

Index

Abel, Niels Henrik, 4, 119, 120, 131, 132, 182–184, 186, 188, 216, 240, 242, 244, 255–258, 260–267, 269, 271, 272, 279, 288, 297, 301, 309, 315, 341, 345	<i>Astronomische Nachrichten</i> , 276
Abel mean, 182	Atkin, A. O. L., 41, 42, 59
Abhyankar, Shreeram, 160	Babbage, Charles, 160
absolutely convergent Fourier series, 192, 208, 209	Bäcklund, R. J., 350, 351, 353
<i>Acta Eruditorum</i> , 8	Baernstein, Albert, 385, 386
Adams, John Couch, 36	Bailey, W. N., 90
addition formula for elliptic functions, 242, 243, 257, 282, 317	Baker, Alan, 330, 339
addition formula for elliptic integrals, 217	Baker, H. F., 58
Ahlfors, Lars, 347, 368, 386	Banach, Stefan, 208
Ahlgren, Scott, 42	Banach algebras, 192, 208, 209
Alder, H. L., 38, 39	Barnes, E. W., 58
Alexander, J. W., 367, 385	Bartels, Johann, 240, 241
algebraically independent numbers, 329, 339	Baxter, R. J., 66
Almkvist, Gert, 254	Bazilevich, I. E., 369
Altmann, Simon, 32	Bell, Eric Temple, 154
<i>Analyse algébrique</i> , 210	Berggren, Lennart, 254
analytic continuation, 186, 239	Berndt, Bruce, 31, 254
analytical engine, 160	Bernoulli, Daniel, 217, 319, 320
Andrews, George, 12, 32, 41, 45, 51, 59, 60, 90	Bernoulli, Jakob, 4, 7, 8, 30, 213, 214, 219, 220, 223
Appell, Paul, 344	Bernoulli, Johann, 34, 213, 214, 216, 217
Arbogast, Louis, 72	Bernoulli numbers, 210
area inequalities, 367, 372	Bers, Lipman, 386
arithmetic-geometric mean, 231, 236, 237, 239, 240, 249, 250, 254, 255	Bertrand, Joseph, 124, 133, 137, 148
Arnold, Vladimir, 187	Bertrand’s conjecture, 124, 125, 133, 136, 147, 148
Aronhold, Siegfried, 155, 157	Bessel, F. Wilhelm, 124, 239, 326, 327, 329
<i>Ars Conjectandi</i> , 8	beta integral, 2, 63, 220, 399
Artin, Emil, 390, 421	Betti, Enrico, 279
Artin, M., 409	Beukers, Frits, 329
Artmann, B., 98	Bézout, Étienne, 158, 159
<i>Aryabhatyabhasya</i> , 318	Bhaskara, 108
Ashworth, Margaret, 42	Bieberbach, Ludwig, 363, 366, 367, 373, 374, 376, 379–381
Askey, Richard, 25, 68, 87, 88, 384, 385	Bieberbach conjecture, 363, 366–368, 370, 373–375, 380, 381, 384
Askey–Gasper inequality, 385	binomial coefficients, 16
	binomial theorem, 7, 24, 70, 214, 237, 240, 390, 398
	biquadratic reciprocity, 300
	Bloch, André, 346

452

Boas, Ralph, 361
 Boehle, K., 324
 Bohr, Harald, 187
 Bohr, Niels, 190
 Boilly, Julien, 256
 Bolibruch, A. A., 340
 Bollobás, Béla, 187
 Bolyai, János, 245
 Bolyai, Wolfgang, 245
 Bombieri, Enrico, 362
 Boole, George, 72, 150–153, 158, 160–164, 179
 Borchardt, Carl, 259, 303, 305
 Borel, Émile, 66, 211, 344–346, 353, 355,
 358–360, 364, 365
 Borel's theorem, 358
 Borwein, Jonathan, 254
 Borwein, Peter, 254
 Bouquet, Jean Claude, 259, 314
 Bourbaki, Nicolas, 368
 Boutroux, Pierre, 365
 Boylan, Matthew, 42
 Bradley, Robert E., 210
 Brahmagupta, 108
 de Branges, Louis, 363, 366, 368, 371, 381–384
 Bressoud, David, 38
 Bringmann, Kathrin, 45
 Brioschi, Francesco, 279
 Briot, C., 259, 314
 Brouncker, William, 108, 319
 Brownwell, W. D., 329
 Buchan, John, 44
 Buchler, Justus, 36
 Bunyakovski, Viktor, 124
 Burns, Robert, 149
 Burnside, William Snow, 58
 Byron, Lord George Gordon, 160

