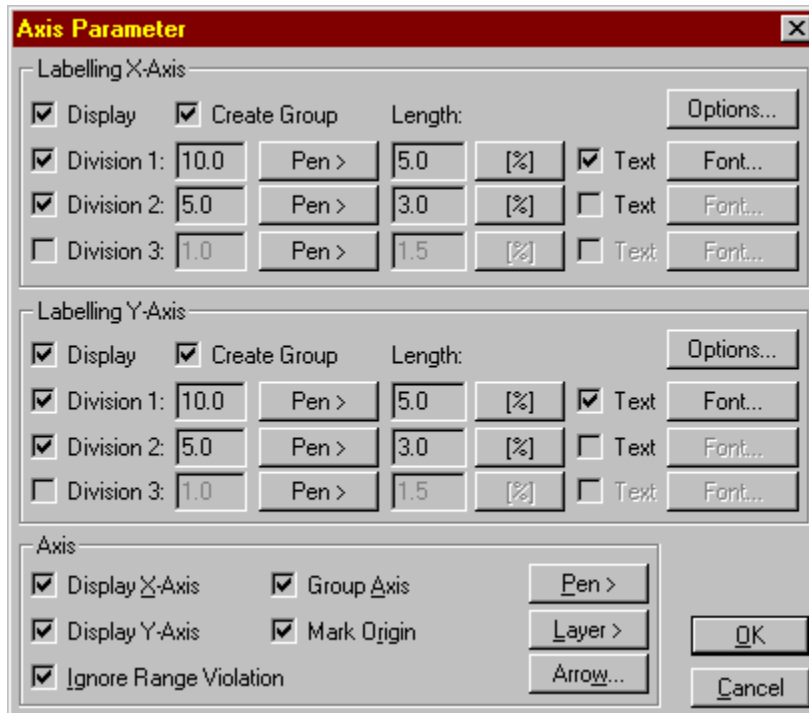
This button displays the "a-Parameters" dialogbox. The settings in this dialogbox define the values for the a-Parameter.

This button defines the pen for the function.

This button defines the layer for the function.

# Dialog Window "Axis Parameters" (Plug-In TSFUNC1)

How can I access information on this dialog?

The axis parameters allow the user to enable or disable the X-axis and the Y-axis as well as divisions on these axis seperately. Per axis up to 3 levels of division are possible. Every level of division has to be activated first by the checkbox on the left side of the dialogbox. In the first edit field the distance between divisions of one level on the axis has to be defined. The following "Pen"-button defines the pen for this level of division. The next edit field defines the length of the division line. This length can be edited in different units. These units can be chosen with the next button in the dialogbox "Division Unit". The description of this dialogbox includes further information regarding usage of various length unit types.

Tip: To generate optically pleasant divisions, the biggest division should get the largest division line length.

Every active level of division can contain additional text that shows the value of each division line. This text is activated by clicking on the associated checkbox in this line. The checkbox can only be enabled when the checkbox "Division" in the same line is already active. The button "Font" allows the user to select any available font for each division. If more than one division is selected with text the distance between divisions can be adjusted in the dialogbox "Font Division" . Here also the rotation of division text can be defined.
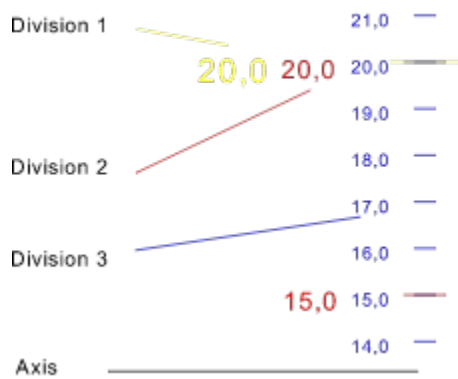
To adjust the distance and position of the text to the axis click on the according "Option"-button. This button supplies the "X-Axis Textoption" and the "Y-Axis Textoption" dialogbox. The user can also define the fractional digits of the dimension text.

If the user wishes to generate a group for each level of divisions, including division lines and division text, the checkbox "Create Group" has to be set. The checkbox "Group Axis" additionally generates a group consisting of the two axis and, if the checkbox is set, the origin marking.

