Maple Plotting Guide

Introduction

Maple provides many varied forms of plots for you to use. This guide is designed to help you find the correct plot, and find the information you need to quickly and easily visualize your function, expression, or data.

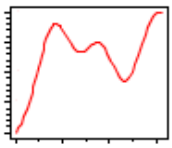
2-D Plots	3-D Plots	Specialized Plots	More Information
Line Plots	Line Plots	Statistical and Financial Plots	Plot Options
Filled Plots	Filled Plots	Dynamic Systems	Interactive Plotting
Vector and Grid Plots	Vector and Grid Plots	Text	Combining Plots
Point Plots	Mathematical Concepts		Animating Plots
Bar Plots	Calculated		Transforming Plots
Mathematical Concepts			Exporting Plots
Calculated			

Click on the name or picture of each plot to see the corresponding Maple help page. The commands to create the plots are in the examples section of each help page.

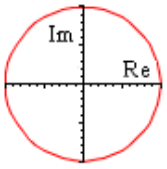
2-D Plots

Line Plots

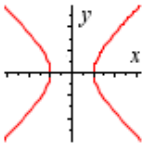
Plot



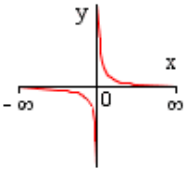
Complex plot



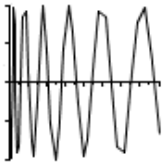
Plot implicit function



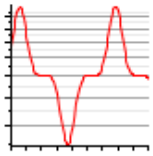
Infinity plot



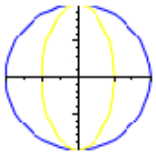
Plot list of values



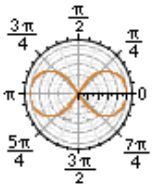
Logarithmic plot



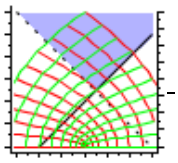
Parametric plot



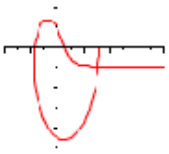
Polar plot



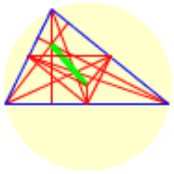
Dual axis plot



Plot in different coordinate system

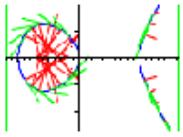


Draw geometric object

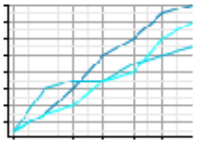


Draw graph or network

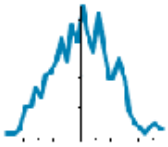
Plot real curve



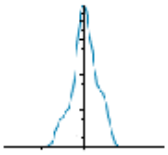
Cumulative sum chart



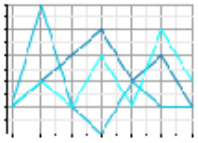
Frequency plot



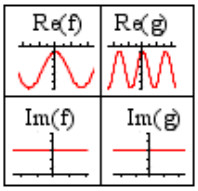
Plot kernel density



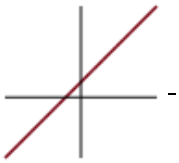
Line chart



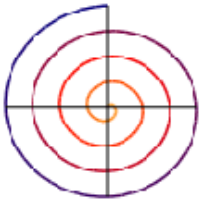
Compare plots



Plot straight line

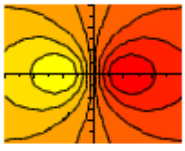


Apply a gradient color scheme

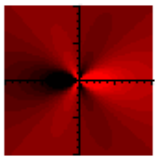


Filled Plots

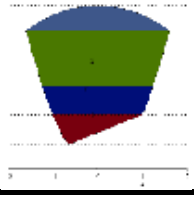
Contour plot



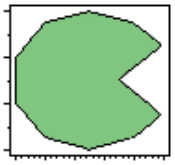
