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Inside interesting integrals (with and introduction to contour integration). A collection of sneaky tricks, sly substitutions, and numerous other stupendously clever, awesomely wicked, and devilishly seductive maneuvers for computing nearly 200 perplexing definite integrals from physics, engineering, and mathematics (plus 60 challenge problems with complete, detailed solutions).

Undergraduate Lecture Notes in Physics. New York, NY: Springer (ISBN 978-1-4939-1276-6/pbk; 978-1-4939-1277-3/ebook). xxiii, 412 p. (2015).

Integration is a mathematical technique that requires certain amount of experience skill and often also non-trivial tricks. The book is aimed at relatively experienced reader familiar with basic integration methods and interested in advanced types of integrals, used mostly in various engineering areas. After a brief introduction to the theory of Riemann and Lebesgue integrals, several nontrivial methods of finding integrals are shown, using various identities, properties of functions, differences, etc. Special integrals, like gamma and beta functions, are discussed in a separate chapter, as well as power series as a method for evaluating integrals. The major part of the text is devoted to the integration of real functions of a single real variable, except of the final chapters where also integration in the complex plane and curve integrals are discussed.

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