 Cahen, Eugène, 128, 148, 211
 Cantor, Georg, 342
 Carathéodory, Constantin, 361, 364–366, 378
 Cardano, Girolamo, 164
 Carlitz, Leonard, 389
 Cartan, Henri, 355
 Cartwright, Mary L., 187
 Casorati, Felice, 346
 Casorati–Weierstrass theorem, 346
 Catalan, Eugène, 184
 Cauchy, Augustin-Louis, 6, 7, 23, 27, 28, 31, 61,
 101, 151, 183, 210, 253, 259–261, 293–296,
 310, 313, 324, 342, 353, 366, 375, 377, 378
 Cauchy product, 184
 Cauchy's integral formula, 325, 350
 Cayley, Arthur, 9, 12, 22, 35, 50–53, 72, 150–156,
 159, 160, 164, 166–175, 177, 180, 228, 229,
 233, 254, 310, 333

Index

Cesàro, Ernesto, 184, 186, 211
 character
 additive, 400, 407, 408
 multiplicative, 400, 407, 408
 Charzynski, Z., 369
 Chebyshev, Pafnuty, 120, 124–126, 128–141, 143,
 145, 147, 149
 Chen Jing-Run, 385
 Chern, S. S., 347
 Cherry, William, 362
 Chowla, Sarvadaman, 40
 Christoffel, Elwin B., 364
 Chu, Shih-Chieh (also Zhu Shijie), 3, 25, 159
 Chudnovsky, D. V., 340
 Chudnovsky, G. V., 340
 Clausen, Thomas, 385
 Clebsch, R. Alfred, 157
 Clunie, J., 362
 complex multiplication of elliptic functions, 239, 242,
 243, 257, 271, 315, 325
Comptes Rendus, 67, 139, 320
 Condorcet, Marie-Jean, 222
 continued fractions
 periodic, 396
 Rogers–Ramanujan, 59, 69
 series, 4
 Cooper, Shaun, 31
 Corry, Leo, 180
 covariant, 154–157, 166–168, 178, 180
 Cox, David, 254
 Cramer, Gabriel, 269
 Crelle, August Leopold, 240, 267
Crelle's Journal, 7, 24, 114, 228, 256, 259, 260, 293
 Crilly, Tony, 180
 cubic transformations of elliptic integrals, 258, 275,
 279, 281

 Darboux, Gaston, 184
 Davenport, Harold, 121, 211, 330, 385, 410–412, 415
 Dedekind, Richard, 116, 129, 176, 180, 183, 388, 389,
 398, 399, 420, 421
 Degen, Ferdinand, 256
 Deligne, Pierre, 42, 390, 409, 421
 Delone, B. N., 149
 Descartes, René, 341, 343
 Descartes's rule of signs, 343
 Dieudonné, Jean, 368
 difference equations, 86, 87
 differential equations, 167, 256, 382
 algebraic, 178
 linear, 326, 329
 digamma function, 339
 Diophantine approximation, 347
 Diophantine equations, 157, 217, 219, 222, 254, 362

