Capturing Infinity:

Understanding the Concept and Applications of a Never Ending Quanitity

Kathleen A. Smith and Carly N. High

Mathematical Evolutions

Mr. Andy Platek and Ms. Jennifer McCarthy

Summer Ventures in Science and Mathematics

The University of North Carolina at Charlotte

Abstract

Capturing the concept of infinity is a complex task. In this paper, the basic modern properties of infinity, proposed by Georg Cantor, are analyzed. The properties are proved to be correct through the ideas included in Cantor's set theory. Infinity is not considered a real number, therefore including infinity in mathematical operations will not abide by basic rules that real numbers do. Zeno was one of the first to introduce the idea of infinity, and he published four main paradoxes about infinity that are explained. His and other important philosophers' ideas on infinity are discussed as they develop and often clash through history. The basic understanding and perception of infinity has become clearer to the world as math has advanced and an example in this paper of that is the nanosecond. Using modern advantages in technology and mathematics can help to better relate and understand infinity. Although Georg Cantor developed the now accepted theory of infinity, before his contributions Isaac Newton and Gottfried Leibniz invented Calculus which incorporated infinity in mathematical circles and not just studies of philosophy.