

## NAG Library Chapter Contents

### d01 – Quadrature

d01 Chapter Introduction – a description of the Chapter and an overview of the algorithms available

Function Name	Mark of Introduction	Purpose
d01bdc	23	nag_quad_1d_fin_smooth One-dimensional quadrature, non-adaptive, finite interval
d01dac	23	nag_quad_2d_fin Two-dimensional quadrature, finite region
d01esc	25	nag_quad_md_sgq_multi_vec Multi-dimensional quadrature using sparse grids
d01fbc	23	nag_quad_md_gauss Multidimensional Gaussian quadrature over hyper-rectangle
d01fdc	23	nag_quad_md_sphere Multidimensional quadrature, Sag–Szekeres method, general product region or $n$ -sphere
d01gac	2	nag_1d_quad_vals One-dimensional integration of a function defined by data values only
d01gdc	23	nag_quad_md_numth_vec Multidimensional quadrature, general product region, number-theoretic method
d01gyc	23	nag_quad_md_numth_coeff_prime Korobov optimal coefficients for use in nag_quad_md_numth_vec (d01gdc), when number of points is prime
d01gzc	23	nag_quad_md_numth_coeff_2prime Korobov optimal coefficients for use in nag_quad_md_numth_vec (d01gdc), when number of points is product of two primes
d01pac	23	nag_quad_md_simplex Multidimensional quadrature over an $n$ -simplex
d01rac	24	nag_quad_1d_gen_vec_multi_rcomm One-dimensional quadrature, adaptive, finite interval, multiple integrands, vectorized abscissae, reverse communication
d01rcc	24	nag_quad_1d_gen_vec_multi_dimreq Determine required array dimensions for nag_quad_1d_gen_vec_multi_rcomm (d01rac)
d01rgc	24	nag_quad_1d_fin_gonnet_vec One-dimensional quadrature, adaptive, finite interval, strategy due to Gonnet, allowing for badly behaved integrands
d01sjc	5	nag_1d_quad_gen_1 One-dimensional quadrature, adaptive, finite interval, strategy due to Piessens and de Doncker, allowing for badly behaved integrands
d01skc	5	nag_1d_quad_osc_1 One-dimensional quadrature, adaptive, finite interval, method suitable for oscillating functions
d01slc	5	nag_1d_quad_brkpts_1 One-dimensional quadrature, adaptive, finite interval, allowing for singularities at user-specified break-points
d01smc	5	nag_1d_quad_inf_1 One-dimensional adaptive quadrature over infinite or semi-infinite interval
d01snc	5	nag_1d_quad_wt_trig_1 One-dimensional adaptive quadrature, finite interval, sine or cosine weight functions

d01spc	5	nag_1d_quad_wt_alglog_1 One-dimensional adaptive quadrature, weight function with end-point singularities of algebraic-logarithmic type
d01sqc	5	nag_1d_quad_wt_cauchy_1 One-dimensional adaptive quadrature, weight function $1/(x - c)$ , Cauchy principal value
d01ssc	5	nag_1d_quad_inf_wt_trig_1 One-dimensional adaptive quadrature, semi-infinite interval, sine or cosine weight function
d01tac	5	nag_1d_withdraw_quad_gauss_1 One-dimensional Gaussian quadrature, choice of weight functions <b>Note:</b> this function is scheduled for withdrawal at Mark 27, see Advice on Replacement Calls for Withdrawn/Superseded Functions for further information.
d01tbc	23	nag_quad_1d_gauss_wset Pre-computed weights and abscissae for Gaussian quadrature rules, restricted choice of rule
d01tcc	23	nag_quad_1d_gauss_wgen Calculation of weights and abscissae for Gaussian quadrature rules, general choice of rule
d01tdc	26	nag_quad_1d_gauss_wrec Calculation of weights and abscissae for Gaussian quadrature rules, method of Golub and Welsch
d01tec	26	nag_quad_1d_gauss_recm Generates recursion coefficients needed by nag_quad_1d_gauss_wrec (d01tdc) to calculate a Gaussian quadrature rule
d01uac	24	nag_quad_1d_gauss_vec One-dimensional Gaussian quadrature, choice of weight functions (vectorized)
d01ubc	26	nag_quad_1d_inf_exp_wt Non-automatic function to evaluate $\int_0^{\infty} \exp(-x^2)f(x) dx$
d01wcc	5	nag_multid_quad_adapt_1 Multidimensional adaptive quadrature
d01xbc	5	nag_multid_quad_monte_carlo_1 Multidimensional quadrature, using Monte-Carlo method
d01zkc	24	nag_quad_opt_set Option setting function
d01zlc	24	nag_quad_opt_get Option getting function

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