Density plot



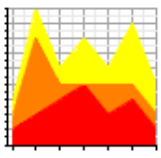
Plot inequality



Plot polygon



Area chart

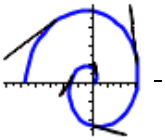


Pie chart

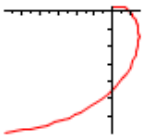
Vector/Grid Plots

Plot vector

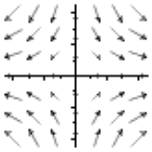
Plot spatial curve



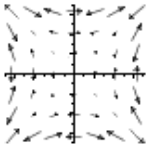
Space curve



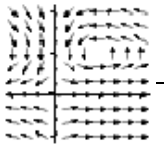
Plot field



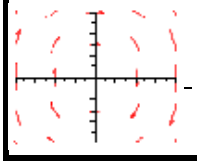
Plot gradient field



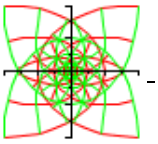
Plot direction field



Plot vector field



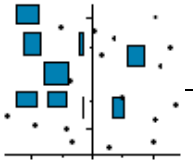
Conformal plot



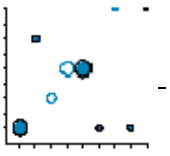
Show coordinate system

Point Plots

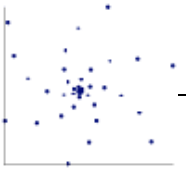
Agglomerated plot



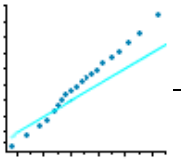
Bubble plot



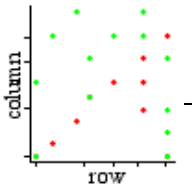
Point Plot



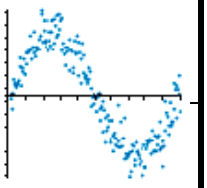
Plot quantile



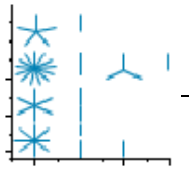
Plot sparse matrix



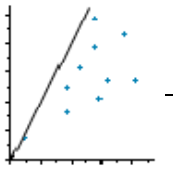
Scatterplot



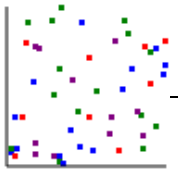
Sunflower plot



Symmetry plot

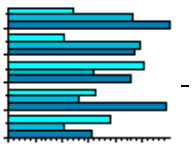


Color points by associated values

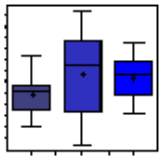


Bar Plots

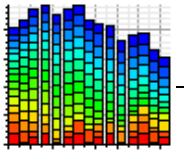
Bar chart



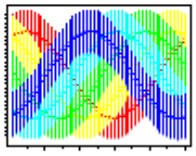
Box plot



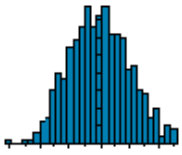
Column graph



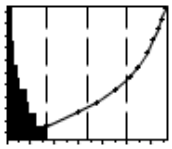
Error plot



Histogram

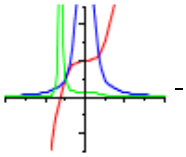


Pareto

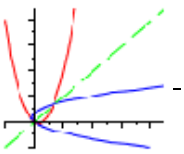


Mathematical Concepts Calculated

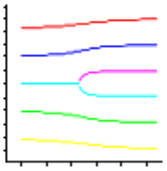
Plot function composition



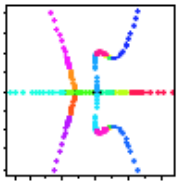
Plot y=x reflection



Plot branches

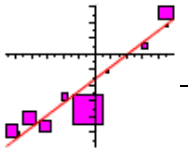


Root locus plot

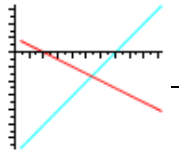


Plot eigenvectors

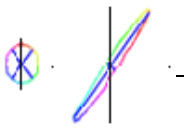
Plot least squares fit



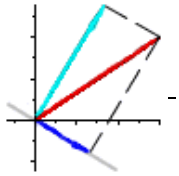
Plot linear system



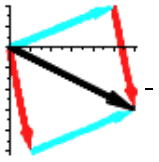
Plot linear transform



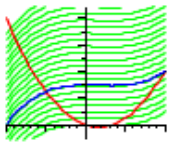
Plot projection



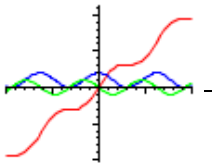
Plot vector sum



