

The Cantor Handbook

Alexander Rieder



The Cantor Handbook

Contents

1	Introduction	1
2	Using Cantor	2
2.1	Cantor features	2
2.2	The Cantor backends	3
2.3	The Cantor Workspace	4
2.3.1	The Worksheet	4
2.3.1.1	Settings	4
3	Command Reference	6
3.1	The main Cantor window	6
3.1.1	The File Menu	6
3.1.2	The Help Menu	6
4	Developer's Guide to Cantor	7
5	Questions and Answers	8
6	Credits and License	9
A	Installation	10
A.1	How to obtain Cantor	10
A.2	Requirements	10
A.3	Compilation and Installation	10
A.4	Configuration	10

Abstract

Cantor is an application, aimed at providing a nice worksheet view to other Free Software Math packages.

Chapter 1

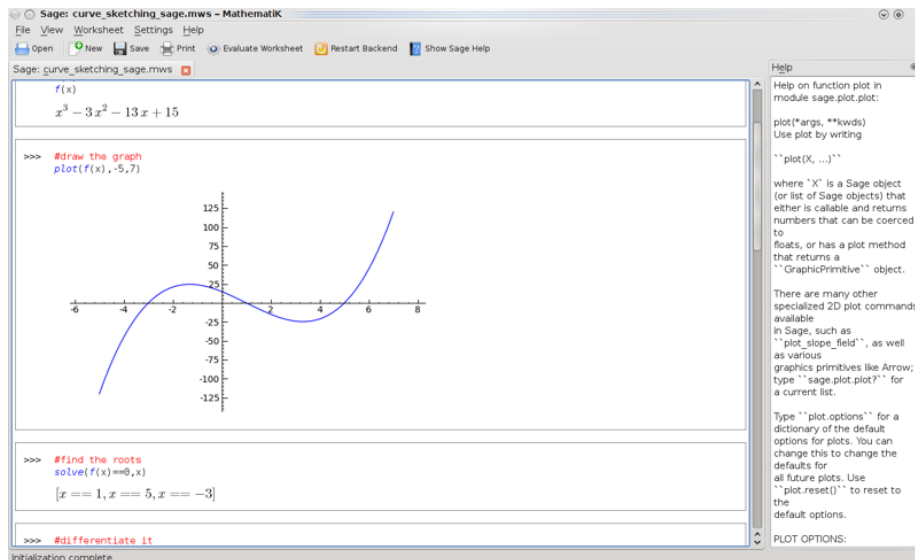
Introduction

Cantor is an application to allow you to use your favorite mathematical applications from within an elegant KDE-integrated Worksheet Interface. It provides dialogs to assist with common tasks and allows you to share your worksheets with others.

Chapter 2

Using Cantor

Screenshot:



2.1 Cantor features

- Intuitive worksheet view for evaluating expressions.
- Results of graph plotting shown inside the worksheet.
- Easy plugin-based structure to allow different backends to be added.
- GetHotNewStuff integration to allow example worksheets to be downloaded (or uploaded.)

- Mathematical formula typesetting using LaTeX.
- Backend-aware syntax highlighting.
- Plugin-based assistant dialogs to help with common tasks, such as integrating a function, or entering a matrix.

2.2 The Cantor backends

Cantor offers you several choices for the backends you wish to use with it. The choice to make depends on what you want to achieve.

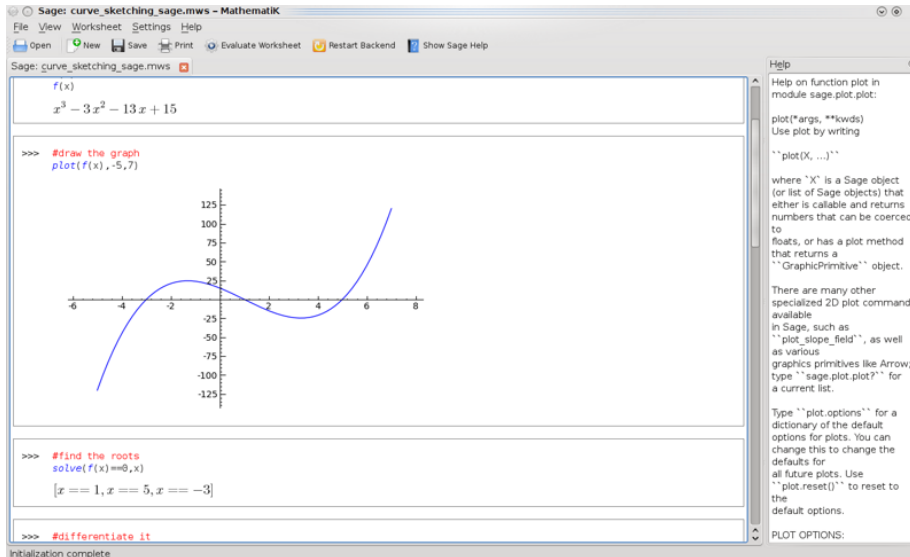
Currently the following backends are available:

Sage: Sage is a free open-source mathematics software system licensed under the GPL. It combines the power of many existing open-source packages, within a common Python-based interface. See <http://sagemath.org> for more information.

