

Roger Godement

Analysis II

Differential and Integral Calculus,
Fourier Series, Holomorphic Functions

Erratum

Due to an error that occurred during the production process, the index on pp. 436–439 is wrong. The corrected version of the index is attached.

Index

$B(x, y)$	109	$\inf(f, g)$	10
$B_p(t)$	232	$\int_K f(x)d\mu(x)$	146
C	243	$(f g)$	12, 275
$C^0(K)$	145	$\mu(f)$	146
$C_c^0(X)$	151	$\sup(f, g)$	10
$C_{\inf}(\varphi)$	44	$\theta(z)$	364
$C_{\sup}(\psi)$	48	$d_r(\varphi, \psi)$	169
$F(x)\Big _a^b$	55	$dm(u)$	259
$H_f(z)$	343	$f \star \varphi(x)$	134
$L(K)$	145	$f \star g(t)$	266
$L(X)$	151	$f(x) = O(g(x))$	195
$L(X, K)$	151	$f(x) = o(g(x))$	195
L^1 norm	13	$f(x) \asymp g(x)$	195
L^2 norm	13	$f(x) \sim g(x)$	195
$L_{\inf}(\varphi)$	156	f^+	10
$L_{\sup}(\psi)$	157	f^-	10
$M(\mu)$	146	$m(J)$	2
$M_K(\mu)$	152	$m(U)$	50
$N_p(f)$	13, 71	$m(\varphi)$	2
$P_f(z)$	340	$m(f)$	258
T'	173	$m^*(f)$	4
$T_f(\varphi)$	172	$m_*(f)$	4
$\mathbf{e}_n(x)$	21	z^s	318
ΔP	347	\mathbb{T}	255
$\Gamma(s)$	108	$\mathbf{e}(t)$	255
$\ \mu\ $	146	$\mathbf{e}_n(t)$	255
$\ \varphi\ ^{(k)}$	287	$\mathcal{D}(\mathbb{R}, K)$	169
$\ \varphi\ ^{(r)}$	169	\mathcal{D}	134
$\ f\ _1$	13	$\mathcal{D}(\mathbb{T})$	287
$\ f\ _2$	13	$\mathcal{D}(K)$	169
$\ f\ _p$	13	$\mathcal{D}(\mathbb{R})$	134
\approx	219	\mathcal{H}	275
$\delta(x)$	129	lsc	46
δ_a	172	usc	48
γ	243		
$\hat{\mu}(n)$	262	Almost everywhere	182
$\hat{f}(n)$	261		
$\hat{f}(y)$	357	Bernoulli	
		– numbers	230
		– polynomials	232

- Cartesian product (measures) 150
- Compact support
 - function of 133
- Comparison relations 195
- Conjugate indices 71
- Convergence
 - dominated 17, 109, 190
 - in mean 186, 278
 - in mean of order p 20
 - in quadratic mean 20, 278
- Convex
 - function 66
 - set 66
- Decomposition into simple elements 95
- Dirac sequence
 - on \mathbb{R} 131
 - on \mathbb{T} 271
- Dirichlet problem 355
- Distribution
 - derivatives of a 173
 - on \mathbb{R} 169
 - on \mathbb{T} 287
 - tempered 381
- Domain 311
- Envelope
 - lower 10
 - upper 10
- Equation
 - integral 214
 - Kepler's 210
- Equicontinuity 304
- Euler's constant 242
- Formula
 - Cauchy's integral 25, 251
 - Euler-Maclaurin 240
 - Fourier inversion 367
 - Parseval-Bessel 23
 - Plancherel 368
 - Poisson summation 358
 - Stirling's 246
 - Taylor's 83
 - Wallis' 80
- Fourier coefficients
 - of a distribution 288
 - of a function 261
- Fourier series
 - Bernoulli polynomials 299
 - periodic holomorphic function 320
 - square wave 77
- Fourier transform 106, 263, 357
 - complex 121
 - of $1/(z+t)^n$ 360
 - of $\exp(-\pi x^2)$ 120
 - of a tempered distribution 383
- Function
 - absolutely integrable 104
 - absolutely integrable on $X \times Y$ 127
 - analytic 307
 - Bessel 213
 - convex 66
 - entire 321
 - equicontinuous 304
 - flat 85
 - Gamma 108
 - harmonic 348
 - holomorphic 307
 - indefinitely differentiable with rapid decrease 375
 - integrable (Lebesgue) 184
 - integrable (Riemann) 5
 - lower semicontinuous 46
 - meromorphic 315
 - of compact support 133
 - of slow increase 291
 - rational 95
 - regulated 26
 - special 75
 - step 1
 - tempered 291
 - translated 32
 - upper semicontinuous 48
- Gamma function
 - analytic continuation 123
 - as a limit 111
 - complement formula 245
 - definition 108
 - derivative 122
 - infinite product 244, 337
 - multiplication formula 128
- l'Hôpital's rule 87
- Inequality
 - Cauchy-Schwarz 10
 - Hölder 13, 71
 - Minkowski 13, 71
- Infinite product
 - for the Γ function 244
 - of holomorphic functions 332
- Integral 2
 - absolutely convergent 104
 - convergent 102