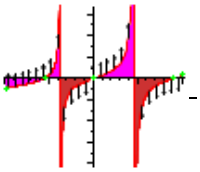
Plot Antiderivative



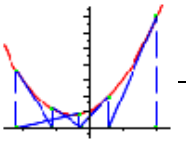
Plot Derivative



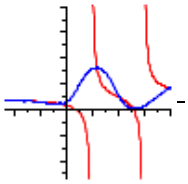
Function chart



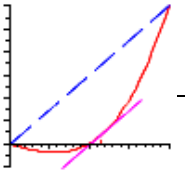
Newton's method



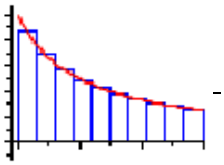
Point interpolation



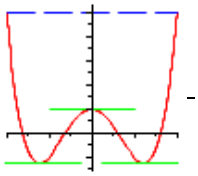
Mean value theorem



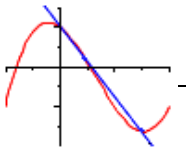
Plot Riemann sum



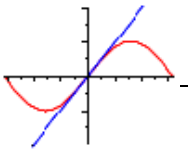
Rolle's theorem



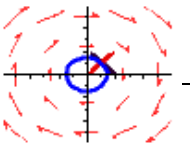
Plot secant line



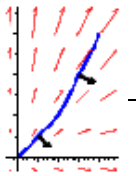
Plot Taylor Approximation



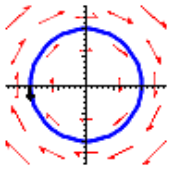
FlowLine



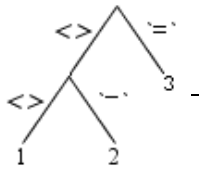
Flux



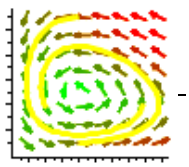
Line Integral



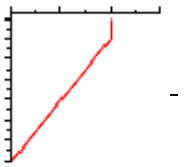
Plot DE solution cases



Plot phase portrait

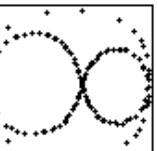


Plot Newton polygon

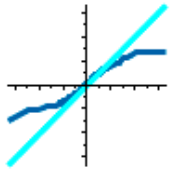


Plot solution of ODE

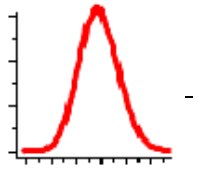
Poincare surface of section



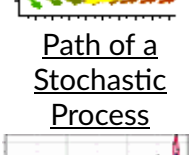
Probability plot



Profile of likelihood

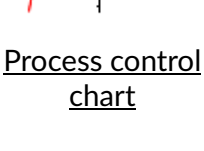


Path of a Stochastic Process

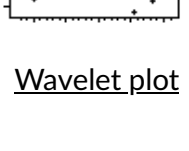


Tree Plot

Process control chart



Wavelet plot



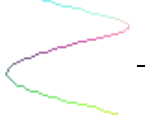
Top of the page

3-D Plots

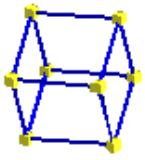
Line and Point Plots

Plot knot

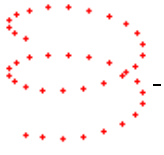
Space curve



Draw graph or network



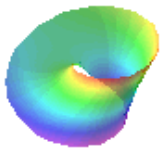
Plot 3-D point



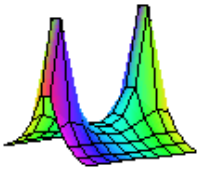
Agglomerated plot

Filled Plots

3-D Plot



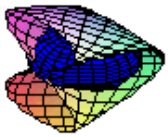
Complex plot



Draw geometric object

Implicit plot

Plot intersection



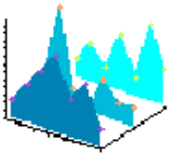
Plot matrix values

Plot polyhedra

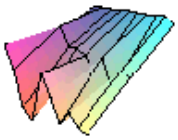
Plot tube

Contour plot

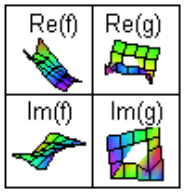
Area chart



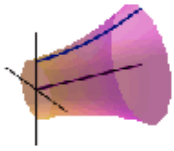
Surface plot of data



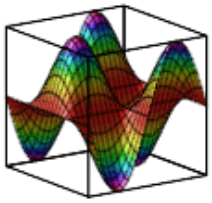
Compare plots



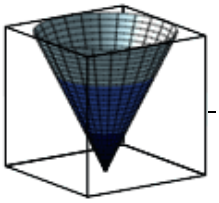
Apply a gradient color scheme to a surface