Maxima: Maxima is a system for the manipulation of symbolic and numeric expressions, including differentiation, integration, Taylor series, Laplace transforms, ordinary differential equations, systems of linear equations, polynomials, sets, lists, vectors, matrices, and tensors. Maxima yields high-precision numeric results by using exact fractions, arbitrary precision integers, and variable precision floating point numbers. Maxima can plot functions and data in two and three dimensions. See <http://maxima.sourceforge.net> for more information.

R: R is a language and environment for statistical computing and graphics, similar to the S language and environment. It provides a wide variety of statistical (linear and nonlinear modelling, classical statistical tests, time-series analysis, classification, clustering, ...) and graphical techniques, and is highly extensible. The S language is often the vehicle of choice for research in statistical methodology, and R provides an open-source route to this. See <http://www.r-project.org> for more information.

2.3 The Cantor Workspace



The Worksheet interface of Cantor consists of three parts:

1. The tab bar, where you can switch through the open worksheets;
2. A help panel, where help for a specific command is displayed if you enter "?" command";
3. The worksheet itself.

2.3.1 The Worksheet

The worksheet is the basic area for working with Cantor. Using it, you can enter expressions, allow the backend to perform calculations, and look at the results. The commands the worksheets accept depend on the chosen backend, so you should learn the appropriate backend syntax (the Show Help button takes you there directly). If you know the command, but you need additional information, you can type "?" command", and contextual help will appear on the right of the worksheet. If you want to see some example worksheets, you can go to Download Example Worksheets in the File menu, and download worksheets other users have published.

2.3.1.1 Settings

The Settings menu allows you to change some settings of the appearance of your current worksheet.

The Cantor Handbook

Typesetting using LaTeX This setting changes the way results are presented to you. If enabled, it passes the result through the LaTeX system, to produce visually appealing formulas. For example, `'3*x^2*sqrt(2)*x+2/3'` be-

comes
$$3x^2 + \sqrt{2}x + \frac{2}{3}$$

Syntax Highlighting Syntax Highlighting increases the readability of code, by highlighting Keywords, or matching brackets in different colors.

Tab Completion When this is enabled, Cantor will show you possible completions for the command you are currently typing when you press the Tab-key. If there is only one choice remaining, it will insert the rest of the command for you.

Line Numbers This setting controls whether the different expressions should have a number in front. This allows you to recall older results - in Maxima, for instance, this is done with the `'%O1'` command.

Chapter 3

Command Reference

3.1 The main Cantor window

3.1.1 The File Menu

File → **New (Ctrl+N)** Creates a new document

File → **Save (Ctrl+S)** Saves the document

File → **Quit (Ctrl+Q)** Quits Cantor

3.1.2 The Help Menu

Help → **Cantor Handbook (F1)** Invokes the KDE Help system starting at the Cantor help pages. (this document).

Help → **What's This? (Shift+F1)** Changes the mouse cursor to a combination arrow and question mark. Clicking on items within Cantor will open a help window (if one exists for the particular item) explaining the item's function.

Help → **Report Bug...** Opens the Bug report dialog where you can report a bug or request a 'wishlist' feature.

Help → **Switch Application Language...** Opens a dialog where you can edit the Primary language and Fallback language for this application.

Help → **About Cantor** This will display version and author information.

Help → **About KDE** This displays the KDE version and other basic information.

Chapter 4

Developer's Guide to Cantor

Cantor is easily extendable by plugins. You can write

Backends: A new backend enables you to use the Cantor interface with a different program.

Assistants: Assistants provide dialogs to allow common tasks to be automated (such entering a matrix or running a script.)

At present, there are no special developer tutorials or API documentation, so if you want to write a plugin you will have to read through the sources. All interface definitions are in the lib directory. For some example implementations, look at the plugins shipped with Cantor.

Chapter 5

Questions and Answers

This document may have been updated since your installation. You can find the latest version at <http://docs.kde.org/>.

1. *The Menu Item Typeset using LaTeX is not available*
Not every Backend supports every option.
2. *I have installed Sage/Maxima, but the appropriate backend does not appear.*
One possible explanation is that Cantor did not correctly detect the location. Go to the Settings dialog and change the Path to the appropriate application.
3. *What a peculiar name - what does it have to do with mathematics?*
Cantor is named after the German mathematician Georg Cantor, the creator of set theory.

Chapter 6

Credits and License

Cantor

Program copyright 2009 Alexander Rieder alexanderrieder@gmail.com

Documentation Copyright (c) 2009 Alexander Rieder alexanderrieder@gmail.com

This documentation is licensed under the terms of the [GNU Free Documentation License](#).

This program is licensed under the terms of the [GNU General Public License](#).

Appendix A

Installation

A.1 How to obtain Cantor

Cantor is part of the KDE project <http://www.kde.org/> .

Cantor can be found in the kdeedu package on <ftp://ftp.kde.org/pub/kde/> , the main FTP site of the KDE project.

A.2 Requirements

In order to successfully use Cantor, you need KDE 4. If you want support for type-setting to be enabled, you need to install LaTeX and LibSpectre. To use the different Backends, the appropriate math package is required.

A.3 Compilation and Installation

For detailed information on how to compile and install KDE applications see [Building KDE4 From Source](#)

Since KDE uses **cmake** you should have no trouble compiling it. Should you run into problems please report them to the KDE mailing lists.

A.4 Configuration

Depending on your system, you may need to adjust the paths to the different applications used by Cantor.