

Exploring Calculus Problems with GeoGebra

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GeoGebra is a free software package that is interactive and is similar to the software the Geometers Sketchpad. This software allows students to explore numerous mathematical topics such as geometry, algebra, and transformation and also provides an excellent opportunity to demonstrate graphical representations of various calculus concepts. GeoGebra can be downloaded for free from its website (www.geogebra.org) and installed on your computer. You can either download it onto your desktop or use the Web applet version that works within your Internet browser.

In textbooks, numerous calculus topics, such as the limit of a function, the derivative of a function, and integrals are often represented algebraically, numerically, and graphically. Although multiple representations are emphasized in the teaching and learning of calculus, it often appears that students still have a limited view of the graphical representation of a derivative because they are accustomed to algebraic representations.

Because of these difficulties and such a limited view, graphing calculators and other computer algebra systems (CAS) are often used to demonstrate graphical representations of a derivative and other calculus concepts. This article explores and demonstrates graphical representations of some elementary calculus topics using GeoGebra—specifically differentiability, the mean value theorem, and Riemann sums.

motivation. His personal interests include juggling and backgammon.



Jae Ki Lee is an assistant professor at Borough of Manhattan Community College. He is interested in discovering alternative teaching and learning algorithms and teaching mathematics with technology.