

## Integrals Involving Airy Functions Iopscience

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### L8.1 Airy functions as integrals in the complex plane

Using the Residue Theorem for improper integrals involving multiple-valued functions

~~Symmetry in Integrals: Examples Calculus II – 8.3.1 Integrals Involving Powers of Sine and Cosine~~

~~Integration ved substitution (eksempler) Calculus 2 Final Exam Review Part 1 - Indefinite Integrals, Integration, /u0026 Parametric Curves~~

~~How to Determine if an Integral is an Improper Integral L8.2 Asymptotic expansions of Airy functions Differential Equations | Series Solutions -- Airy's Equation Theory of Elasticity- Lecture 27-Airy's Stress Function Series solution of ode: Airy's equation Series solution of the Airy's equation (Part A) | Lecture 37 | Differential Equations for Engineers~~

~~What's a Tensor? Writing Integral in Terms of Itself: MIT Integration Bee (21) How to Integrate Using U-Substitution (NancyPi) 3.2.1 Asymptotic Notation: Video An Exhilarating Journey of Integration Airy`s Stress function A basic integral - know your strategies! What is BOUNDARY ELEMENT METHOD? What does BOUNDARY ELEMENT METHOD mean? Integration technique: Dummy Variables /u0026 Proof: Odd function over symmetric integral is always 0 L1.1 General problem. Non-degenerate perturbation theory The Airy Equation - Mathematics - Calculus - TU Delft Calculus 2 | Chapter 10 | Topic: The Integral Test Computing Improper Integrals using the Residue Theorem | Cauchy Principal Value Airy's Stress Function for Mode-I Integral Calculus: Solids of Revolution L7.4 Connection formula stated and example FACTDOUBLE vs FACT in Taylor Series Expansion of Gaussian Integral using ERF SQRTPI Boundary integral evaluation Integrals Involving Airy Functions Iopscience Integrals involving Airy functions J R Albright and E P Gavathas Published 11 September 1986 • Journal of Physics A: Mathematical and General , Volume 19 , Number 13~~

### Integrals involving Airy functions - IOPscience

Integrals Involving Airy Functions Iopscience The function  $Ai(x - a)Ai(x - b)$ , where  $a, b \in \mathbb{R}$  and  $Ai(x)$  is the Airy function of the first kind, appears in the study of the Gelfand–Levitan–Marchenko equation involving Airy functions (see [1, p. 408]), the second Painleve equation (see [27, p. 134]) and the limit at the “ edge of the spectrum ” of the level spacing

### Integrals Involving Airy Functions Iopscience

A large number of indefinite integrals of the form  $\int x^n y^1 y^2 dx$  have been evaluated in terms of  $x, y^1, y^2$  and their first derivatives;  $y^1$  and  $y^2$  are both solutions of the differential equation  $y''=xy$ . Some of these integrals can be applied to the quantum mechanical problem of a particle in a uniform field of force.

### Integrals of products of Airy functions - IOPscience

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Abstract. We show how to evaluate a large number of integrals involving Airy functions. The method uses the fact that the Wronskian has a very simple form. A recent paper by Wille and Vennik (1985) presented a derivation of the result  $\int_{-\infty}^{\infty} \text{Ai}(x)\text{Bi}(x) (\text{Ai}^2(x) + \text{Bi}^2(x))' dx = 48$  where  $\text{Ai}(x)$  and  $\text{Bi}(x)$  are the standard Airy functions.

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Integrals Involving Airy Functions Iopscience The function  $\text{Ai}(x - a)\text{Ai}(x - b)$ , where  $a, b \in \mathbb{R}$  and  $\text{Ai}(x)$  is the Airy function of the first kind, appears in the study of the Gelfand–Levitan–Marchenko equation involving Airy functions (see [1, p. 408]), the second Painleve equation (see [27, p. 134]) and

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## Integrals Involving Airy Functions Iopscience

Integrals of products of Airy functions are collected here;  $y$  refers to any linear combination  $I$  of  $\text{Ai}(x)$  and  $\text{Bi}(x)$ ;  $n$  is a positive integer.  $\int_{-\infty}^{\infty} y^2 dx = xy^2 - yT^2$  (A.1)

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## Integrals Involving Airy Functions Iopscience

The Airy function based solutions of the paraxial wave equation in planar geometry are framed within the unifying context of a well-known Lie algebra formalism, which is shown to account for both infinite and finite energy solutions. In fact, the finite energy solutions can be obtained by complexification of the relevant propagation parameter.

## A note on the Airy beams in the light of the symmetry ...

In this short paper, we give some integrals involving Volterra  $\mu$ -functions and Airy functions. In particular, we prove that Volterra functions behave as eigenfunctions of integral equations whose kernels are solutions of the linearized Korteweg-de Vries equation. Keywords: Airy Functions, Volterra Function, Diffusion Equation, Linearized Korteweg-de Vries Equation.

## Some Integrals Involving Airy Functions and Volterra $\mu$ ...

In terms of Airy functions. Ascending series. Asymptotic series. Primitive of Scorer functions. Repeated primitives. Product of Airy Functions . The method of Albright. Some primitives. Other Primitives. Miscellaneous. Elementary Integrals . Particular integrals. Integrals containing a single Airy function . Integrals involving algebraic ...

## Primitives and Integrals of Airy Functions | Airy ...

A new integral representation of the Hankel transform type is deduced for the function  $F_n(x, Z) = Z^{n-1} \text{Ai}(x-Z) \text{Ai}(x+Z)$  with  $x \in \mathbb{R}$ ,  $Z > 0$  and  $n \in \mathbb{N}$ . This formula involves the product of Airy functions, their derivatives and Bessel functions. The presence of the latter allows one to perform various transformations with respect to  $Z$  and obtain new integral formulae of the type of the Mellin transform, K-transform, Laplace and Fourier transform.

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