# NAG Fortran Library Chapter Contents

# D01 – Quadrature

**Note:** please refer to the Users' Note for your implementation to check that a routine is available.

D01 Chapter Introduction

| Routine Name | Mark of Introduction | Purpose |
|---|---|---|
| D01AHF | 8 | One-dimensional quadrature, adaptive, finite interval, strategy due to Patterson, suitable for well-behaved integrands |
| D01AJF | 8 | One-dimensional quadrature, adaptive, finite interval, strategy due to Piessens and de Doncker, allowing for badly behaved integrands |
| D01AKF | 8 | One-dimensional quadrature, adaptive, finite interval, method suitable for oscillating functions |
| D01ALF | 8 | One-dimensional quadrature, adaptive, finite interval, allowing for singularities at user-specified break-points |
| D01AMF | 2 | One-dimensional quadrature, adaptive, infinite or semi-infinite interval |
| D01ANF | 8 | One-dimensional quadrature, adaptive, finite interval, weight function $\cos(\omega x)$ or $\sin(\omega x)$ |
| D01APF | 8 | One-dimensional quadrature, adaptive, finite interval, weight function with end-point singularities of algebraico-logarithmic type |
| D01AQF | 8 | One-dimensional quadrature, adaptive, finite interval, weight function $1/(x-c)$, Cauchy principal value (Hilbert transform) |
| D01ARF | 10 | One-dimensional quadrature, non-adaptive, finite interval with provision for indefinite integrals |
| D01ASF | 13 | One-dimensional quadrature, adaptive, semi-infinite interval, weight function $\cos(\omega x)$ or $\sin(\omega x)$ |
| D01ATF | 13 | One-dimensional quadrature, adaptive, finite interval, variant of D01AJF efficient on vector machines |
| D01AUF | 13 | One-dimensional quadrature, adaptive, finite interval, variant of D01AKF efficient on vector machines |
| D01BAF | 7 | One-dimensional Gaussian quadrature |
| D01BBF | 7 | Pre-computed weights and abscissae for Gaussian quadrature rules, restricted choice of rule |
| D01BCF | 8 | Calculation of weights and abscissae for Gaussian quadrature rules, general choice of rule |
| D01BDF | 8 | One-dimensional quadrature, non-adaptive, finite interval |
| D01DAF | 5 | Two-dimensional quadrature, finite region |
| D01EAF | 12 | Multi-dimensional adaptive quadrature over hyper-rectangle, multiple integrands |
| D01FBF | 8 | Multi-dimensional Gaussian quadrature over hyper-rectangle |
| D01FCF | 8 | Multi-dimensional adaptive quadrature over hyper-rectangle |
| D01FDF | 10 | Multi-dimensional quadrature, Sag–Szekeres method, general product region or $n$-sphere |
| D01GAF | 5 | One-dimensional quadrature, integration of function defined by data values, Gill–Miller method |
| D01GBF | 10 | Multi-dimensional quadrature over hyper-rectangle, Monte Carlo method |
| D01GCF | 10 | Multi-dimensional quadrature, general product region, number-theoretic method |
| D01GDF | 14 | Multi-dimensional quadrature, general product region, number-theoretic method, variant of D01GCF efficient on vector machines |
| D01GYF | 10 | Korobov optimal coefficients for use in D01GCF or D01GDF, when number of points is prime |

| | | |
|---|---|---|
| D01GZF | 10 | Korobov optimal coefficients for use in D01GCF or D01GDF, when number of points is product of two primes |
| D01JAF | 10 | Multi-dimensional quadrature over an *n*-sphere, allowing for badly behaved integrands |
| D01PAF | 10 | Multi-dimensional quadrature over an *n*-simplex |