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Titolo	The journal of the Canadian Health Libraries Association / / CHLA = Journal de l'Association des bibliothèques de la santé du Canada / ABSC
Pubbl/distr/stampa	Toronto, Ont., : Canadian Health Libraries Association [Ottawa, Ont., Canada], : [Distributed by National Research Council Canada NRC Research Press], [2004]-
Descrizione fisica	1 online resource
Classificazione	cci1icc coll11 coll20
Disciplina	027.6
Soggetti	Medical libraries - Canada Medical libraries Libraries, Medical Periodicals. Periodical Canada
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Periodico
Note generali	Title from issue contents screen (publisher Web site, viewed Sept. 20, 2004). Refereed/Peer-reviewed

2. Record Nr.	UNINA9910788424703321
Autore	Ross Dieter <1932->
Titolo	Learning and teaching mathematics using simulations [[electronic resource]] : plus 2000 examples from physics / / Dieter Ross
Pubbl/distr/stampa	Berlin ; ; Boston, : De Gruyter, c2011
ISBN	1-283-39992-X 9786613399922 3-11-025007-1
Descrizione fisica	1 online resource (257 p.)
Collana	De Gruyter textbook
Disciplina	510.71
Soggetti	Mathematics - Study and teaching - Simulation methods Physics - Study and teaching - Simulation methods Mathematics Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	Front matter -- Preface -- Contents -- Guide to simulation technique -- 1 Introduction -- 2 Physics and mathematics -- 3 Numbers -- 4 Sequences of numbers and series -- 5 Functions and their infinitesimal properties -- 6 Visualization of functions in the space of real numbers -- 7 Visualization of functions in the space of complex numbers -- 8 Vectors -- 9 Ordinary differential equations -- 10 Partial differential equations -- 11 Appendix. Collection of physics simulations -- 12 Conclusion
Sommario/riassunto	Mathematics course with 60 Java-based interactive mathematic simulations by the author Comprehensive and systematically organized collection of 2,000 Java-based physics simulations All simulations are runnable, and can be accessed both on- and offline Visualization of mathematic relationships Facilitates an experiment-based understanding of problems, including suggestions for your own mathematical experiments Calculation procedures can be adjusted in a variety of ways Introduction to simulation techniques with the EJS (Easy Java Simulation) tool Visual interface for simple and transparent modeling and programming Building block library for programming

one's own simulations Quick access to simulations from links embedded in the digital text Mathematics is the language of physics and technology. Yet in the age of computers, mathematic skill is not based on mastery of arithmetic. Rather, it depends on understanding relationships in time and space, and expressing them with precise and clear formulas. In this regard, one cannot rely on the rote memorization of rules and formulas - insight and intuitive understanding are crucial. But how can this understanding be achieved in higher mathematics, which depends on abstract concepts such as complex numbers, real and complex infinite series, infinitesimal calculus, 2, 3, and 4 dimensional functions, conformal maps, vectors, and linear and nonlinear ordinary and partial differential equations? The author takes a highly practical approach to facilitating the insight essential for true learning in mathematics. Students can work directly with the simulation programs, can visualize relationships, and creatively interact with the calculation procedures. Proceeding in textbook fashion, the work makes use of a broad palette of multimedia tools, and features numerous interactive calculation programs for mathematical experimentation. Students merely have to select one of the many predefined examples and set the relevant parameters - and in a flash the results are graphically displayed in 2 or 3 dimensions. In addition, the specific functions used can be changed or even newly formulated according to user preferences. For example, a procedure developed for a fourth degree power function for the numerical calculation of zero points can be adapted for use with another function. Each simulation is accompanied by a detailed description, instructions for use, and numerous suggestions for experimentation. The mathematical simulations are based on the Easy Java Simulation (EJS) programming tool. All of the files developed with EJS are completely open and transparent. The user can even draw on the examples as building blocks for the development his or her own calculation procedures. The appendix contains a short introduction to EJS. The work is enriched by a comprehensive collection of cosmological simulations as well as models from the Open Source Physics project, organized by subject area. Intended as a systematic collection of methods and materials for upper-secondary school teachers and as a course for students of physics and mathematics, the work facilitates hands-on and experiment-driven learning in higher mathematics. The print version contains the electronic text and simulations for offline use. For questions concerning download or online access to the simulations, please contact service@degruyter.com.
