

Index

- A-order, 275
- abc-conjecture, 90
 - number field version, 92
- abc-theorem for function fields, 174
- absolute value, 12
 - archimedean, 13
 - continuation, 14
 - equivalence, 13
 - extension, 14
 - non-archimedean, 13
 - trivial, 12
- additive unit representation, 287
- algebraic coset, 321
- algebraic function field, 30
- algebraic subgroup, 321
- bad reduction, of rational self-map, 296
- Baker's method, 98
- Baker's type inequalities, 97
- binary form, 231
- canonical number system, 310
- characteristic polynomial, 3
- class group, 10
- class number, 10, 11
- CM-field, 121
- CNS basis, 310
- CNS order, 310
- completion, 13
- complex place, 15
- cycle, 291
- cycle, polynomial, 292
- decomposable form, 231
- decomposable form equation, 232, 263, 272, 286
- decomposable form inequality, 278, 282
- decomposable form of discriminant type, 275
- decomposable form, triangularly connected, 263
- decomposable polynomial, 282
- decomposable polynomial equations, 282
- Dedekind domain, 6
- derivative
 - of algebraic function, 36
- difference graph, 301
- differential, 35
 - holomorphic, 36
- discrete valuation, 7, 13
- discriminant
 - of basis, 4
 - of number field, 10, 11
- discriminant equation, 305
- discriminant form, 268, 276
- discriminant form equation, 233, 263, 268, 272
- division group, 324
- effective specialization, 198
- effectively computable algebraic number, 23
- effectively computable fractional ideal, 24
- effectively given algebraic number, 23
- effectively given fractional ideal, 24
- effectively given number field, 23
- elliptic equation, 273
- equivalence
 - of binary forms, 311
- equivalent
 - of algebraic integers, 306
 - of monic polynomials, 306
- Euclidean norm, 123
- exceptional units, 121
- explicitly presented field, 37, 175

- exponential-polynomial equations, 326
 Extension Formula, 33
- family of solutions of decomposable form equation, 248
 Fermat's Last Theorem, 91
 field of p -adic numbers, 26
 field with absolute value, 13
 complete, 13
 completion, 13
 Fincke–Pohst algorithm, 117, 118
 finite étale K -algebra, 246
 finite place
 of \mathbb{Q} , 14
 of number field, 15
 fractional ideal, 5
 absolute norm, 9
 extension, 7
 generated by \mathcal{S} , 5
 greatest common divisor, 6
 inverse, 6
 lowest common multiple, 6
 product, 6
 relative norm, 8
 fundamental system of S -units, 18
- $\text{Gal}(G/K)$ -proper, 234
 $\text{Gal}(G/K)$ -stable, 234
 Galois symmetric S -unit vector, 251
 generalized Fermat equation together, 91
 genus, 36, 173
 $\text{GL}(2, A)$ -equivalence, 317
 good reduction, of rational self-map, 296
 Gram–Schmidt orthogonalization process, 123
 group of S -units, 17
- height
 S -height, 44, 130
 absolute logarithmic, 19
 absolute multiplicative, 19
 homogeneous of polynomial over function field, 35
 homogeneous of vector over function field, 33
 logarithmic of finite set S , 201
 logarithmic of matrix, 201
 logarithmic of vector, 21
 multiplicative homogeneous of vector, 21
 multiplicative of vector, 21
 of algebraic function, 34
 of polynomial, 22
 twisted, 46
 hyperelliptic equation, 273
- ideal membership algorithm, 199, 204
 index form, 276
 index form equation, 268, 272
 infinite place
 of \mathbb{Q} , 14
 of number field, 15
 infinite valuation function field, 33
 inner product on, 123
 irreducible family of solutions of decomposable form equation, 255
- KANT, 119, 123
 k -nomial, 298
 k -proportional solutions, 180
- Lang's Conjecture, 322, 323
 Lang–Bogomolov Conjecture, 325
 lattice
 full in real vector space, 68
 in real vector space, 68
 lattice, full in real vector space, 10
 Laurent series, 31
 length, of cycle, 291
 linear forms in logarithms, 52
 linear recurrence sequence, 326
 companion polynomial, 326
 non-degenerate, 327
 order, 326
 zero-multiplicity, 327
 LLL-reduced basis, 104, 110, 123
 LLL-reduction algorithm, 103, 124, 125
 local parameter, 31
 local ring of discrete valuation, 30
- MAGMA, 119
 Mahler measure, 21
 minimal polynomial over \mathbb{Z} , 20
 MINIMIZE, 117
 Minkowski's Theorem on successive minima, 68
 monic minimal polynomial, 3
 monogenic number field, 309
 monogenic order, 309
 monogenic, k times, 309
 Mordell's Conjecture, 322, 323
 Mordell's equation, 273
 Mordell–Weil Theorem, 322

- Noetherian module, 238
 Noetherian ring, 238
 non-degenerate solution, 180
 non-degenerate solutions, 128
 norm
 absolute, of fractional ideal, 9
 of algebraic number, 4
 on real vector space, 68
 relative, of fractional ideal, 8
 relative, of prime ideal, 8
 unit ball, 68
 v -adic of polynomial, 22
 v -adic of vector, 21
 norm form, 244
 norm form equation, 233, 244, 250, 263, 267
 normal closure, 3
- orbit, 291
 orbit, finite, 291
 orbit, finite polynomial, 292
 order, in number field, 308
 order, monogenic, 309
- p -adic exponential, 28
 p -adic logarithm, 27
 p -adic numbers, 14
 pair of representatives, 199
 periodic point, 291
 place lying above, 16
 place lying below, 16
 power integral basis, 268, 308
 preperiodic point, 291
 prime ideal
 of ring of integers, 6
 Product Formula, 14, 15
 Puiseux expansions, 31
- radical, 89
 ramification index, 8, 31
 ramification index of local field, 26
 Ramsey theory, 288
 real place, 15
 regulator, 11
 representation of algebraic function, 37
 representation of algebraic function, 175
 representative, 199
 residue class degree, 8
 resultant, 315, 317
 resultant equation, 280, 315
 ring of p -adic integers, 26
- ring of S -integer, 17
 Roth's Theorem, 42, 91
- S -integer, 17
 S -norm, 17
 S -regulator, 18
 Σ -symmetric partition, 251
 S -units, 17
 S -regulator, 18
 fundamental system, 18
 S -unit of function field, 173
 self-map, 291
 semi-abelian variety, 322
 Skolem, Mahler–Lech theorem, 327
 specialization, 140, 218
 splitting field, 3
 Subspace Theorem, 43, 245
 p -adic, 44, 249
 parametric, 45, 46
 quantitative, 45, 252, 279, 329
 successive minimum, 68
 Sum Formula, 31
 superelliptic equation, 273
- Thue equation, 232, 250, 258
 Thue–Mahler equation, 232, 249, 277
 trace, 4
 triangle graph, 302
- ultrametric inequality, 13
 Uniform Boundedness Conjecture, 297
 unit equations, 61, 232
 homogeneous, 61
 units, 10
 exceptional, 121
 fundamental system, 11
 regulator, 11
 unit group of ring of integers, 10
 unit rank, 11
- valuation, 13
 discrete, 7, 13
 value group, 13
 valuation on function field, 30, 173
 explicitly given, 38, 175
 Vandermonde's identity, 4
- Weak Nullstellensatz, 140
 wide family of solutions of decomposable
 form equation, 246