A Balance between Educational Significance and the Historical Flow of Mathematics

Ayako Kobayashi (Tanaka)

Definition in mathematics is the most basic of conventions. However, in mathematics, the same definition is not always used for the same referent. This paper will discuss the definition of the definite integral in calculus, and argues the reasons for adopting this definition in high school mathematics courses.

The indefinite integral is used as the definition of the definite integral in high school. However, the definite integral evolved in the process of studying the area of a figure drawn by the graph of a function.

The areas of the figure have been studied by a number of mathematicians during the development of calculus, from before even Newton and Leibniz. The definition of the definite integral should be taught as part of high school mathematics considering its importance to the history of calculus.