
General Index

- abscissa of convergence, 94
- addition formula, 37
- almost holomorphic modular form, 132, 271
- antiderivative, 398
- automorphy factor, 5

- basis
 - Miller, 364
- Bernoulli number, 91
 - χ , 92
- beta function, 94
- Borcherds, R., 10
- Brumer, A., 12
- Burnside curve, 65

- Cayley transform, 130
- character
 - conductor, 98
 - Dirichlet, 47, 97
 - equivalent, 98
 - even, 98
 - Hecke, 9, 34, 56
 - odd, 98
 - primitive, 98
 - quadratic, 99
 - real, 99
 - trivial, 97
- χ -Bernoulli number, 92
- class number, 657
 - Hurwitz, 104
- CM form, 9
- cocycle, 6
 - cocycle relation for j , 6
- codifferent, 656
- coefficient
 - Fourier, 75
- cofinite Fuchsian group, 125
- commensurable subgroup, 126
- compact Lie group, 36
- complex multiplication form, 9
- conductor of a character, 98
- congruence subgroup, xii, 126
- conjecture
 - Ramanujan–Petersson, 315
 - Sato–Tate, 323
 - Shimura–Taniyama–Weil, 36
- convergence
 - normal, 72
- covolume, 3, 52
- critical value, 401
- curve
 - elliptic, 36
- cuspidal form, 5, 175
 - holomorphic, 5

- Dedekind eta-function, 10, 33, 190
- Dedekind sum, 191
- Dedekind zeta function, 662
- delta function, 38
- depth of a form, 132
- different, 656
- Dirichlet L -function, 101
- Dirichlet character, 47, 97
- Dirichlet series, 94
- discontinuous action, 121

- discriminant
 fundamental, 100
dominated convergence theorem, 72
dominating series, 72
dual lattice, 52
- EBV, 386
- Eichler cohomology, 406
- Eichler–Selberg trace formula, 379
- Eichler–Shimura isomorphism, 408
- eigenform, 361
- Eisenstein series, 22, 146
 nonholomorphic, 294
- elliptic curve, 8, 36
- elliptic function, 8, 17
 order, 19
- elliptic variable, 34
- entire and bounded in vertical strips, 386
- eta quotient, 192
- eta-function, 10, 33, 190
- Euler product, 94, 370
- Euler’s constant, 94
- Euler’s phi function, 97
- even character, 98
- even lattice, 53
- expansion
 Fourier, 4
- form
 cusp, 175
 Jacobi, 35
 Maass, 4
 modular, 132, 175
 quasi-modular, 132
- formula
 Stirling’s, 94
- Fourier coefficient, 75
- Fourier expansion, 4
- Fourier series, 75
- Fourier transform, 76
- Fuchsian group, 3, 125
- Fuchsian group of the first kind, 125
- function
 beta, 94
 Dedekind eta, 10
 delta, 38
 elliptic, 17
 gamma, 93
 j , 38
 modular, 132, 175
 quasi-elliptic, 27
 theta, 9, 33, 39
 functional equation, 370
 fundamental discriminant, 100
 fundamental domain
 for a lattice, 18
 of $\bar{\Gamma}$, 117
 gamma factor, 73
 gamma function, 93
 Gauss sum, 41, 48, 99
 Gram matrix, 52
 Grössencharakter, 9, 56
 group
 Fuchsian, 3
 modular, 116
 paramodular, 12
 Haar measure, 93
 heat equation, 47
 Hecke character, 9, 34, 56
 Hecke operator, 13
 Hecke triangle group, 126
 Hecke’s trick, 329
 Hecke–Eisenstein series, 661
 Hilbert modular form, 658
 Hilbert modular group, 656
 Hilbert symbol, 40
 holomorphic Jacobi form, 613
 holomorphic modular function, 5
 Hurwitz class number, 104
 Hurwitz zeta function, 110
 hyperbolic Laplacian, 4, 166
 hyperbolic triangle, 121
- ideal class group, 657
- identity
 Rankin, 326
 Salié, 317
 Selberg, 319
- j -function, 38
- Jacobi form, 35, 613
- Jacobi triple product identity, 10, 31
- J -Bessel function, 81
- K -Bessel function, 85
- kernel of a linear form, 272
- Kloosterman sum, 283
- Koecher principle, 658
- Kramer, K., 12
- Kronecker–Jacobi symbol, 99
- L -function, 101

- lacunary series, 34, 60
 Laplacian, 4
 hyperbolic, 166
 lattice, 18, 52
 covolume, 52
 determinant, 52
 discriminant form, 52
 dual, 52
 even, 53
 gram matrix, 52
 integral, 52
 period, 18
 unimodular, 53
 Legendre symbol, 99
 Liouville's theorem, 22
 Lipschitz summation formula, 105
 local factor, 372
 local uniformizer, 123

