Notation: Integration Tables

A list of the notation, acronyms and abbreviations used in the integration tables is given below.

arg	argument of a complex number
$(a)_n$	Pochhammer's symbol $= \dfrac{\Gamma(a+n)}{\Gamma(n)} = a\,(a+1)\,\ldots\,(a+n-1)$
$\mathrm{B}(m,n)$	beta function $= \dfrac{\Gamma(m)\,\Gamma(n)}{\Gamma(m+n)}$
$\mathrm{B}_x(p,q)$	incomplete beta function
$B_n(x)$	Bernoulli polynomials
$B_n,\ B_{2n}$	Bernoulli numbers
$C(x)$	Fresnel cosine integral
$C_\nu(x)$	Young function
$C_n^\mu(x)$	Gegenbauer polynomials
$\mathrm{Ci}(x)$	cosine integral
$\mathrm{chi}(x)$	hyperbolic cosine function
$D_p(z)$	parabolic cylinder functions
E_n	Euler numbers
$E(\varphi,k)$	elliptic integral of the second kind
$\mathbf{E}(k),\ \mathbf{E}(k')$	complete elliptic integral of the second kind, $k' = \sqrt{1-k^2}$.
$\mathbf{E}_\nu(z)$	Weber function
$\mathrm{Ei}(x)$	exponential integral function $= -\displaystyle\int_{-x}^{\infty} \frac{e^{-t}}{t}\,dt = \int_{-\infty}^{x} \frac{e^{t}}{t}\,dt,\ x<0$
$\overline{\mathrm{Ei}(x)}$	= p.v. $\mathrm{Ei}(x)$
$E_m(x)$	exponential integral $= \int_1^\infty \left(e^{-xt}/t^m\right)\,dt$
$\mathrm{erf}(x)$	error function

$\mathrm{erfc}(x)$	complementary error function $= 1 - \mathrm{erf}(x)$
$F(\varphi, k)$	elliptic integral of the first kind
${}_2F_1(\alpha, \beta, \gamma; x)$	Gauss hypergeometric function, also $F(\alpha, \beta, \gamma; x)$
${}_nF_m\,(\cdot, \cdot\,; x)$	generalized hypergeometric function
F_1, F_2, F_3, F_4	hypergeometric functions of two variables
$G^{m,n}_{p,q}\left(x \,\middle\vert\, {a_1,\dots,a_p \atop b_1,\dots,b_q}\right)$	Meijer functions
$\mathbf{G}$	Catalan constant ≈ 0.91596559
$H^{(1)}_\nu(z),\ H^{(2)}_\nu(z)$	Hankel functions of the first and second kind
$H_n(x)$	Hermite polynomials
$\mathbf{H}_\nu(z)$	Struve functions
$I_n(z)$	modified Bessel functions of the first kind
$\Im\{z\}$	imaginary part of a complex number z
$J_n(x)$	Bessel function of the first kind
$\mathbf{J}_\nu(z)$	Anger functions
$k_\nu(x)$	Bateman function
$\mathbf{K}(k),\ \mathbf{K}(k')$	complete elliptic integral of the first kind, $k' = \sqrt{1 - k^2}$
$K_n(z)$	modified Bessel functions of the second kind
$L(x)$	Lobachevskiy function
$\mathbf{L}_\nu(z)$	modified Struve function
$L^{(\alpha)}_n(x)$	Laguerre polynomials
$\mathrm{li}(x)$	logarithm integral $= \mathrm{Ei}\,(\ln\, x),\ x > 1$
$M_0(\alpha, \beta, z)$	(or $M(\alpha, \beta, z)$) Kummer's confluent hypergeometric function
$M_{\lambda,\mu}(z)$	Whittaker functions
N	the set of natural numbers
$O_n(x)$	Neumann polynomials
p.v.	principal value
$P_n(x)$	Legendre polynomials
$P^{(a)}_n(x)$	associated Legendre polynomials of the first kind
$P^{(\alpha,\beta)}_n(x)$	Jacobi polynomials
$Q^{(\alpha)}_\nu(x)$	associated Legendre polynomials of the second kind
$Q_\nu(z)$	Legendre functions of the second kind
$s_{\mu,\nu}(z),\ S_{\mu,\nu}(z)$	Lommel functions
$S_n(x)$	Schläfli polynomials
$S(x)$	Fresnel sine integral
$S_n(x)$	Schläfli polynomials
$\mathrm{shi}(x)$	hyperbolic sine integral
$\mathrm{sgn}\, x$	sign function $= \begin{cases} 1, & x > 0, \\ 0, & x = 0, \\ -1, & x < 0. \end{cases}$
$\mathrm{Si}(x)$	sine integral
$T_n(x)$	Chebyshev polynomials of the first kind
$U(\alpha, \beta, z)$	Kummer's confluent hypergeometric function

$U_n(x)$	Chebyshev polynomials of the second kind
$U_n(w,z)$	Lommel functions of two variables
$V_n(w,z)$	Lommel functions of two variables
$W_{\lambda,\mu}(z)$	Whittaker functions
$\lfloor x \rfloor$	integral part of a real number x
$Y_n(z)$	Neumann functions
z^*	complex conjugate of z
$\Re\{z\}$	real part of a complex number z
$\beta(x)$	$= \int_0^1 \frac{t^{x-1}}{1+t}\,dt = \frac{1}{2}\left[\psi\left(\frac{x+1}{2}\right) - \psi\left(\frac{x}{2}\right)\right]$
$\gamma(a,x)$	incomplete gamma function $= \int_0^x e^{-t}\,t^{a-1}\,dt$
$\Gamma(a,x)$	incomplete gamma function $= \Gamma(a) - \gamma(a,x) = \int_x^\infty e^{-t}\,t^{a-1}\,dt$
$\Gamma(x)$	gamma function
γ_e	Euler constant ≈ 0.5772156649*
$\nu(x)$	nu function $= \int_0^\infty \frac{x^t\,dt}{\Gamma(t+1)}$
$\nu(x,\alpha)$	nu-alpha function $= \int_0^\infty \frac{x^{t+\alpha}\,dt}{\Gamma(t+\alpha+1)}$
$\zeta(u)$	Weierstrss zeta function
$\zeta(z), \zeta(z,q)$	Riemann zeta function
$\Pi(x)$	Lobachevskiy angle of parallelism
$\Pi(\varphi,n,k)$	elliptic integral of the third kind
$\sigma(x)$	Weierstrass sigma function
$\Phi(z,s,v)$	Lerch function
$\Phi(a,c;x)$	confluent hyperbolic function $= {}_1F_1(\alpha;\gamma;x)$
$\Phi_1(\alpha,\beta,\gamma,x,y)$	degenerate hypergeometric series in two variables
$\psi(x)$	Euler psi function
$\binom{m}{n}$	binomial coefficient $= \frac{m!}{n!\,(m-n)!}$

The orthogonal polynomials $C_n^\mu(x)$, $H_n(x)$, $L_n^\alpha(x)$, $P_n(x)$, $P_n^{(\alpha,\beta)}(x)$, and $U_n(x)$ are discussed in §1.2 in the book. For a description of other notation, see the file `SpecialFunctions.pdf`.

*This constant is usually denoted by γ; but we use γ_e to avoid confusion with other uses of the letter γ.