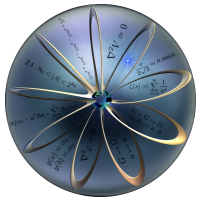

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quadrature

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Defines	cubature

Quadrature is the computation of a univariate definite integral. It can refer to either numerical or analytic techniques; one must gather from context which is meant. The term refers to the geometric origin of integration in determining the area of a plane figure by approximating it with squares.

Cubature refers to higher-dimensional definite integral computation. Likewise, this term refers to the geometric operation of approximating the volume of a solid by means of cubes (and has since been extended to higher dimensions).

The terms "quadrature" and "cubature" are typically used in numerical analysis to denote the approximation of a definite integral, typically by a suitable weighted sum. Perhaps the simplest possibility is approximation by a sum of values at equidistant points, i.e. approximate $\int_0^1 f(x)\,dx$ by $\sum_{k=0}^{n} f(k/n)/n$. More complicated approximations involve variable weights and evaluation of the function at points which may not be spaced equidistantly. Some such numerical quadrature methods are Simpson's rule, the trapezoidal rule, and Gaussian quadrature.