

Workshop

Technical Problems – solved by Sec 2 Mathematics

Wolfgang Alvermann, BBS II Emden, Germany

Abstract

In central examination of vocational schools in Lower Saxony real life problems from the field of technology or economy using a GTR or CAS are obligatory. In text books you will find only few suitable problems so the teacher has to develop problems by himself.

Problems from industrial companies and crafts enterprises provided by students form the base of this workshop in which is shown that applying Secondary 2 level mathematics enables to find satisfying solutions for these problems under integration of a CAS. Contents of the workshop is:

- DOT PRODUCT AND VECTOR PRODUCT (production of a special frustum of a pyramid),
- LENGTH CALCULATION WITH INTEGRAL CALCULUS (Cut of cylinders in metal processing),
- REGRESSION AS AN EXTREMAL PROBLEM (Bending problem in connection with special tests for welds of submarines),
- FRICTIONAL PROBLEMS which lead on TRIGONOMETRIC- and EXPONENTIAL FUNCTIONS (Eytelwein's equation for rope friction),
- DEFLECTION CURVES, represented by polynomial functions.

Special technical and physical knowledge is not required. This workshop course is suitable for teachers of the vocational schools and general secondary schools as well. Basic knowledge in dealing with a CAS is recommended.

Technology: TI-NspireCAS

Participants with basic knowledge in other CAS are very welcome.