- Dirichlet, Peter Lejeune, 24, 61, 91, 94–99, 103–116,
 126, 140, 144, 145, 157, 183, 185–188, 195, 196,
 201, 259, 296, 301, 364, 389, 403, 421
- Dirichlet L -function, 110, 121
 functional equation, 99
- Dirichlet L -series, 91, 94, 95, 107, 108, 114, 291
 class number, 116
 complex variable, 108, 116
 infinite product, 103
- Dirichlet's divisor theorem, 201
- Dirichlet–Jordan theorem, 196
- Dirksen, Enno, 61
- Disquisitiones Arithmeticae*, 5, 98, 103–105, 107,
 113, 115, 116, 157, 234, 257, 273, 299, 388,
 391, 392
- divergent series, 181–183
 asymptotic, 182
- Dixon, A. L., 64, 67
- Doyle, Arthur Conan, 44
- Dunnington, Guy Waldo, 254
- Dupré, Athanase, 107
- Duren, Peter, 378, 386
- Durfee, William, 36, 47, 49, 50
- Dwork, Bernard, 409
- Dyson, Freeman J., 41
- Edwards, Harold, 147, 149
- Einstein, Albert, 190
- Eisenstein, F. Gotthold, 7, 24, 25, 61, 98, 99,
 157, 160, 260, 296–299, 301–303, 400,
 403–406, 408
- Eisenstein's criterion, 303
- elimination theory, 158–160
- Elliott, Edwin B., 177, 180
- elliptic functions, 4, 31, 72, 213, 228, 239, 240,
 242, 254–256, 259, 260, 267, 273, 281,
 287, 291, 297, 303, 305, 420
 addition formula, 257, 262
 infinite product, 265, 288
- elliptic hypergeometric functions, 64
- elliptic integrals
 addition formula, 219
 complete, 273
 Landen's transformation, 230
- Ellis, David, 121
- Ellis, Robert, 121
- Emelyanov, E. G., 371
- Encke, J. F., 122–124
- entire functions, 128, 129, 243, 344–346, 349, 355
 finite order, 128, 186, 346, 358
 infinite product, 343
 Picard's theorem, 186
 transcendental numbers, 326
 zeta function, 344
- Erdős, Paul, 59, 129, 137, 148, 185
- Eudoxus, 318
- Euler, Leonhard, 1–3, 7–13, 22–24, 30, 33–36, 38–40,
 45, 49–52, 54, 55, 58, 61, 63, 71, 72, 77, 91, 92,
 94, 95, 98–100, 102, 103, 106–110, 122, 124,
 126, 129, 132, 133, 141, 153, 158, 159, 181, 182,
 186, 201, 213, 217–222, 224–228, 240, 241, 243,
 248, 253–255, 258, 261, 264, 267, 273, 281, 291,
 293, 297, 299, 300, 318, 320, 322, 324, 341, 342,
 347, 387–392, 395
- Euler polynomials, 121
- Euler product, 91, 92
- Euler totient function, 117, 420
- Euler–Maclaurin summation formula, 182, 209,
 210, 319
- Exercices de calcul intégral*, 255
- Faber, G., 373
- Fagnano, Giulio Carlo, 213–218, 223–228, 251, 253,
 254, 257
- Farkas, Hershel M., 31, 32, 43
- Favard, J., 67
- Favard's theorem, 67
- Fejér, Lipót, 67, 68, 83, 84, 185–187, 194–197
- Fekete, M., 368
- Feldheim, Ervin, 68, 83–86
- Fermat, Pierre, 45, 60, 64, 108, 121, 157, 217, 272,
 290, 291, 293, 297, 300, 364, 387, 389–391, 397
- Fermat's little theorem, 387, 390, 391
- Feron, Eric, 158
- Ferrers, N. M., 36
- finite fields, 387
 irreducible polynomials, 388, 392, 393
- FitzGerald, C. H., 371, 381
- FitzGerald's inequality, 371
- Foata, Dominique, 32
- Fomenko, O. M., 386
- Fonctions analytiques*, 222
- Fourier, Joseph, 4, 182, 294, 347
- Fourier coefficients, 183, 188, 194, 196, 348, 349
- Fourier inversion formula, 145
- Fourier series, 196
- Fourier transforms, 98, 190, 191, 193, 204, 205,
 207, 208
 fast, 239
- Français, Jacques F., 72
- Franklin, Fabian, 36, 45, 153
- Fredholm, Ivar, 367
- Frénicle de Bessy, Bernard, 387
- Fricke, R., 31
- Frobenius, Georg, 36, 38, 67, 151, 183, 185, 186,
 194, 201, 210
- Fuchs, Lazarus, 185
- Fundamenta Nova*, 6, 101, 228, 232, 247, 254, 259,
 273, 279, 281, 292
- Fuss, P. H., 120, 213, 254, 320

