An Introduction to SAGE Programming. With Applications to SAGE Interacts for Numerical Methods

Description:
Features a simplified presentation of numerical methods by introducing and implementing SAGE programs. An Introduction to SAGE Programming: With Applications to SAGE Interacts for Numerical Methods emphasizes how to implement numerical methods using SAGE Math and SAGE Interacts and also addresses the fundamentals of computer programming, including if statements, loops, functions, and interacts. The book also provides a unique introduction to SAGE and its computer algebra system capabilities, discusses second and higher order equations and estimate limits, and determines derivatives, integrals, and summations. Providing critical resources for developing successful interactive SAGE numerical computations, the book is accessible without delving into the mathematical rigor of numerical methods. The author illustrates the benefits of utilizing the SAGE language for calculus and the numerical analysis of various methods such as bisection methods, numerical integration, Taylor’s expansions, and Newton’s iterations. Providing an introduction to the terminology and concepts involved, An Introduction to SAGE Programming: With Applications to SAGE Interacts for Numerical Methods features:

- An introduction to computer programming using SAGE
- Many practical examples throughout to illustrate the application of SAGE Interacts for various numerical methods
- Discussions on how to use SAGE Interacts and SAGE Cloud in order to create mathematical demonstrations
- Numerous homework problems and exercises that allow readers to practice their programming skillset
- A companion website that includes related SAGE programming code and select solutions to the homework problems and exercises

An Introduction to SAGE Programming: With Applications to SAGE Interacts for Numerical Methods is an ideal reference for applied mathematicians who need to employ SAGE for the study of numerical methods and analysis. The book is also an appropriate supplemental textbook for upper-undergraduate and graduate-level courses in numerical methods.

SEO Keywords for Marketing (will not appear on cover): SAGE; programming; numerical analysis; Boolean expressions; nonlinear equations; bisection algorithms; Newton-Raphson algorithms; numerical differentiation; Taylor series; interpolating polynomials; numerical integration; Trapezoidal rule; Simpson's rule; Romberg method; numerical methods; differential equations

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