- double 39, 148
- iterated 37
- lower 4
- of a step function 2
- upper 4
- Lagrange remainder 85
- Laplace
 - operator 348
 - transform 121
- Locally compact 115
- Mean value 35, 257
- Measure
 - bounded 152
 - discrete 4
 - invariant 260
 - Lebesgue 144, 147
 - of an open set 50
 - of density $\mu(x)$ 147
 - of finite total mass 152
 - on unit circle 259
 - positive 145
 - product 150
 - Radon 145, 152
 - Stieltjes 157
- Negligible
 - function 183
 - set 182
- Norm
 - L^1, L^2, L^p 13
- Norm of a measure 146
- Orthogonal (functions) 13
- Orthogonality relations 259
- Partition of unity 150
- Periodic function 255
 - mean value 257
- Philtre
 - decreasing 42
 - increasing 42
- Poisson
 - summation formula 358
 - transform 340
- Poles 314
- Primitive
 - of $1/(x-a)$ 97
 - of a distribution 292
 - of a holomorphic function 316
 - of a rational function 95
 - of a regulated function 59
- Principal part of order s 199
- Product
 - convolution 134, 266
 - scalar 12
- Product of measures 150
- Regularising 134
- Residue 317
- Schwartz space
 - $\mathcal{D}(\mathbb{R})$ 134
 - $\mathcal{D}(\mathbb{T})$ 283
 - $\mathcal{S}(\mathbb{R})$ 375
- Schwarz' lemma 312
- Series
 - asymptotic 219
 - complex Fourier 320
 - Fourier 263
 - hypergeometric 204
 - Laurent 314
 - Newton's 87
 - power series for $\cot z$ 233
 - power series of a harmonic function 348
 - rational fractions for $\cot z$ 299
 - trigonometric 265
- Set
 - convex 66
 - integrable 191
 - measurable 192
 - negligible 182
 - of measure zero 182
- Singular point
 - essential 314
 - isolated 314
- Sturm-Liouville (equations) 326
- Subdivision 2
- Successive approximations 216, 328
- Sums
 - Lebesgue 145
 - Riemann 14
- Theorem
 - Borel-Lebesgue 27
 - Cauchy 309
 - d'Alembert-Gauss 321
 - Dini 41
 - Dirichlet 298
 - Fejér 302
 - Fundamental (FT) 54
 - Heine 32
 - Lebesgue's dominated convergence 190
 - Lebesgue-Fubini 124
 - Liouville 320, 321

- Mean value 62
- Parseval-Bessel 280
- Riesz-Fischer 187
- Transform
- Poisson 340
- Translation invariance 14
- Truncated expansion of order s 199
- Uniform continuity 32
- Weierstrass' theorems
 - Fourier series 274
 - infinite products 332
 - limits of holomorphic functions 331
 - limits of polynomials 136

Analysis II

Differential and Integral Calculus, Fourier Series,
Holomorphic Functions

Godement, R.

2005, VII, 448 p. 20 illus., Softcover

ISBN: 978-3-540-20921-8