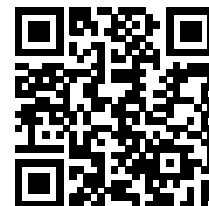


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# Calculus



Calculus is a branch of \_\_\_\_\_ that deals with rates of change and the accumulation of quantities. It was developed independently by \_\_\_\_\_ and Gottfried Wilhelm \_\_\_\_\_ in the late 17th century. Calculus is divided into two main branches: \_\_\_\_\_ calculus and \_\_\_\_\_ calculus. Differential calculus focuses on the concept of the \_\_\_\_\_, which represents the rate of change of a function with respect to a variable. It helps in understanding how a quantity changes over time. Integral calculus, on the other hand, involves the \_\_\_\_\_, which represents the accumulation of quantities. It helps in calculating areas, volumes, and other concepts that arise from adding up infinitely many tiny quantities. Calculus plays a crucial role in various fields such as physics, engineering, economics, and even medicine. The \_\_\_\_\_ concept is fundamental to calculus. It helps in understanding the behavior of functions as they approach a certain point. The \_\_\_\_\_ is a powerful tool in differential calculus, allowing the calculation of derivatives of composite functions. Similarly, the Fundamental Theorem of \_\_\_\_\_ links differential and integral calculus in a profound way. It states that differentiation and integration are inverse processes. Learning calculus requires a solid understanding of algebra and \_\_\_\_\_. It challenges students to think abstractly and apply their knowledge to solve complex problems. Calculus has significantly contributed to the advancement of \_\_\_\_\_ and technology, shaping the modern world as we know it.

|              |            |          |             |              |          |          |
|--------------|------------|----------|-------------|--------------|----------|----------|
| Isaac Newton | chain rule | limit    | mathematics | derivative   | geometry | integral |
| Calculus     | science    | integral | Leibniz     | differential |          |          |