
Index

- Abelian integrals, 271
- Abel's theorem, 265, 272
- absolutely convergent continued fractions, 131, 234
- algebraic function, 272
- algebraic irrationals, 95
- algebraic numbers, 95
- algebraically conjugate element, 76
- algorithm of regular fractions, 17
- aliquot fractions, 5
- angle trisection, 268
- ascending continued fractions, 3, 66
- associated fractions, 252
- asymptotic expansion, 143

- Bary's theorem, 355
- Bauer–Muir transforms, 230
- Bauer–Muir–Perron theory, 229
- Beatty sequence, 38
- Beatty's theorem, 70
- Bernoulli numbers, 149
- beta function, 173
- Blaschke product, 329
- Bombelli's method, 3, 146
- Brouncker's continued fraction, 134
- Brouncker's functional equation, 144
- Brouncker's orthogonal polynomials, 316
- Brouncker's program, 145
- Budan's theorem, 303

- calendar problem, 5
- cardioid, 174
- Carleman's criterion, 314
- cattle problem, 88
- Cauchy index, 309
- ceiling sequence, 41
- Cesàro–Nevai measure, 385
- Cesàro sequence, 385
- Chebyshev–Markoff theorem, 253, 254

- Chebyshev polynomials, 315
- Chebyshev polynomials of the second kind, 315
- Chebyshev rational functions, 308
- Chebyshev's example, 268
- complementary error function, 198
- complex Markoff test, 285
- conjugate Markoff sequence, 45
- consonant notes, 7
- constructible field, 268
- continuant, 17
- continued fraction, 11
 - and sums, 162
- convergence, 123
- convergent continued fraction, 123
- convergents, 5, 12, 253
- convex sequence, 147
- correspondence, 36
- cube duplication, 268

- D. Bernoulli's inverse problem, 158
- degree of algebraic number, 96
- Descartes' theorem, 303
- determinant identity, 328
- discriminants, 95
- dissonant, 7

- equilibrium measure, 396
- equivalence transform, 127
- equivalent continued fractions, 127
- equivalent irrationals, 92, 95
- Erdős measures, 356
- error function, 198
- Euclidean algorithm, 1
- Euclidean domain, 248
- Euclidean rings, 247
- Euler continued fraction, 160
- Euler–Mascheroni constant, 151
- Euler–Mindingen formulas, 15

- Euler numbers, 192
 Euler–Wallis formulas, 12
 Euler's algorithm, 71, 72
 Euler's algorithm for square surds, 259
 Euler's form of Wallis' product, 169
 Euler's gamma function, 146
 Euler's multiplicative function, 120
 Euler's quadrature formulas, 163
 Euler's substitutions, 258
 even part of a continued fraction, 240
 evolution equation, 180
 exposed point, 360
 extreme point, 353
- Farey's sequences, 28
 Fatou's theorem, 324
 Favard's theorem, 344
 Fermat's question, 84
 first Markoff period, 55
 floor function, 17
 Ford circles, 33
 formal Laurent series, 249
C-fractions, 252
P-fractions, 248
 fundamental inequalities, 237
- Galois dual function, 410
 Galois' theorem, 83
 Gauss's continued fractions for ${}_2F_1$, 281
 Gaussian distribution, 288
 Gaussian quadrature, 299
 general continued fractions, 130
 Geronimus continued fraction, 332
 Geronimus' theorems, 335
 golden ratio, 18
 Gram–Schmidt algorithm, 336
 Green's function, 397
 Gregorian calendar, 5
- Hölder class, 388
 Hamburger moment problem, 292
 Hankel matrix, 256
 Hardy spaces, 326
 Helly's theorems, 325
 Herglotz theorem, 323
 Hermite polynomials, 315
 Hermite–Stieltjes formula, 194
 Hippasus of Metapontum, 2
 Holland's theorem, 380
 Huygens approximation, 21
 Huygens' method, 4
 Huygens' theorem, 252
 Huygens' theory of real numbers, 19
- hypergeometric function ${}_0F_1$, 278
 hypergeometric function ${}_1F_1$, 279
- integer part, 17
 integrable by quadrature equation, 207
 integration in finite terms, 270
 intermediate convergents, 24
 irrationality of π , 238
 irreducible polynomial, 96
- Jacobi formulas, 256
 Jacobi matrix, 317
 Jacobi's theorem, 256
 Jean Bernoulli algorithm, 38
 Jean Bernoulli period, 55
 Jean Bernoulli sequences, 36, 38
 Jean Bernoulli's theorem, 37
 Jensen's inequality, 423
- Khinchin–Ostrovskii theorem, 326
 Kiepert's curve, 175
 Koch and Seidel theorems, 125
 Kronecker's theorem, 257
- López condition, 391
 Lagrange approximation, 22
 Lagrange spectrum, 101, 102
 Lagrange's identity, 67
 Lagrange's theorem, 81
 Lagrange's theory, 22
 Laguerre polynomials, 320
 Laguerre's theorem, 284
 Lambert's theorem, 239
 Laurent series, 247
 Lebesgue derivative, 324
 Legendre polynomials, 301
 Legendre's theorem, 31, 239
 Leibnitz' series, 193
 lemniscate identity, 173
 lemniscate of Bernoulli, 173, 174
 Liouville's theorem, 272
 logarithmic capacity, 396
 logarithmic concave sequence, 308
 logarithmic convex function, 148
- Möbius transformation, 92
 Markoff conditions, 44
 Markoff sequence, 45, 49
 derivatives of, 53
 integrals of, 53
 Markoff series, 45
 Markoff's algorithm, 41
 oscillating, 58