- Galois, Évariste, 267, 329, 388, 389, 395–398, 407
 gamma function, 27, 61, 211, 220, 342
 gamma integral, 399
 Garabedian, P. R., 369
 Garsia, Adriano, 38
 Garvan, Frank, 41, 45, 60
 Gasper, George, 384, 385
 Gauss, Carl Friedrich, 4–8, 12–23, 25–27, 29, 30, 45, 52, 61, 62, 68, 70, 71, 75, 98, 99, 103–105, 108, 110, 113, 115, 116, 122–124, 126, 133, 143, 144, 150, 157, 183, 210, 216, 220, 226, 231–236, 238–260, 266, 267, 269, 272, 273, 275, 296, 297, 299–301, 303, 330, 339, 341, 342, 387–389, 391–397, 400, 402, 403, 407, 420, 421
 Gauss sums, 5, 15–18, 32, 68, 75, 97, 108, 120, 293–296, 420
 Gauss's summation formula, 7, 25
 Gauss's transformation of elliptic integrals, 233, 275, 276
 Gaussian polynomials, 15, 22, 168, 169
 Gautschi, Walter, 384
 Gegenbauer, Leopold, 385
 Gegenbauer polynomials, 64–66, 68, 86
 Gegenbauer–Hua formula, 385
 Gelfand, Izrail M., 153, 160, 192, 208–210, 330
 Gelfond, Aleksandr, 109, 117–119, 322–326, 329, 330
 Gelfond–Schneider theorem, 326, 330
 Germain, Sophie, 300
 Gilbert, L. P., 108
 Glaisher, J. W. L., 58
 Goldbach, Christian, 3, 11, 61, 107, 153, 217, 227, 293, 319, 320, 339, 385
 Goldberg, A. A., 362
 Goldstein, Catherine, 32
 Goluzin, G. M., 371
 Goluzin's inequality, 371
 Gong, Sheng, 386
 Gordan, Paul, 156–158, 172, 178, 337
 Gordon, Basil, 38, 59
 Goursat, G., 344
 Gouvêa, Fernando, 121
 Grace, J. H., 180
 Graham, Ronald, 121
 Grandi, Guido, 181, 183
 Gray, J. J., 254, 386
 Green, B., 121
 Green, George, 35, 351, 352, 364
 Green's formula, 352
 Green's theorem, 373
 Greenhill, Alfred G., 29
 Gregory, Duncan, 72
 Gregory, James, 319
 Gregory–Newton interpolation formula, 25
 Griffith, A., 64
 Grinshpan, A. Z., 371
 Gröbner basis, 158, 160
 Gromov, Mikhail, 329, 330
 Gronwall, Thomas H., 197, 367, 369, 372, 373, 376, 379
 Grothendieck, Alexander, 209, 390, 409
 Grunsky, Helmut, 368, 369
 Grunsky's inequality, 369, 371
 Gubler, Walter, 362
 Gudermann, Christoph, 273, 341
 Gupta, Hansraj, 40
 Hadamard, Jacques, 128, 129, 186, 188, 189, 205, 212, 344, 345, 355, 356, 358
 Hadamard product, 127
 Hadamard three circles theorem, 356
 Hadamard–Borel factorization theorem, 358
 Halphen, George-Henri, 128
 Hammond, J., 72
 Han, G.-N., 32
 Hansteen, Christoffer, 258
 Hardy, G. H., 28, 37–39, 43, 52, 58, 69, 120, 128, 129, 143, 144, 153, 186–190, 193, 196, 200–202, 211, 212, 323, 361, 385, 410, 421
 Hardy–Littlewood maximal function, 187
 Hardy–Littlewood Tauberian theorem, 191, 193, 197, 198
 Harriot, Thomas, 341
 Hasse, Helmut, 410, 411, 415
 Hathaway, Arthur, 36
 Hayman, Walter, 353, 362, 386
 Heath-Brown, Roger, 212
 Heaviside, Oliver, 190
 Hecke, Erich, 42, 260
 Heckmann, G., 329
 Heegner, Kurt, 330
 Heilbronn, Hans, 186
 Heine, Eduard, 7, 23, 27, 61–65, 70–72, 88, 90
 Heine's q -hypergeometric transformation, 62–65, 70, 72
 Herglotz, Gustav, 390, 420
 Hermite, Charles, 64, 65, 72, 73, 128, 170, 172, 180, 184, 193, 259, 279, 281, 304, 309–314, 321, 322, 326, 333–337, 339, 340, 344, 345
 Hermite polynomials, 66, 72
 Hesse, Otto, 157
 Hickerson, Dean, 45
 Hilbert, David, 67, 154, 156–158, 175–180, 197, 321–326, 337, 340, 364, 365
 Hilbert basis theorem, 157, 175, 176, 178
 Hölder, Otto, 183, 184
 Holmboe, Bernt, 258
 homogeneous functions, 161, 163
 homogeneous polynomials, 151