The setting "Ignore Range Violation" can be used if divisions up to the origin are needed, even though the definition range or resulting value range does not reach the origin. This functionality can be helpful to generate a proper background grid for the function. The following examples of the function `F(x)=sin(x)+3` show the difference. The red frame displays the rectangle, the user defines where to insert the graph.
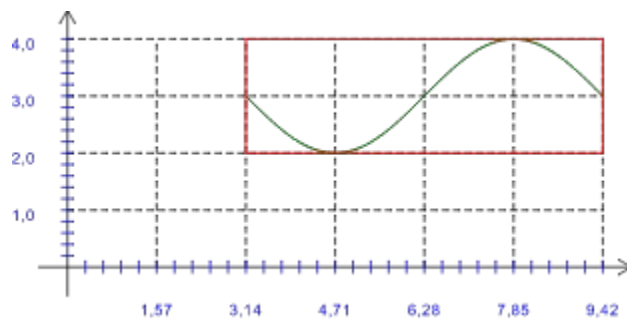
Grid with active checkbox "Ignore Range Violation".
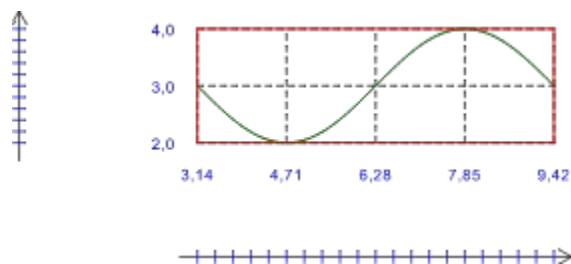
Grid with inactive checkbox "Ignore Range Violation".

More information about the generation of a grid with the help of divisions in the description of the dialogbox "Division Unit".

This button activates the division for the X-axis.

This button activates the division for the Y-axis.

This button enables the generation of a group of division lines and division text for the X-axis. The group can be broken up later.

This button enables the generation of a group of division lines and division text for the Y-axis The group can be broken up later.

This checkbox enables the first level of division for the X-axis.

This checkbox enables the second level of division for the X-axis.

This checkbox enables the third level of division for the X-axis.

This checkbox enables the first level of division for the Y-axis.

This checkbox enables the second level of division for the Y-axis.

This checkbox enables the third level of division for the Y-axis.

This edit field defines the distance between divisions of the first X-axis level. The value can only be changed when the according checkbox "Division 1" is active.

This edit field defines the distance between divisions of the second X-axis level. The value can only be changed when the according checkbox "Division 2" is active.

This edit field defines the distance between divisions of the third X-axis level. The value can only be changed when the according checkbox "Division 3" is active.

This edit field defines the distance between divisions of the first Y-axis level. The value can only be changed when the according checkbox "Division 1" is active.

This edit field defines the distance between divisions of the second Y-axis level. The value can only be changed when the according checkbox "Division 2" is active.

This edit field defines the distance between divisions of the third Y-axis level. The value can only be changed when the according checkbox "Division 3" is active.

This button displays the pen selection list for the first division of the X-axis.

This button displays the pen selection list for the second division of the X-axis

This button displays the pen selection list for the third division of the X-axis.

This button displays the pen selection list for the first division of the Y-axis.

This button displays the pen selection list for the second division of the Y-axis.

This button displays the pen selection list for the third division of the Y-axis.

In this edit field the length of the division lines of the first level of X-axis divisions is entered. The edit field can only be accessed when the according checkbox "Division 1" is active.

In this edit field the length of the division lines of the second level of X-axis divisions is entered. The edit field can only be accessed when the according checkbox "Division 2" is active.

In this edit field the length of the division lines of the third level of X-axis divisions is entered. The edit field can only be accessed when the according checkbox "Division 3" is active.

In this edit field the length of the division lines of the first level of Y-axis divisions is entered. The edit field can only be accessed when the according checkbox "Division 1" is active.

In this edit field the length of the division lines of the second level of Y-axis divisions is entered. The edit field can only be accessed when the according checkbox "Division 2" is active.

In this edit field the length of the division lines of the third level of Y-axis divisions is entered. The edit field can only be accessed when the according checkbox "Division 3" is active.

This button calls the dialogbox "Division Unit". In this dialogbox the unit for the first X-axis division is defined. The button displays the selected unit. It can only be accessed when the checkbox "Division 1" is active.

This button calls the dialogbox "Division Unit". In this dialogbox the unit for the second X-axis division is defined. The button displays the selected unit. It can only be accessed when the checkbox "Division 2" is active.

