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(B); 21 Pigeonhole Principle; Basic Forms of Pigeonhole Principle; Examples; Testing Questions (A); Testing Questions (B); 22 x and $\{x\}$; Some Basic Properties of x and $\{x\}$; Examples Testing Questions (A) Testing Questions (B); 23 Diophantine Equations (I); Definitions; Examples; Testing Questions (A); Testing Questions (B); 24 Roots and Discriminant of Quadratic Equation $ax^2 + bx + c = 0$; Basic Methods for Finding Roots of $ax^2 + bx + c = 0$; Relation between Discriminant and Existence of Real Roots; Examples; Testing Questions (A); Testing Questions (B); 25 Relation between Roots and Coefficients of Quadratic Equations; Examples; Testing Questions (A); Testing Questions (B); 26 Diophantine Equations (II); Basic Methods for Solving Quadratic Equations on \mathbb{Z} ; Examples Testing Questions (A) Testing Questions (B); 27 Linear Inequality and System of Linear Inequalities; Basic Properties of Inequalities; Steps for Solving a Linear Inequality; Examples; Testing Questions (A); Testing Questions (B); 28 Quadratic Inequalities and Fractional Inequalities; Basic Methods for Solving Quadratic Inequalities; Examples; Testing Questions (A); Testing Questions (B); 29 Inequalities with Absolute Values; Basic Methods for Removing Absolute Value Signs; Examples; Testing Questions (A); Testing Questions (B); 30 Geometric Inequalities; Examples; Testing Questions (A) Testing Questions (B) Solutions to Testing Questions; Solutions to Testing Questions 16; Testing Questions (16-A); Testing Questions (16-B); Solutions to Testing Questions 17; Testing Questions (17-A); Testing Questions (17-B); Solutions to Testing Questions 18; Testing Questions (18-A); Testing Questions (18-B); Solutions to Testing Questions 19; Testing Questions (19-A); Testing Questions (19-B); Solutions to Testing Questions 20; Testing Questions (20-A); Testing Questions (20-B); Solutions to Testing Questions 21; Testing Questions (21-A); Testing Questions (21-B) Solutions to Testing Questions 22

Sommario/riassunto

Olympiad mathematics is not a collection of techniques of solving mathematical problems but a system for advancing mathematical education. This book is based on the lecture notes of the mathematical Olympiad training courses conducted by the author in Singapore. Its scope and depth not only covers and exceeds the usual syllabus, but introduces a variety concepts and methods in modern mathematics. In each lecture, the concepts, theories and methods are taken as the core. The examples are served to explain and enrich their intension and to indicate their applications. Besides, appropriate num