

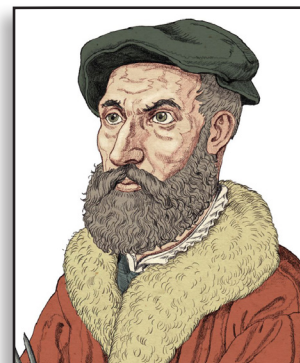
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ALGEBRA

“A person who can, within a year, solve $x^2 - 92y^2 = 1$ is amathematician”
- Brahmagupta

Niccolo Fontana Tartaglia was an Italian mathematician, engineer, surveyor and bookkeeper from then Republic of Venice (now Italy). He published many books, including the first Italian translations of Archimedes and Euclid, and an acclaimed compilation of mathematics. Tartaglia was the first to apply mathematics to the investigation of the paths of cannonballs; his work was later validated by Galileo’s studies on falling bodies.

Tartaglia along with Cardano were credited for finding methods to solve any third degree polynomials called cubic equations. He also provided a nice formula for calculating volume of any tetrahedron using distance between pairs of its four vertices.



Niccolo Fontana Tartaglia
1499/1500 – 1557 AD(CE)



Learning Outcomes

- To solve system of linear equations in three variables by the method of elimination
- To find GCD and LCM of polynomials
- To simplify algebraic rational expressions
- To understand and compute the square root of polynomials
- To learn about quadratic equations
- To draw quadratic graphs
- To learn about matrix, its types and operations on matrices



3.1 Introduction

Algebra can be thought of as the next level of study of numbers. If we need to determine anything subject to certain specific conditions, then we need Algebra. In that sense, the study of Algebra is considered as “Science of determining unknowns”. During third century AD(CE) Diophantus of Alexandria wrote a monumental book titled “Arithmetica” in thirteen volumes of which only six has survived. This book is the first source where the conditions of the problems are stated as equations and they are eventually solved. Diophantus realized that for many real life situation problems, the variables considered are usually positive integers.