This button calls the dialogbox "Division Unit". In this dialogbox the unit for the third X-axis division is defined. The button displays the selected unit. It can only be accessed when the checkbox "Division 3" is active.

This button calls the dialogbox "Division Unit". In this dialogbox the unit for the first Y-axis division is defined. The button displays the selected unit. It can only be accessed when the checkbox "Division 1" is active.

This button calls the dialogbox "Division Unit". In this dialogbox the unit for the second Y-axis division is defined. The button displays the selected unit. It can only be accessed when the checkbox "Division 2" is active.

This button calls the dialogbox "Division Unit". In this dialogbox the unit for the third Y-axis division is defined. The button displays the selected unit. It can only be accessed when the checkbox "Division 3" is active.

This checkbox activates the text for the first division of the X-axis. It can only be accessed when the checkbox "Division 1" is active.

This checkbox activates the text for the second division of the X-axis. It can only be accessed when the checkbox "Division 2" is active.

This checkbox activates the text for the third division of the X-axis. It can only be accessed when the checkbox "Division 3" is active.

This checkbox activates the text for the first division of the Y-axis. It can only be accessed when the checkbox "Division 1" is active.

This checkbox activates the text for the second division of the Y-axis. It can only be accessed when the checkbox "Division 2" is active.

This checkbox activates the text for the third division of the Y-axis. It can only be accessed when the checkbox "Division 3" is active.

This button opens the dialogbox <u>"Font Division"</u>. In the dialogbox the font, its style, rotation, height, character distance and slope for the first division of the X-axis can be defined. It can only be pressed when the according checkbox "Text" is active.

This button opens the dialogbox <u>"Font Division"</u>. In the dialogbox the font, its style, rotation, height, character distance and slope for the second division of the X-axis can be defined. It can only be pressed when the according checkbox "Text" is active.

This button opens the dialogbox <u>"Font Division"</u>. In the dialogbox the font, its style, rotation, height, character distance and slope for the third division of the X-axis can be defined. It can only be pressed when the according checkbox "Text" is active.

This button opens the dialogbox <u>"Font Division"</u>. In the dialogbox the font, its style, rotation, height, character distance and slope for the first division of the Y-axis can be defined. It can only be pressed when the according checkbox "Text" is active.

This button opens the dialogbox <u>"Font Division"</u>. In the dialogbox the font, its style, rotation, height, character distance and slope for the second division of the Y-axis can be defined. It can only be pressed when the according checkbox "Text" is active.

This button opens the dialogbox <u>"Font Division"</u>. In the dialogbox the font, its style, rotation, height, character distance and slope for the third division of the Y-axis can be defined. It can only be pressed when the according checkbox "Text" is active.

This button calls the dialogbox "X-Axis Text Options". Here global parameters for X-axis texts are defined.

This button calls the dialogbox "Y-Axis Text Options". Here global parameters for the Y-axis texts are defined.

If this checkbox is active the X-axis is added to the function graph. This setting does not effect the divisions of the axis.

If this checkbox is active the Y-axis is added to the function graph. This setting does not effect the divisions of the axis.

If this checkbox is active the axis (if existing) and the origin marking (if existing) are included in one group. This group can be broken up afterwards.

If this checkbox is active a marking is added to the graph at the origin.

If this checkbox is active the axis are, independent from the selected definition range or resulting value range, are always started at the origin.
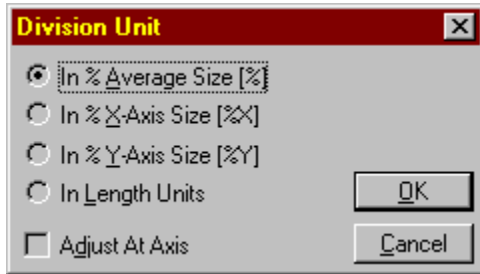
This button calls the dialogbox "Arrow Parameters". Here the parameters for the axis arrows are defined.

This button displays a list with available pens for the axis.

This button displays a list with available layers for the axis.

Dialog Window "Division Unit" (Plug-In TSFUNC1)

How can I access information on this dialog?

The available division units allow the user to use divisions in various ways.

A common division can be chosen with the first radio button. The length of a division line in this case is calculated as a percentage value of the average length of both axis. This unit guarantees a unique appearance of the graph independent of its size.

