

# 07.01 Definition of Integration

## What is Integration?

In discrete terms, integration is the process of measuring the area under a function plotted on a graph. Why would we want to do such a thing? Among the most common examples are finding the velocity and displacement of a body from acceleration and velocity functions, respectively. Throughout the engineering fields, there are (what sometimes seems like) countless applications for integral calculus. Sometimes, the evaluation of expressions involving these integrals can become daunting, if not indeterminate.

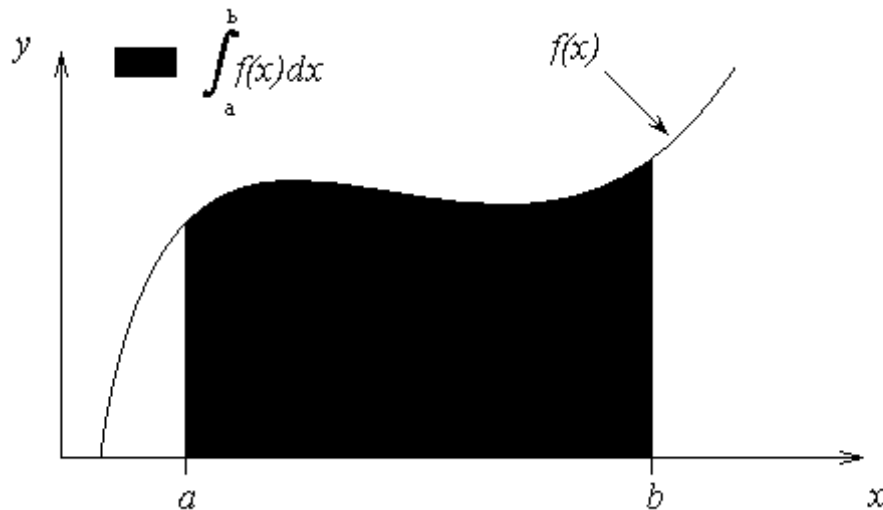


Figure 1: Integration of a function

For this reason, a wide variety of numerical methods have been developed to simplify the integral. We will discuss four well-known methods: the trapezoidal rule, Simpson's 1/3<sup>rd</sup> Rule, Gauss Quadrature Rule, and Romberg Integration.

---

**INTEGRATION**

---

<b>Topic</b>	Introduction to Integration
<b>Summary</b>	Textbook notes on introducing the concept of integration.
<b>Major</b>	All Majors of Engineering
<b>Authors</b>	Autar Kaw
<b>Last Revised</b>	November 20, 2009
<b>Web Site</b>	<a href="http://numericalmethods.eng.usf.edu">http://numericalmethods.eng.usf.edu</a>

---