Color surface by coordinate values



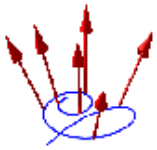
Color surface by associated values



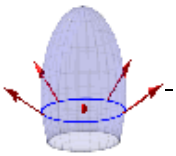
Vector/Grid Plots

Plot vector

Plot spatial curve



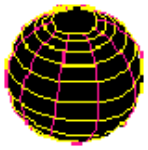
Plot surface



Plot field

Plot gradient field

Conformal plot

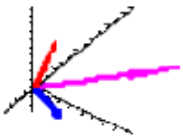


Show 3-D coordinate system

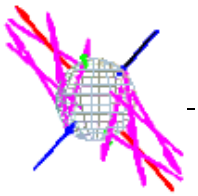
3-D Plot in different coordinate system

Mathematical Concepts Calculated

Plot cross product



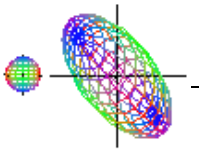
Plot eigenvectors



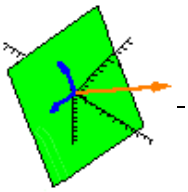
Plot least squares fit

Plot linear system

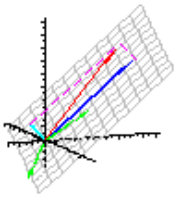
Plot linear transform



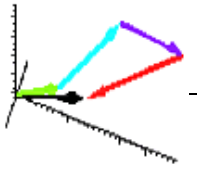
Vector-defined plane



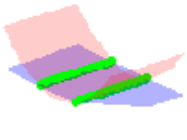
Plot projection



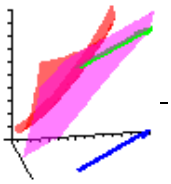
Plot vector sum



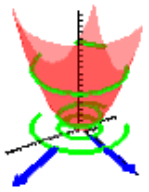
Plot cross section



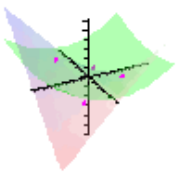
Directional derivative



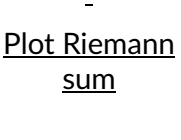
Gradient



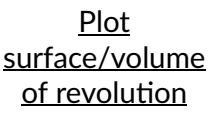
Lagrange multipliers



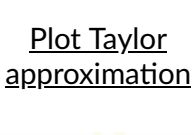
Plot Riemann sum



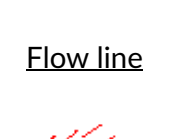
Plot surface/volume of revolution



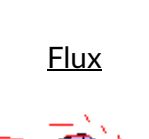
Plot Taylor approximation



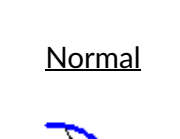
Flow line



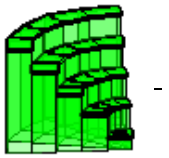
Flux



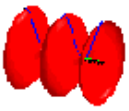
Normal



Radius of curvature

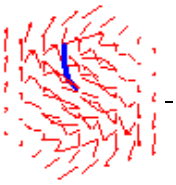


Tangent vector

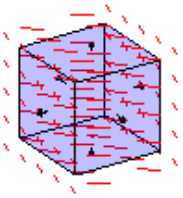


TNB frame

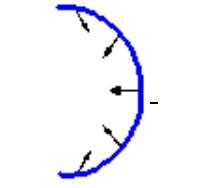
Plot DE solution



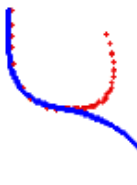
Plot ODE solution

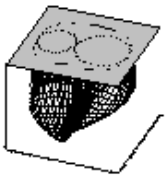


Plot PDE solution



Poincare surface of section





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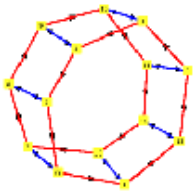
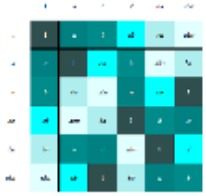
Specialized Plots

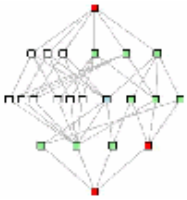
Cayley Graph



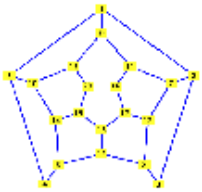
Cayley Table



Draw Subgroup Lattice

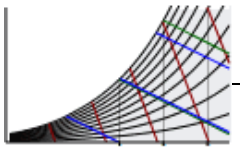


Draw Graph

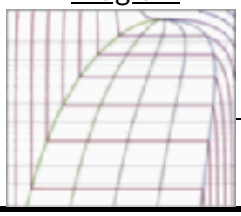


Plot Polyhedral Set

Psychrometric Chart



Pressure-enthalpy Diagram



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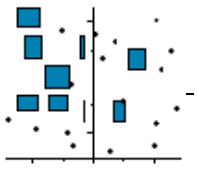
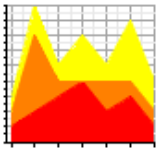
Statistical and Financial Plots

Agglomerated plot

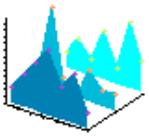


Agglomerated plot (3-D)

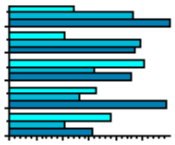
Area chart



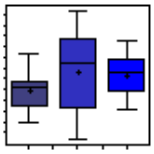
Area chart (3-D)



