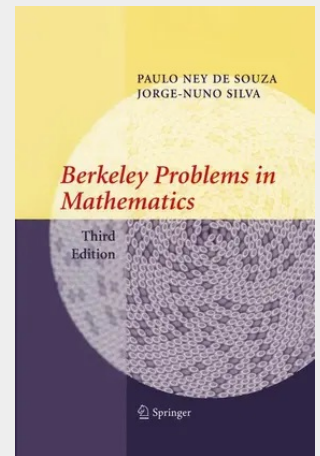


Berkeley Problems in Mathematics

In 1977 the Mathematics Department at the University of California, Berkeley, instituted a written examination as one of the first major requirements toward the Ph.D. degree in Mathematics. Its purpose was to determine whether first-year students in the Ph.D. program had successfully mastered basic mathematics in order to continue in the program with the likelihood of success. Since its inception, the exam has become a major hurdle to overcome in the pursuit of the degree. The purpose of this book is to publicize the material and aid in the preparation for the examination during the undergraduate years. The book is a compilation of over 1,250 problems which have appeared on the preliminary exams in Berkeley over the last twenty-five years. It is an invaluable source of problems and solutions for every mathematics student who plans to enter a Ph.D. program. Students who work through this book will develop problem-solving skills in areas such as real analysis, multivariable calculus, differential equations, metric spaces, complex analysis, algebra, and linear algebra. The problems are organized by subject and ordered in an increasing level of difficulty. Tags with the exact exam year provide the opportunity to rehearse complete examinations. The appendix includes instructions on accessing electronic versions of the exams as well as a syllabus and statistics of passing scores.

This new edition has been updated with the most recent exams, including exams given during the Fall 2003 semester. There are numerous new problems and solutions which were not included in previous editions.

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