- Markoff's periods, 55
 Markoff's theory, 98
 Máté–Nevai condition, 366
 T -matrix, 378
 mean value, 37
 mediant, 29
 Metius' approximation, 10
 minimal polynomial, 96
 modified Euler continued fraction, 233
 moment of inertia, 173
 monic polynomial, 257
- Nevai's class, 371
 Nevai's theorems, 373
 Newman–Schlömilch formula, 151
 Newton–Cotes formulas, 298
 nonextreme points, 353
 nonprincipal convergents, 23
 normal family, 285
 normal pair, 30
- octave, 7
 odd part of a continued fraction, 240
 orthogonal matrices, 296
 orthogonal polynomials, 310
 in $L^2(d\sigma)$, 338
 oscillating Markoff sequence, 46
 outer function, 352
- Padé approximants, 255
 Padé pair, 255
 Padé problem, 255
 parabola theorem, 240, 243
 paradox of quadratic equations, 124
 paradox of Sofronov, 123
 parameterization of \mathbb{R} , 34
 partial denominators, 12
 partial numerators, 12
 partial sums, 158
 Pell's equation, 84
 perfect fifth, 7
 periodic continued fraction, 71
 periodic Jean Bernoulli sequences, 36
 periodic measures, 405
 Pochhammer symbol, 275
 Poincaré metric, 354
 pre-compact family, 285
 Pringsheim's test, 238
 Pringsheim's theorem, 238
 pseudo-hyperbolic distance, 354
 pure periodic continued fraction, 71
 Pythagorean triples, 137
- quadratic irrationals, 258
 quadratic surds, 76
 quadratic theory, 30
 quadrature problem, 9
 quadrature formulas, 298
- racing algorithm, 50
 Rakhmanov measures, 364
 Rakhmanov's theorem, 358
 Ramanujan's formula, 152, 153
 ratio-asymptotic measure, 390
 rational compact, 417
 reduced quadratic irrational, 81
 regular continued fraction, 2
 regular Jean Bernoulli sequence, 48
 Riccati's equation, 202, 206
 Riccati's generalized equation, 206
 Riesz product, 381
- Schur functions, 327
 Schur parameters, 327
 Schur's algorithm, 327
 Schur's theorem, 331
 Scott–Wall inequalities, 240
 second Markoff period, 55
 separable polynomial, 268
 Serret's theorem, 95
 singular function, 380
 sinnlos continued fraction, 130
 sinusoidal spiral, 174
 Smirnov's theorem, 326
 Stieltjes continued fraction, 194
 Stieltjes moment problem, 292
 Stieltjes' theory, 285
 Stirling's formula, 148
 Stolz's theorem, 68, 229
 Sturm's series, 305
 Sturm's theorem, 304
 Szegő function, 352
 Szegő measure, 346
 Szegő's entropy theorem, 347
- three-term recurrence, 340
 Totik's theorem, 378
 transcendental numbers, 101
 triangle sequences, 46
- unconditionally convergent continued fractions, 130
 universal measures, 386
- Vahlen's theorem, 31
 Van Vleck's theorem, 286

Cambridge University Press

978-0-521-85419-1 - Orthogonal Polynomials and Continued Fractions: From Euler's Point of View

Sergey Khrushchev

Index

[More information](#)

478

Index

Verblunsky parameters, 344
Viète's formula, 131
Vincent's theorem, 307

Wall continued fraction, 327
Wall pair, 403
Wall polynomials, 328
Wallis' formula, 132
Wallis' hypergeometric
function, 275

Wallis' product, 131
Watson's lemma, 150
*-weak topology, 322
Weber–Fechner law, 7
well-tempered clavier, 7
witch of Agnesi, 136
Worpitsky's test, 237
Wronskian, 320

Zygmund class, 388