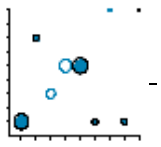
Bar chart



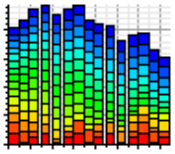
Box plot



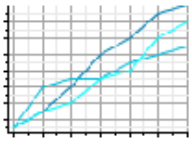
Bubble plot



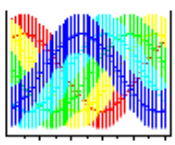
Column graph



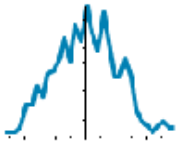
Cumulative sum chart



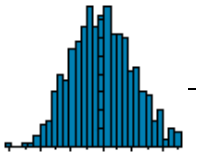
Error plot



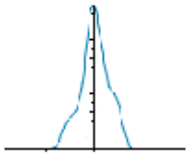
Frequency plot



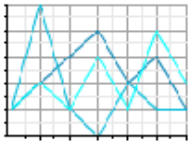
Histogram



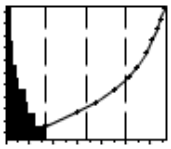
Plot kernel density



Line chart

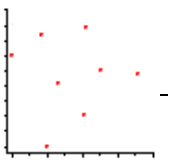


Pareto

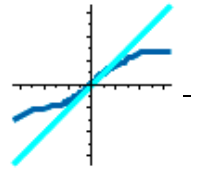


Pie chart

Plot point



Probability plot



Profile of likelihood

Plot quantile

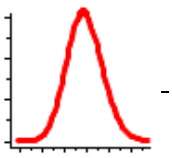
Scatterplot

Sunflower plot

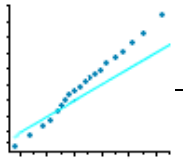
Surface plot of data

Symmetry plot

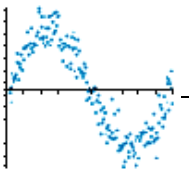
Path of a Stochastic Process



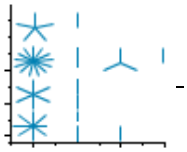
Tree Plot



ScatterPlot3D

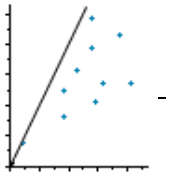


SeasonalSubseriesPlot

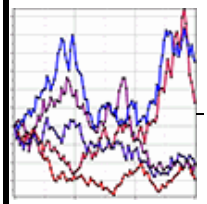


TimeSeriesPlot

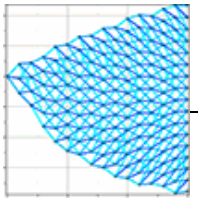
TreeMap



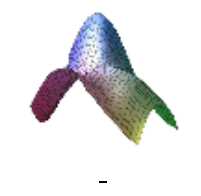
Data Plot



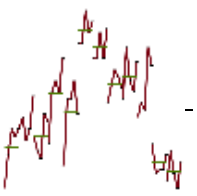
Heat Map



Biplot



ScreePlot



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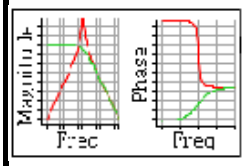
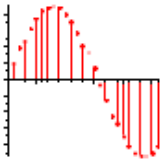
