

The Next Generation: PeCAS (Pedagogical CAS)

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Abstract

Computer algebra systems (CAS) originally were developed to support the work of mathematicians. But soon after they became commercially available, mathematics teachers demonstrated that they can also be used for teaching and learning mathematics - though often only with quite some creativity and effort. After several years of teaching with such systems, teachers now want CAS-based tools with specific support for teaching and learning. In the sequel we call such tools PeCAS (= Pedagogical CAS). While the computer algebra algorithms continue to make the mathematical kernel of such a system, an interface that is built according to didactical and pedagogical principles and computer algebra algorithms modified according to educational demands such as for explaining calculation steps should help teachers and students in teaching and learning mathematics. In this lecture we suggest features and criteria which make a CAS a PeCAS. We put special emphasis on features which will help average teachers (i.e. those who are not "technology freaks") and average students.