- Horace, 182
 Horowitz, D., 371
 Hua Loo-Keng, 385, 414
 Hurwitz, Adolf, 108, 321
 hypergeometric series, 7, 23, 62–64, 220, 239, 340
 q -extension, 61, 70
- Ihara, Y., 409
 Ingham, A. E., 190
Introductio in Analysin Infinitorum, 1, 3, 9, 103,
 107, 241, 264, 320
 invariant, 153, 154
 index, 154
 isobaric, 167
 weight, 154
 invariant theory, 22, 37, 64, 65, 72, 150, 151, 153,
 157, 159, 160, 163, 164, 166, 168, 175, 176,
 178, 180
 Ireland, Kenneth, 420
 Ismail, Mourad, 68, 88
 isobaric polynomial, 155
 Ivory, James, 231, 236–238, 254
- Jackson, Frank Hilton, 30, 31, 63, 64
 Jacobi, C. G. J., 4, 6, 7, 9, 22, 23, 25–27, 40, 49, 55,
 56, 61, 101, 157, 213, 222, 228, 232, 247, 250,
 254–256, 258–260, 273–282, 284–293, 296,
 303, 304, 309, 313, 315, 316, 345, 347–349,
 384, 400, 402, 407
 Jacobi polynomials, 384
 Jacobi sums, 420
 Jacobi's imaginary transformation, 274–276
 James, I. M., 386
 Jeans, James, 58
 Jenkins, J. A., 369
 Jensen, Johan L., 346, 347, 349, 351–353
 Jensen's formula, 346, 347, 350–352, 355
- Kac, Mark, 164, 180, 206, 207, 400
 Kalman, Dan, 180
 Kant, Immanuel, 175
 Kapranov, M. M., 153, 160, 210
 Karamata, Jovan, 193, 194, 197, 198, 202, 211, 212
 Khinchin, A. Y., 121, 322
 Kinkelin, Hermann, 108
 Klein, Esther, 59
 Klein, Felix, 208, 249, 340, 364
 Kneser, Adolf, 188
 von Koch, Niels Helge, 367
 Koebe, Paul, 364, 366, 370, 374
 Kolchin, E., 329
 Kolmogorov, A. N., 210
 Kornblum, Heinrich, 389, 390, 421
 Kovalevskaya, S., 342
 Kra, Irwin, 31, 32, 43
- Kronecker, Leopold, 160, 260, 279, 315
 Kubota, K. K., 340
 Kühne, Hermann, 389
 Kummer, Ernst, 98, 157, 296, 389, 407
 Kuzmin, Rodion, 320, 324
 Kuzmina, Galina V., 386
- Lagrange, J. L., 108, 114, 150, 151, 157, 159, 182,
 220–222, 231, 232, 237, 240, 241, 249, 250,
 255, 257, 267, 269, 270, 272, 347, 388, 391,
 392, 395, 396, 401, 402
 Lagrange resolvents, 267, 272, 401
 Lagrange's transformation of elliptic integrals, 232
 Laguerre, Edmond, 343, 344, 360
 Lambert, J. H., 292, 318, 319, 328
 Landau, Edmund, 128, 129, 186, 189, 201, 208, 323,
 324, 346, 347, 361, 365, 389
 Landen, John, 220–222, 228, 236, 254, 255, 274
 Landen's transformation of elliptic integrals, 228,
 230, 238, 275, 276
 Landis, E. M., 330
 Lanzewizky, I. L., 68, 83, 84, 86
 Laplace, Pierre-Simon, 150, 185, 261
 Laplace series, 197
 Lasker, Emanuel, 158
 Laurent, Pierre, 260
 law of quadratic reciprocity, 299
 Lebedev, N. A., 370, 371
 Lebedev–Milin inequality, 370
 Lebesgue, Henri, 364
 Lebesgue, V. A., 410
 Legendre, Adrien-Marie, 7, 34, 68, 86, 104, 106,
 107, 124, 126, 129, 130, 133, 134, 140, 143,
 219–222, 228, 230, 236, 238, 254–256, 258,
 259, 262, 273, 276–278, 281, 282, 298, 299,
 316, 318–320, 328, 392
 Legendre polynomials, 28, 68, 83, 84, 197, 256
 Lehmer, D. H., 39
 Lehner, Joseph, 41, 42
 Leibniz, G. W., 34, 181, 183
 Lemmermeyer, Franz, 420
 lemniscate, 213, 214, 216, 217, 223, 224, 226, 241,
 253, 257, 420
 division of, 214, 223–225, 239, 241, 242, 257,
 271, 272
 lemniscatic integral, 213, 214, 218, 226, 241, 249, 315
 addition formula, 225, 228
 complex multiplication, 216
 Levinson, Norman, 212
 Lie, Sophus, 1, 210
 Lindelöf, Ernst, 345, 350, 355, 361
 Lindelöf, Lorenz, 345
 Lindemann, Ferdinand, 178, 319, 321, 322, 325,
 327–329, 337
 Linnik, Yuri, 109, 117, 118, 325, 330

