

Instructions of History of Mathematics with Mathematical Machines

수학기계를 활용한 수학사 수업

KWON Oh Nam 권오남 · PARK Jung Sook 박정숙 · KIM Eun Ji* 김은지

Although many people have recognized the importance of history of mathematics in mathematics education, there are few studies that history and mathematics educations are connected. In this paper, we present and discuss the ways of introducing the instruction with mathematics machines. This instruction use the history of mathematics as part of a class not as a tool to stimulate students' interest but as a goal that it can be targeted mathematical itself. To do this, we first analyze the characteristics of applying history of mathematics in mathematical education, second, describe the meaning and the educational value of mathematical machines, and finally explained the way of applying history of mathematics with mathematics machines. The Instruction of history of mathematics with mathematics machines has advantages that practice (manipulation and experiment) and theory (elaboration of definition, production of conjectures and constructions of proofs) are interlaced within a historic-cultural perspective.

Keywords: history of mathematics, mathematics education, mathematical machine; 수학사, 수학교육, 수학기계.

MSC: 97D40 *ZDM:* D44

1 서론

수학사가 수학교육에서 가지는 중요성은 많은 사람들이 인정하고 있지만 수학사와 수학교육을 연결시킨 연구는 많지 않다[7, 9, 13, 14]. 특히 우리나라의 수학 교육과정을 찾아보면 수학사에 대한 언급을 찾을 수 없으며 교과서에 제시된 수학사는 단원의 도입이나 단원의 마무리에 등장하여 학생들의 흥미를 불러일으키기 위한 동기로서의 역할을 할 뿐 수학 학습에서 수학사가 가지는 고유의 장점을 찾을 수 있는 부분은 드물다. 최근

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fascinating original work Tympas indispensably intertwines the histories of analog and digital computing showing them to be
inseparable from the evolution of social and economic conditions Prof David Mindell MIT **Computers in Mathematics**
V. Chudnovsky, Richard D. Jenks, 1990-05-25 Talks from the International Conference on Computers and Mathematics held

July 29 Aug 1 1986 Stanford U Some are focused on the past and future roles of computers as a research tool in such areas as number theory analysis special functions combinatorics algebraic geometry topology physics Journal of Research of the National Bureau of Standards United States. National Bureau of Standards,1969 The Preparation of Programs for an Electronic Digital Computer Maurice Vincent Wilkes,1951 This is often considered the first book on computer programming It was written for the EDSAC Electronic Delay Storage Automatic Calculator computer that began operation in 1949 as the world s first regularly operated stored program computer The idea of a library of subroutines was developed for the EDSAC and is described in this book Maurice Wilkes lead the development of the EDSAC **NASA Thesaurus** ,1982 Contains the authorized subject terms by which the documents in the NASA STI Database are indexed and retrieved NBS Special Publication ,1968 **Naval Training Bulletin** ,1964 Kurt Gödel and the Foundations of Mathematics Matthias Baaz,Christos H. Papadimitriou,Hilary W. Putnam,Dana S. Scott,Charles L. Harper, Jr,2011-06-06 This volume commemorates the life work and foundational views of Kurt G del 1906 78 most famous for his hallmark works on the completeness of first order logic the incompleteness of number theory and the consistency with the other widely accepted axioms of set theory of the axiom of choice and of the generalized continuum hypothesis It explores current research advances and ideas for future directions not only in the foundations of mathematics and logic but also in the fields of computer science artificial intelligence physics cosmology philosophy theology and the history of science The discussion is supplemented by personal reflections from several scholars who knew G del personally providing some interesting insights into his life By putting his ideas and life s work into the context of current thinking and perceptions this book will extend the impact of G del s fundamental work in mathematics logic philosophy and other disciplines for future generations of researchers Mathematics of Shape Description Pijush K. Ghosh,Koichiro Deguchi,2009-03-04 Image processing problems are often not well defined because real images are contaminated with noise and other uncertain factors In Mathematics of Shape Description the authors take a mathematical approach to address these problems using the morphological and set theoretic approach to image processing and computer graphics by presenting a simple shape model using two basic shape operators called Minkowski addition and decomposition This book is ideal for professional researchers and engineers in Information Processing Image Measurement Shape Description Shape Representation and Computer Graphics Post graduate and advanced undergraduate students in pure and applied mathematics computer sciences robotics and engineering will also benefit from this book Key Features Explains the fundamental and advanced relationships between algebraic system and shape description through the set theoretic approach Promotes interaction of image processing geochronology and mathematics in the field of algebraic geometry Provides a shape description scheme that is a notational system for the shape of objects Offers a thorough and detailed discussion on the mathematical characteristics and significance of the Minkowski operators **Technical Translations** ,1961 First USA-Japan Computer Conference Proceedings ,1972 **Biomedical**

Research and Computer Application in Manned Space Flight United States. National Aeronautics and Space Administration. Technology Utilization Office, 1971 Technology Utilization Program designed to transfer technological developments that may have useful commercial applications From NASA laboratories and contractors aeronautics and space related technology is gathered and evaluated Items which have potential industrial use are made generally available This survey of computer uses in the field of medicine is one of a series of NASA publications that presents information of direct or indirect interest to the non aerospace community This report summarizes the areas of medicine in which computers can be employed and examines in detail several cases where computers have been applied in connection with the medical aspects of NASA's manned space flight program Treated are such problems as those of automated medical data storage and retrieval systems continuous monitoring and interpretation of electrocardiograms and computer aided medical diagnosis The approach is cautious throughout with the emphasis almost constantly on ways to permit the computer to perform various clerical functions while leaving critical decisions to a human monitor Foreword

A History of Modern Computing, second edition Paul E. Ceruzzi, 2003-04-08 From the first digital computer to the dot com crash a story of individuals institutions and the forces that led to a series of dramatic transformations This engaging history covers modern computing from the development of the first electronic digital computer through the dot com crash The author concentrates on five key moments of transition the transformation of the computer in the late 1940s from a specialized scientific instrument to a commercial product the emergence of small systems in the late 1960s the beginning of personal computing in the 1970s the spread of networking after 1985 and in a chapter written for this edition the period 1995 2001 The new material focuses on the Microsoft antitrust suit the rise and fall of the dot coms and the advent of open source software particularly Linux Within the chronological narrative the book traces several overlapping threads the evolution of the computer's internal design the effect of economic trends and the Cold War the long term role of IBM as a player and as a target for upstart entrepreneurs the growth of software from a hidden element to a major character in the story of computing and the recurring issue of the place of information and computing in a democratic society The focus is on the United States though Europe and Japan enter the story at crucial points on computing per se rather than on applications such as artificial intelligence and on systems that were sold commercially and installed in quantities

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