A Study of the Evolution and Importance of Diophantine Equations

Benjamin W. Zhang

Mathematical Evolutions

Jennifer McCarthy and Andrew Platek

Summer Ventures in Science and Mathematics

The University of North Carolina at Charlotte

## Abstract

The purpose of this study was to discover more about the mathematical concept of Diophantine equations, as well as how they have evolved over time. Another main question was how these equations related to a person's daily life. The research method primarily relied on book and Internet sources, as well as contributions from a few individuals. Diophantus' original works were discussed first, as well as how they lead to the formation of the concept of a Diophantine equation. Next, many aspects of linear Diophantine equations were discussed in a broad overview. It was discovered that they are the most related to an individual's life, as problems based on these types of equations can be applied to daily actions. Proofs were used to go more in-depth into these equations, as well as to show exactly how they worked. The primary conclusion from the study was that Diophantine equations have had and will continue to have a lasting impact on the field of mathematics, especially in algebra and number theory.