

Long lecture

Teaching Mathematics with CAS SAGE

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Abstract

1. Quick overview of Sage and the Sage notebook .

Sage offers a wide range of mathematical topics including nearly 100 open-source packages, integrating their functionality. It provides an extended help, a lot of tutorials and examples. Using the programming language Python Sage becomes a flexible and extendible tool. Sage offers various ways of visualization, animated graphics, interactive controls. Therefore Sage is a powerful tool for teaching mathematics.

The Sage notebook provides an user interface in a web browser, including user management as well as creating, sharing and publishing worksheets (the Sage notebook as collaboration framework). Beside the Sage notebook there are interesting related projects: Sage Cloud Server and Sage Cell Server.

2. Examples of teaching mathematics using Sage on (advanced) secondary school level.

Presentation of worksheets: visualization, algorithmic problem solving, approximate solutions, challenging tasks.

3. Discussion: Issues of using Sage on school level.

Sage is a huge and complex system, help and examples are mainly on university level, error messages seem to be confusing, there are some problems of unexpected behavior. Very likely beginners (students as well as teachers) may strand soon. Thus there is a need of specific examples and tutorials providing guidance for a successful use of Sage in school.

Web:

www.sagemath.org

nb.mathe-mit-sage.de

Keywords

CAS, Sage, Notebook