Dynamic Systems

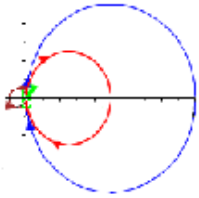
Bode plot



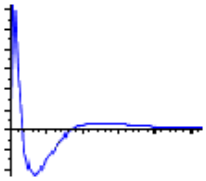
Plot discrete points



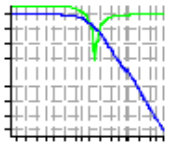
Nyquist plot



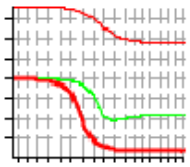
Plot impulse response



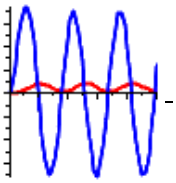
Plot magnitude



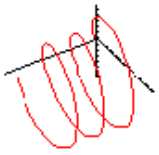
Plot phase



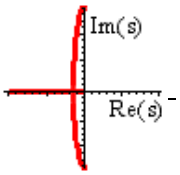
Plot response



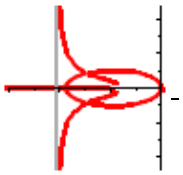
Plot response in 3-D



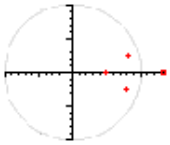
Root-contour plot



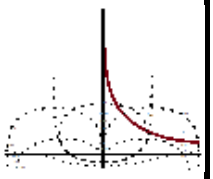
Root-locus plot



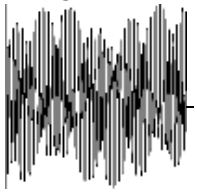
Plot zeros and poles



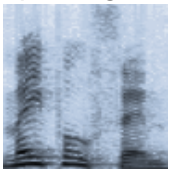
Nichols Plot



SignalPlot



Spectrogram



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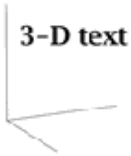
Text

Text plot

Text plot (3-D)



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Plot Options

There are many options that can be applied to the **plot** command, and other plots accept most of those options. They include grid display options (gridlines, axes, captions, and more), plot generation options (adaptive point sampling and discontinuity detection), and plot display options (colors, line and fill styles, transparency, etc). See plot options for a complete list. Each plot page indicates which of the options it accepts.

