

Evaluating Definite Integrals Without Evaluating

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One of the primary topics of an integral calculus course is the study of areas and definite integrals. It is common to use Riemann sums followed by the Fundamental Theorem of Calculus. However, it is possible to compute areas of various regions using only geometry, which is the primary focus of this article. We begin with some better-known examples, do a couple of Monte Carlo simulations, and conclude with the area of an elliptical region, all without employing any definite integrals.

Keywords: area under a plane curve, geometry, Monte Carlo simulation, calculus



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