METADATA

Title: Recreational Mathematics

Other Titles: From mathrmatical puzzles to mathematical theories

Language: Greek

Authors: Hatziikiriakou, K., Professor, UTH

ISBN: 978-618-228-126-0

Subject: MATHEMATICS AND COMPUTER SCIENCE

Keywords: Recreational Mathematics / Problem Solving / Mathematical Puzzles / Graphs / Magic Squares

Bibliographic Reference: Hatzikiriakou, K. (2023). Recreational Mathematics [Undergraduate textbook]. Kallipos, Open Academic Editions. http://dx.doi.org/10.57713/kallipos-361

Abstract

The main didactical aim of this book is to show how certain puzzles and simply stated problems of playful character have led or can lead to beautiful, interesting deep and useful mathematical theories like graph theory, finite group theory, combinatorics, probability theory, number theory. In particular, the first three chapters deal with the properties of important graphs. The fourth chapter is about trees and their applications in fields other than mathematics, e.g. in Chemistry. The fifth chapter deals with planar graphs and the sixth examines various colourings of graphs and maps. The following two chapters deal with magic and latin squares, sudokou and kenken. The ninth and tenth chapters form an introduction to finite group theory. The eleventh chapter presents certain arithmetical puzzles like the cryptarithm anf the final chapter is a short introduction to probability theory. It ends with a short excursion into critical mathematics education. Each chapter starts with working sheets. The corresponding mathematical theory is developed through the solving of the puzzles and problems those sheets contain.

The Project is funded by the National Development Programme 2021-2025 of the Ministry of Education and Religious Affairs and implemented by the Special Account for Research Funds of the National Technical University of Athens and the Hellenic Academic Libraries Link.