 Maass cusp form, 629
 Maass form, 4, 628
 singular, 628
 weak, 628
 Maass waveform, 629
 majorant, 72
 Manin's rationality theorem, 381, 426
 Mellin
 inversion formula, 80
 transform, 80
 metaplectic cover, 7
 Miller basis, 364
 modular
 weak, 34, 132
 modular form, 132, 175
 almost holomorphic, 132, 271
 holomorphic, 5
 weakly holomorphic, 5
 modular function, 132, 175
 weakly, 5
 modular group, 116
 modular parametrization, 36
 modular symbol, 379
 modular variable, 34
 moment of Kloosterman sums, 319
 multiplier system, 6, 132
 of theta, 42

 Nahm's conjecture, 11
 Nahm, W., 11
 non-Euclidean geometry, 127
 noncongruence subgroup, 126
 nonholomorphic Eisenstein series, 294

 normal convergence, 72
 normalized eigenform, 361

 odd character, 98
 order of an elliptic function, 19
 orthogonality
 of characters, 98

 \wp -function, 20
 addition formula, 37
 parallel weight, 658
 paramodular group, 12
 parity of Hecke eigenvalues, 430
 Parseval–Bessel formula, 75
 partition function, 638
 period
 elliptic function, 17
 modular form, 414
 period polynomial, 401
 Petersson scalar product, 270
 Petersson trace formula, 286, 367
 phi function, 97
 Picard theorem, 189
 piecewise C^1 , 75
 Poincaré series, 8
 Poincaré upper half-plane, 3
 Poisson summation formula, 9, 39, 76,
 95
 multidimensional, 53
 polynomially bounded, 130
 primitive character, 98

 quadratic character, 99
 quadratic Gauss sum, 101
 quadratic reciprocity law, 100
 quasi-elliptic function, 27, 28
 quasi-modular form, 132
 quasi-modular function, 13
 quasi-period, 28
 quintuple-product identity, 68

 Ramanujan's τ -function, 64, 314
 Ramanujan–Petersson conjecture, 315
 Rankin's bound, 438
 Rankin's identity, 326
 Rankin–Cohen operators, 13, 161
 ray class group, 56
 real character, 99
 reciprocity law
 quadratic, 100
 Riemann surface, 176
 Riemann zeta function, 94
 Rogers–Ramanujan identities, 11, 16

- root number, 48
- Salié sum, 338
- Salié's identity, 317
- Sato–Tate conjecture, 323
- scalar product
 - Petersson, 270
- scattering determinant, 642
- scattering matrix, 642
- Selberg's identity, 319
- series
 - Dirichlet, 94
 - Eisenstein, 22, 146
 - Poincaré, 8
- Shimura correspondence, 104
- Shimura, G., 38
- Shimura–Taniyama–Weil conjecture, 36
- σ -function
 - Weierstrass, 30
- sign of the quadratic Gauss sum, 101
- singular Maass form, 628
- skew-holomorphic Jacobi form, 613
- slash operator, 131
- space
 - symmetric, 3
- special value
 - L -function, 102
 - ζ -function, 95
- spectral decomposition, 643
- spherical polynomial, 33, 54
- stationary phase, 84
- steepest descent, 87
- Stirling's formula, 94
- Sturm bound, 185
- subgroup
 - commensurable, 126
 - congruence, 126
 - noncongruence, 126
- sum
 - Dedekind, 191
 - Gauss, 99
 - Kloosterman, 283
- summation formula
 - Lipschitz, 105
 - Poisson, 39, 76, 95
- symbol
 - Kronecker–Jacobi, 99
 - Legendre, 99
- symmetric space, 3
- symmetric square, 376, 435
- Taniyama, T., 38
- tau function, 64
- tessellation, 120
- the Jacobi group, 612
- theta function, 9, 31, 33, 39
- theta multiplier system, 42
- Thetanullwerte, 44
- totally positive element, 656
- trace formula, 64, 379
 - Petersson, 286, 367
- transform
 - Mellin, 80
- triangle group
 - Hecke, 126
- triple product identity, 10, 31
- trivial character, 97
- twist of a modular function, 13
- unfolding, 433
- unimodular lattice, 53
- upper half-plane, 3
- Watson's quintuple-product identity, 68
- weak Maass form, 628
- weakly holomorphic modular form, 5
- weakly modular, 34, 132
 - function, 5
- Weierstrass σ -function, 30
- Weierstrass \wp -function, 20
- Weierstrass ζ -function, 28
- weight, 34
 - of a modular function, 5
- Weil bound, 315
- Weil representation, 9
- Weil, A., 38
- Weyl's law, 644
- Wiles's theorem, 36
- Wiles, A., 12, 38
- Zagier, D., 12, 69
- zeta function
 - Hurwitz, 110
 - Riemann, 94
- ζ -function
 - Weierstrass, 28