The second radio button selects a unit which allows the user to enter the length of a division line as a percentage of the full length of the X-axis. This unit for example can be used to present a X-division line length in good proportion to the full length of the X-axis. This also can be used for divisions of the Y-axis to put a grid in the background. For this, select the division line length as 100% and the Unit "In % of X-Axis Size [%X]". To align the grid properly (not centered) select the checkbox "Adjust At Axis". The result of this action is shown in the next picture. This setting is also independent of the size the graph has later.
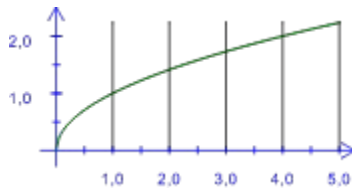

The third radio button allows the user to enter the length of a division line as a percentage of the full length of the Y-axis (The same process as previously mentioned). This unit for example can be used to present a Y-division line length in good proportion to the full length of the Y-axis. This also can be used for divisions of the X-axis to put a grid in the background. For this select the division line length as 100% and the Unit "In % of Y-Axis Size [%Y]". To align the grid properly (not centered) select the checkbox "Adjust At Axis". The result of this action is shown in the next picture. This setting is also independent of the size the graph has later.
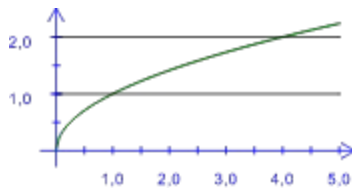
The fourth radio button selects absolute length as a unit of measure. This unit allows the user to enter a defined length for the division lines in the current CAD/DRAW units. The selected length has to be kept in mind regarding the size of the graph entered by the user afterwards.

The checkbox "Adjust At Axis" enables the division lines to not be centered to the axis they divide, but in the same proportion like the parallel axis to the origin. The following picture shows the Y-grid from the example above without adjustment:
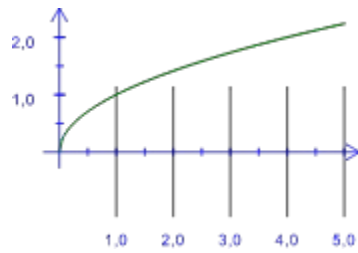
To get to know the various ways how to use these settings try to experiment with them.

If this radio button is active the division lines are calculated as a percentage of the average effective size of the function. This average size is calculated of the height and width of the axis. The division lines are generally well balanced with this setting.

If this radio button is active the division lines are calculated as a percent of the X-axis size.

If this radio button is active the division lines are calculated as a percent of the Y-axis size.

If this radio button is active the division lines are calculated in absolute length in the current length unit of CAD/DRAW. The length of each unit is independent from the size of the graph

If this checkbox is inactive the division lines are centered to the axis they divide. If the checkbox is active the division lines are aligned to the axis they divide in the same proportion like the parallel axis to the origin.

Dialog Window "X-Axis Text Options" (Plug-In TSFUNC1)

How can I access information on this dialog?
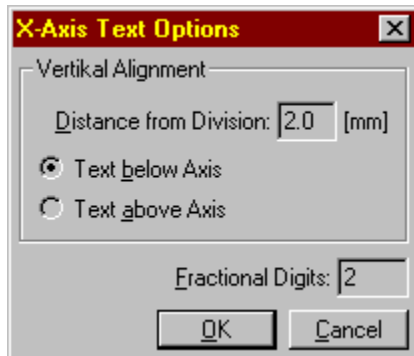
This dialogbox lets the user edit the text parameter for the X-axis division texts. A fixed distance to the X-axis can be entered and the alignment of texts to the division line (above or below) can be defined. Also the number of fractional digits is defined here. If this value is set to 0 no comma is displayed.

This edit field contains the distance of the first division text frame above or below the division unit of the X-axis in the current CAD/DRAW length unit.
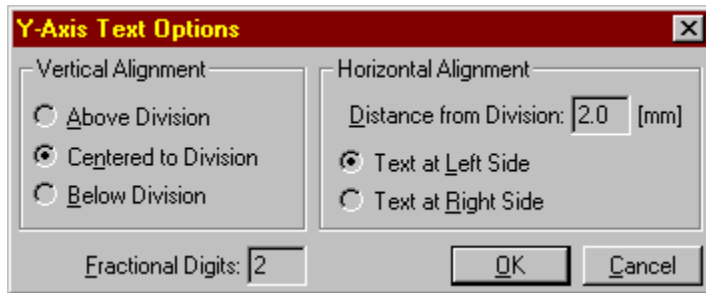
This radio button defines the text position below the X-axis.