Most of the options that can be applied to a **plot** command can also be applied interactively to an existing plot, by using the plot context menus.

The plottools package provides commands to generate basic graphical objects and alter existing plot structures. Objects include geometric shapes, arrows, and points, and can be displayed either in existing plots or on separate axes. Transformations involve rotation, translation, and scaling of any type of plot. Also available is textplot, for adding text or 2-D math to an existing plot (or textplot3d for 3-D plots). You can also add text, 2-D math, various shapes, or free form drawing to a 2-D plot using a set of drawing tools.

Typesetting for 3-D plots provides the ability to use typeset mathematics and text in titles, captions, axis labels and text objects, as well as the ability to edit them in place. For more information, see the plot/typesetting help page.

The plot and plot3d commands have been updated to recognize units in the function and range arguments, for both the expression-form and operator-form of the calling sequences. More information about this feature is available on the plot/units help page.

You can set most plot options for an entire Maple session, using the setoptions command. The options apply only to the worksheet in which they are set, until either it is closed, or restart is called.

Interactive Plotting

Most of the above plots can be generated using the Interactive Plot Builder assistant. It is an interface with easy-to-use input fields and drop-down menus, allowing you to specify all of the options available for the plot you choose. After you enter an expression to be plotted, it provides a choice of plot commands which are compatible with that expression. Subsequent windows allow you to enter only the options that your chosen command accepts. The output can be manipulated by using context menus, or redrawn by using the plot builder. For detailed instructions on using the plot builder interface, see interactive plot interface. For performing many tasks with plots, see the links on the plotting overview page.

The interactiveparams command is useful for quickly viewing changes to certain variables in an expression. The expression can be manipulated and the plot previewed with a Maplet, then output as either a plot or a plotting command.

Combining Plots

You can use the display command to display multiple plots on the same axes. This command accepts multiple plots of different structures, as long as they are all of the same dimension, and allows any of the plot options to be defined for all of the plots being displayed. Alternately, you can enter an array of plots into the **display** command, and plots can be displayed side-by-side. This command can also be used to animate one or more plots.

With most of the commands above, you can enter a set of functions or expressions in place of a single function or expression. Alternately, you can use the multiple command. These methods display multiple plots on the same axes, but they are all of the same type.

An easy way to add functions or expressions to an existing plot is to select and drag the input or output of an expression or function definition onto the plot. The settings that are applied to the original plot are also applied to the new function, but if you use default settings, the grid automatically adjusts to display all expressions fully. See drag and drop for details.

Animating Plots

Many of the plots above can be animated on a parameter, which is defined when the animate command is called. This provides a method for examining the effects of a single parameter on the plot. The same command can be used to show a curve traced in time. See the display help page for instructions on how to animate several plots and display an animation with a background plot.

The **viewpoint** animation option allows you to create a "fly-through" animation by varying the viewpoint through a 3-D plot. In a fly-through animation, the camera that projects the 3-D plot moves in all directions above, below, and around the plot surface, as if the camera were flying through the plot. For more information, see the plot3d/viewpoint help page.

Transforming Plots

Maple provides many methods for altering existing plots. The easiest method is to use the plot context menus. There, you can change many of the plot options that can be specified when first generating the plot by using an interface that allows you to enter only the options accepted by that plot.
See plotinterface for more details on manipulating both 2-dimensional and 3-dimensional plots.

You can also specify modifications and transformations to plot structures and objects using plottools. For instance, to exchange the coordinate axes of a plot or to apply a custom mapping to a plot, use plottools[transform].

Exporting Plots

The default method of output for all plots is to display the plot inline within the Maple Worksheet. However, you can specify the output as a jpeg, gif, or postscript file, a Maplet, a new Maple Worksheet, or one of several other formats. To set the output method in a worksheet, use the plotsetup command.

You can also export a plot from the worksheet once it has been drawn, by using the plot context menus. See export a plot for more information.

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See Also

plotinterface, plot types, User Manual: Chapter 6