456

Index

- Liouville, Joseph, 208, 259, 260, 303–310, 313, 320, 321, 331, 332, 340, 357, 388, 389
 Liouville numbers, 331
Liouville's Journal, 139, 295, 395
 Lipschitz, Rudolf, 108
 Littlewood, John E., 39, 120, 121, 128, 129, 144, 153, 158, 183, 187–190, 193, 197, 199–202, 211, 212, 357, 367, 368, 371, 375–377, 385, 410
 Littlewood's Tauberian theorem, 199
 Lobachevsky, Nikolai I., 210, 240
 Löwner, Karl, 365, 366, 368, 371, 378–382
 Lototskii, A. V., 325
 Lovelace, Ada, 160
 Loxton, J. H., 339
 Lubkin, Saul, 409
- Macaulay, F. S., 158
 Maclaurin, Colin, 182
 MacMahon, Percy A., 22, 28–30, 37–39, 43, 52, 72
 Madhava–Leibniz series, 291
 Mahlburg, Karl, 43
 Mahler, Kurt, 320, 339
 Mahnke, D., 34
 Maier, W., 328
 Malebranche, Nicolas, 213
 Markov, A. A., 68, 321
 Masser, David, 339
 Mathews, G. B., 108
 Mazur, Stanislaw, 208, 209
 McCleary, John, 180
 Mécanique analytique, 150, 222
 Mehler, F. G., 74, 197
 Mehler's integral for Legendre polynomials, 197
 Meixner, J., 67
 Mellin, Hjalmar, 99, 127, 128, 145, 186, 211, 345
 Mengoli, Pietro, 319
 meromorphic functions, 256, 323, 346, 349, 351–354, 356, 359, 361, 362
 finite order, 356
 value distribution, 345
 Mersenne, Marin, 387
 Mertens, Franz, 108, 120, 125, 126, 133, 139–144, 148, 321, 399
Messenger of Mathematics, 58
Methodus Differentialis of Stirling, 220
 Milin, I. M., 368–371, 381, 382, 384
 Milin's conjecture, 381–383
 Milin's inequality, 370, 384
 Milne, Stephen, 38
 Minkowski, Hermann, 297, 365
 Mittag-Leffler, M. Gösta, 221, 222, 254, 367
 Möbius inversion, 128, 134, 388, 395, 398, 399
 Möbius, A. F., 388, 395, 399
 mock theta functions, 41, 43–45, 90
 modular equations, 41, 278, 279
- de Moivre, Abraham, 182
 Monsky, Paul, 109, 119, 120, 419
 Montel, Paul, 364
 Montmort, Pierre R. de, 3
 Mordell, Louis J., 421
 Murphy, Robert, 72
 Mustafy, A. K., 149
- Narkiewicz, W., 149
 Naudé, Phillipe, 1, 8, 33
 Nerurkar, Mahesh, 121
 Nesterenko, Yu. V., 340
 Netto, Eugen, 98
 Neumann, Carl, 185, 364
 Neumann, Franz, 61, 185
 Nevanlinna, Frithiof, 345, 346
 Nevanlinna, Rolf, 345, 346, 351–356, 358–360
 Nevanlinna's characteristic function, 346, 354, 359
 Newman, Francis, 342
 Newton, Isaac, 92, 150, 159, 181, 182, 187, 210, 222, 240, 241, 267, 343, 398
 Nilakantha, 318
 Noether, Emmy, 121, 157, 158, 160, 180
 Noether, Max, 176
 normal family, 364, 365
 normed rings, 208–210
 Nullstellensatz of Hilbert, 178, 179
 numerical integration, 239
- Ohm, Martin, 24
 Okada, Y., 323
 Olbers, Wilhelm, 5, 124
 Oleinikov, V. A., 329
 Olver, P. J., 180
 Ono, Ken, 42, 45, 60
 operational calculus, 72
 Ortiz, E. L., 32
 Osgood, Charles, 347
 Osipov, Y., 340
 Ostrowski, Alexander, 208
 Ozhigova, E. P., 254
- Paley, R. E. A. C., 367, 368, 376, 377
 Parrilo, Pablo, 158
 Parseval, Marc-Antoine, 347
 Parshall, Karen H., 180
 partitions, 2, 29, 33–39, 41, 43, 47, 58, 59, 156, 170, 187
 congruence properties, 39, 42, 54
 crank, 41, 60
 distinct parts, 38, 50, 58
 Durfee square, 47, 50
 graphical methods, 45
 rank, 41, 43, 45
 self-conjugate, 48, 49

