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Integration

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Abstract: *In mathematics, an integral is the continuous analog of a sum, which is used to calculate areas, volumes, and their generalizations. Integration, the process of computing an integral, is one of the two fundamental operations of calculus, the other being differentiation. Integration started as a method to solve problems in mathematics and physics, such as finding the area under a curve, or determining displacement from velocity. Today integration is used in a wide variety of scientific fields.The integrals enumerated here are called definite integrals, which can be interpreted as the signed area of the region in the plane that is bounded by the graph of a given function between two points in the real line. Conventionally, areas above the horizontal axis of the plane are positive while areas below are negative. Integrals also refer to the concept of an anti-derivative, a function whose derivative is the given function; in this case, they are also called indefinite integrals. The fundamental theorem of calculus relates definite integrals with differentiation and provides a method to compute the definite integral of a function when its anti-derivative is known; differentiation and integration are inverse operations..*

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