

Study On Quadratic Equation-Solving

Mallikarjun, Research Scholar, Department of Mathematics, SunRise University, Alwar, Rajasthan (India)

Abstract

Quadratic equations are an important component of elementary and advanced algebra, providing a foundation for understanding mathematical relationships, functions, and problem-solving techniques. This study examines the methods used for solving quadratic equations and investigates students' understanding, accuracy, and difficulties in applying these methods. The study focuses primarily on standard techniques such as factorization, completing the square, and the quadratic formula, while also considering graphical interpretation as a means of understanding the nature and number of solutions. Particular attention is given to common errors, including incorrect factorization, sign errors, improper application of formulas, and difficulties in interpreting the discriminant. The study further explores how different instructional approaches can support conceptual understanding rather than dependence on memorized procedures. By comparing various solution methods, the study highlights their mathematical relationships, advantages, and appropriate applications in different problem contexts. The findings are intended to contribute to more effective teaching and learning strategies for quadratic equations by encouraging systematic reasoning, verification of solutions, and connections between algebraic and graphical representations. The study concludes that a balanced approach combining procedural practice with conceptual understanding can improve students' ability to solve quadratic equations accurately and apply their knowledge to mathematical and real-life problems.

Keywords: Quadratic equations, algebra, factorization, quadratic formula, completing the square, discriminant, problem-solving, mathematical reasoning, algebraic methods, conceptual understanding.



