

Visualizing the Mean Value Theorem Using GeoGebra

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Abstract:

The Mean Value Theorem (MVT) is a cornerstone of calculus. It is bridging the derivative of a function and its overall change across an interval. This project leverages GeoGebra, a dynamic mathematics software, to visually explore and demonstrate the MVT, making this fundamental theorem more accessible and engaging through interactive visualizations.

The objective of this project is to provide a clear and intuitive understanding of the Mean Value Theorem. By utilizing GeoGebra, the project aims to illustrate the theorem's conditions, implications, and proofs, helping learners grasp the concept in a tangible way. Interactive visualizations will show the point c where the derivative of the function equals the average rate of change over an interval, as dictated by the MVT.

The results will highlight the importance of the Mean Value Theorem in understanding the behaviour of functions, offering a practical approach to learning through visual aids. This method enhances comprehension by not only providing theoretical insights but also encouraging exploration and experimentation with different functions and intervals.

Keywords:

Mean Value Theorem, Calculus, Derivative, Tangent Line, Secant Line, Derivative Application.