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Realizing the concept of "Multiple Representations" by using CAS (Part I, Part II)

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Mathematical concepts are presented in multiple modes of representation (or "prototypes") such as text, graphs and diagrams, tables, algebraic expressions and computer simulations. A prime goal of teaching is to help learners develop an understanding of the mathematical concepts by considering and using these different representational modes and levels. Several prototypes of the concept provide complementary information [1]. Therefore it is not enough to become acquainted with and to understand the information of a certain representation mode. A central cognitive activity on the way to mathematical concepts is to build links between representation modes of a concept. In traditional mathematics education prototypes mostly are available in a serial way. The main importance of technology tools is that the learner can use several prototypes parallely. By using examples of Algebra and Analysis I will show the role of CAS when building links between several representation modes of a concept or when solving problems [2].

References

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[2] HEUGL, H., Mathematikunterricht mit Technologie – ein didaktisches Handbuch mit einer Vielzahl von Aufgaben. *Veritas-Verlag*, Linz, 2014, ISBN 978-3-7101-0431.