This radio button defines the text position above the X-axis.

This edit field contains the number of fractional digits for the division texts. If this field contains a 0 no comma is displayed.

Dialog Window "Y-Axis Text Options" (Plug-In TSFUNC1)

How can I access information on this dialog?

This dialogbox defines the parameters for the Y-axis division texts. The user can edit a fixed distance of the first text to the Y-axis and define the alignment of each text to the axis (left or right). Additional alignment of the texts in its text column can be predefined. The maximum number of fractional units can be entered in the edit field. If this value is set to 0 no comma is displayed.

This radio button defines the vertical alignment of the texts to be above the division lines of the Y-axis.

This radio button defines the vertical alignment of the texts to be centered to the division lines of the Y-axis.

This radio button defines the vertical alignment of the texts to be below the division lines of the Y-axis.

This edit field contains the distance of the first division text frame left or right of the division line of the Y-axis in the current CAD/DRAW length unit.

This radio button defines the position of the division texts to be left of the Y-axis.

This radio button defines the position of the division texts to be right of the Y-axis.

This edit field contains the number of fractional digits for the division texts. If this field contains a 0 no comma is displayed.

Dialog Window "Arrow Parameters" (Plug-In TSFUNC1)

How can I access information on this dialog?

This dialogbox defines additional distances of the arrow heads from the definition range or resulting value range. This length is entered as a percent of the total axis length. If the checkbox "Axis Identical" is active, the length for the X- and Y-arrow distance is calculated from the average length of both axis.

This edit field defines the percentage of additional distance for the arrow heads over the definition and resulting value range.

If this checkbox is set the percentage additional length is based on the average length of X- and Y-axis. If the box is not checked the additional length is calculated independently for the X-axis and the Y-axis. In this case the distance can be different for both axis.

This button calls the dialogbox "Axis Arrotype" . Here the start- and end arrow types of both axis are defined.

Dialog Window "Axis Arrow Types" (Plug-In TSFUNC1)
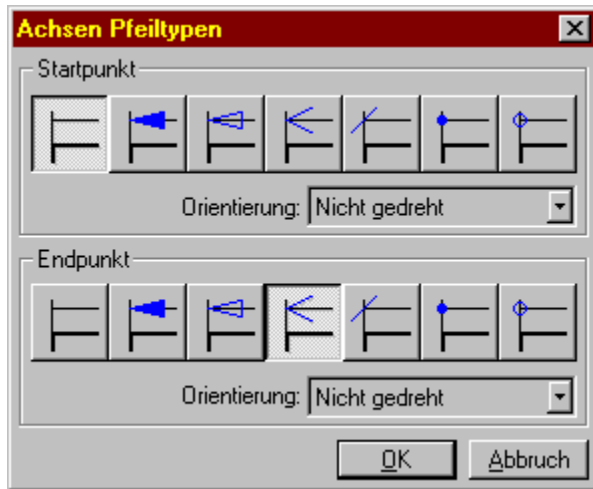
By clicking on the icons in this dialogbox the user defines the arrow type of both axis. The starting point for the X-axis is at the left edge, for the Y-axis the bottom end. The definition of the orientation has no meaning in this dialogbox. Arrows will never be drawn as rotated.

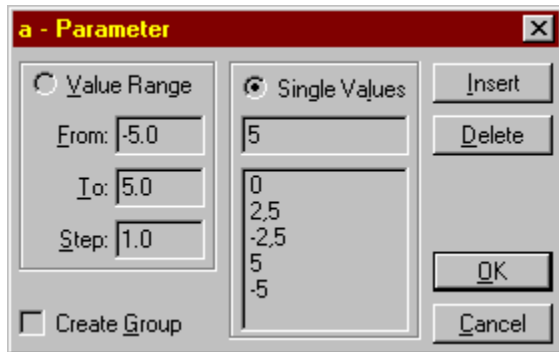These icons select the arrow type for the left edge of the X-axis and the bottom edge of the Y-axis

This list is without meaning.

These icons select the arrow type for the right edge of the X-axis and the top edge of the Y-axis.

This list is without meaning.