- Pascal, Blaise, 395
 Patterson, S. J., 32
 Paule, Peter, 90
 Peirce, Benjamin, 36
 Peirce, C. S., 36, 37
 pentagonal number theorem, 9, 34, 36, 45,
 50, 51, 55, 248, 254
 permutations
 greater index, 29
 inversions, 28
 Perron, Oskar, 67
 Petrović, Mihailo, 193
 Pfaff, Johann Friedrich, 246, 388
 Phragmén, E., 367
 Picard, Émile, 193, 329, 344–346, 357, 359,
 360, 365
 Picard's theorem, 186, 345, 346, 357, 360, 365
 Pick, Georg, 185, 361, 366, 386
 Pieper, Herbert, 254
 Pitt, H. R., 193, 208
 Poincaré metric, 386
 Poincaré, Henri, 187, 193, 344, 364, 365, 386
 Poisson, S. D., 6, 98, 101, 182, 183, 185, 196, 253,
 261, 293, 351–353, 365
 Poisson integral, 183, 185
 Poisson summation formula, 98, 294
 Poisson–Jensen formula, 351, 353, 356
 Polignac, Alphonse de, 125, 126, 139, 141
 Pólya, George, 67, 185, 194, 322, 323
 Pommerenke, Christian, 369, 371, 381, 386
 van der Poorten, Alfred, 339
 prime number theorem, 123, 125, 126, 128–130,
 133, 186, 189, 190, 192, 200–202, 205, 206,
 211, 212
 primes in arithmetic progressions, 95, 103, 106, 116
 primitive root, 387
 Privalov, I. I., 322, 367
Produzioni Matematiche, 213, 217, 253
 Prym, F. Emil, 364
- q -binomial theorem, 6, 7, 20, 24, 25, 27, 28,
 61, 62, 70
 q -difference operator, 62
 q -Hermite polynomials, 66, 68, 73–75, 83
 q -hypergeometric series
 Heine's transformation, 71
 q -integral, 62, 63, 72
 q -ultraspherical polynomials, 68, 72, 80, 83, 87
 orthogonality of, 88
 quadratic forms, 6, 107, 109, 116, 150, 157, 324, 388
 class number, 107, 114
 negative determinant, 114–116
 quadratic reciprocity, 7, 299
 law, 18, 108, 298, 299, 389, 420
 quantic, 153–155, 171, 179
- Quarterly Journal of Pure and Applied Mathematics*,
 58
 quartic reciprocity law, 303
- Rademacher, Hans, 365
 Ramanujan, S., 12, 27–31, 37–45, 52–58, 60, 66, 69,
 78, 88, 90, 137, 147–149, 182, 187, 315, 421
 Ramanujan's summation formula, 28
 Ramanujan's tau function, 421
 resultant, 153, 159, 160
 Riccati difference equation, 86
 Riemann, G. Bernhard, 62, 99–102, 126–128,
 144–147, 194, 198, 260, 305, 324, 344, 345, 347,
 363, 364, 389
 Riemann hypothesis, 120, 127, 128, 147, 149, 322,
 346, 349, 390
 characteristic p , 390, 421
 Riemann mapping theorem, 363–365, 378
 Riemann surface, 43, 176, 254, 260, 364
 Riemann zeta function, 102, 344, 346, 390
 functional equation, 186, 211
 Riesz, Frigyes, 209
 Ritt, Joseph, 329
 Robertson, M. S., 368, 370
 Robertson's conjecture, 370
 Rodrigues, Olinde, 22, 28, 29, 32
 Rogers, L. J., 9, 12, 37, 38, 52, 58, 64–68, 72–82,
 87–90
 Rogers–Ramanujan identities, 12, 38, 39, 52, 66,
 68, 75, 90
 Rogers–Szegő polynomials, 74, 82
 Rolle's theorem, 325
 Rosen, Michael, 420, 421
 Rothe, H. A., 6, 24
 Rothe–Gauss theorem, 6, 7, 24, 83
 Rothschild, Bruce L., 121
 Rowe, David, 180
 Russell, Bertrand, 190
- Sandifer, C. Edward, 210
 Sarkaria, Karanbir S., 386
 Schaar, Mathias, 296
 Schappacher, Norbert, 32
 Schering, Ernst Julius, 62
 Schiffer, Max, 369, 371
 Schlesinger, Ludwig, 249
 Schmidt, Erhard, 365
 Schmidt, F. K., 389
 Schmidt, Robert, 190
 Schneider, Theodor, 322, 325, 326
 Schönemann–Eisenstein criterion, 303
 Schönemann, Theodor, 317, 389
 Schulze, J. C., 123
 Schumacher, Heinrich, 239, 240, 258, 276
 Schur, Issai, 38, 121, 125

