# NAG Library Chapter Contents

# d01 – Quadrature

d01 Chapter Introduction

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

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|---|---|---|
| d01spc | 5 | nag_1d_quad_wt_alglog_1<br>One-dimensional adaptive quadrature, weight function with end-point singularities of algebraic-logarithmic type |
| d01sqc | 5 | nag_1d_quad_wt_cauchy_1<br>One-dimensional adaptive quadrature, weight function $1/(x-c)$, Cauchy principal value |
| d01ssc | 5 | nag_1d_quad_inf_wt_trig_1<br>One-dimensional adaptive quadrature, semi-infinite interval, sine or cosine weight function |
| d01tac | 5 | nag_1d_quad_gauss_1<br>One-dimensional Gaussian quadrature, choice of weight functions<br>**Note**: 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<br>Pre-computed weights and abscissae for Gaussian quadrature rules, restricted choice of rule |
| d01tcc | 23 | nag_quad_1d_gauss_wgen<br>Calculation of weights and abscissae for Gaussian quadrature rules, general choice of rule |
| d01uac | 24 | nag_quad_1d_gauss_vec<br>One-dimensional Gaussian quadrature, choice of weight functions (vectorized) |
| d01wcc | 5 | nag_multid_quad_adapt_1<br>Multidimensional adaptive quadrature |
| d01xbc | 5 | nag_multid_quad_monte_carlo_1<br>Multidimensional quadrature, using Monte–Carlo method |
| d01zkc | 24 | nag_quad_opt_set<br>Option setting function |
| d01zlc | 24 | nag_quad_opt_get<br>Option getting function |