Dialog Window "a - Parameters" (Plug-In TSFUNC1)

How can I access information on this dialog?

This dialogbox defines the a-parameters. The user may define a range and a step size or single values for the parameter a. If a range is chosen the smallest range value is the start value and for each new a-parameter the value of step size is added. If the range does not fit exactly with the step size the last calculated value is still in the range.

If this radio button is active the parameter a is taken from the defined value range.

This edit field contains the start value for the a-parameter range.

This edit field contains the end value for the a-parameter range.

This edit field contains the step size for the a-parameter range.

If this checkbox is active all generated functions are combined together in a group. This group can later be broken up.

If this radio button is active single values from the list below are taken for the a-parameter.

In this edit field a value has to be entered to append it to the list of single values or to delete it from the list of single values.

This list contains and displays all single values that are taken for the a-parameter.

This button inserts a value from the edit field into the list of a-parameters. If the value exists already in the list an error message appears.

This button deletes the value in the edit field from the list of a-parameters. If the list is empty or the value does not exist, an error message occurs.

Dialog Window "Font Division" (Plug-In TSFUNC1)
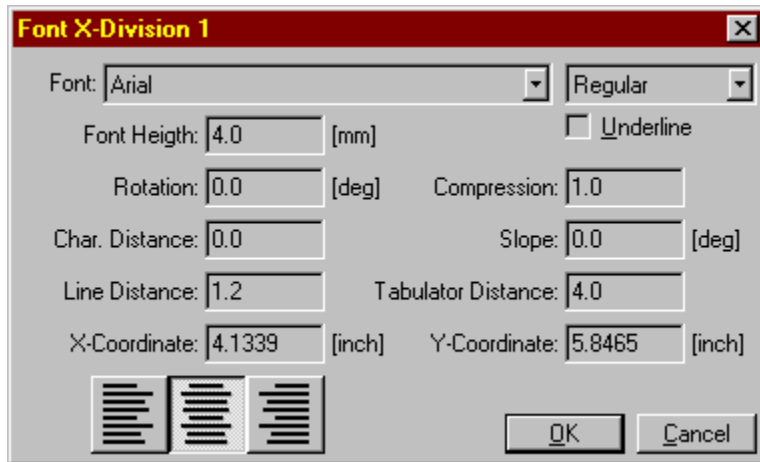
This dialogbox defines the font and its parameters for the text used for the divisions.

Hint: The line distance defines the distance of texts next to each other. For X-divisions this is a horizontal distance, for Y-divisions this is a vertical distance.

This list contains the name of the font.

This list contains the style of the font.

This edit field contains the height of the font.

This edit field contains the rotation of the text.

This edit field contains the character distance of the text.

This edit field contains for X-divisions the line distance from one level division text to the next. For Y-divisions it defines the horizontal distance between two division texts of different levels of texts.

This edit field contains the compression of the text. The value is relative to 1.0.

This edit field contains the slope of the text.

Without meaning in this plug-in.

Without meaning in this plug-in.

Without meaning in this plug-in.

If this checkbox is marked the text is underlined.

Thes icons define the horizontal alignment of the division text relative to all displayed texts of one level of division.

Functions (Plug-In TSFUNC1)

The following operators and functions are supported by the function plotter plug-in:

Standard operators:

+	Plus
−	Minus
*	Multiplication
/	Division
^	Power

Trigonometrical functions:

SIN( )	Sine Function
COS( )	Cosine Function
TAN( )	Tangent Function
COT( )	Cotangent Function
SINH( )	Hyperbolic Sine Function
COSH( )	Hyperbolic Cosine Function
TANH( )	Hyperbolic Tangent Function
COTH( )	Hyperbolic Cotangent Function
ASIN( )	Arc Sine Function
ACOS( )	Arc Cosine Function
ATAN( )	Arc Tangent Function
ACOT( )	Arc Cotangent Function
ASINH( )	Hyperbolic Arc Sine Function
ACOSH( )	Hyperbolic Arc Cosine Function
ATANH( )	Hyperbolic Arc Tangent Function
ACOTH( )	Hyperbolic Arc Cotangent Function

Additional funktions:

ABS( )	Absolute Function
SQRT( )	Square root Function
LN( )	Natural Logarithm (to the base of e)
LOG( )	Logarithm to the base of 10
EXP( )	Exponential Function
SIGN( )	Sign Function
FAC( )	Factorial