458

Index

- Schwartz, Laurent, 353
 Schwarz, H. A., 185, 196, 316, 317, 341, 345, 361, 364–366, 386
 Schwarz's lemma, 365
 Schweins, Franz F., 6, 26, 61
 Schwermer, Joachim, 32
 Seki Takakazu, 159
 Selberg, Atle, 44, 129
 seminvariant, 155, 168, 169, 173–175, 180
 Serre, Jean-Pierre, 42, 330
 Serret, Joseph, 389
 Shah, S. M., 361
 Shidlovskii, Andrei B., 329, 339
 Shimizu, Tatsujiro, 347
 Shimura, Goro, 42, 60, 121
 Siegel, Carl Ludwig, 216, 254, 322, 324–329, 331, 339
 Simpson, Thomas, 110
 Sinai, Y., 340
 Smale, Stephen, 187
 Smale's horseshoe, 187
 Smith, David E., 149, 340
 Smith, H. J. S., 293, 296, 297, 300, 395
 Sokhotskii, I. V., 346
 Spencer, Joel H., 121
 Spiridonov, V., 64
 Stark, H. M., 330
 Steiner, Jakob, 303
 Stickelberger, L., 407–409
 Stieltjes, Thomas Joannes, 67, 68, 128, 321, 364
 Stieltjes integral, 144, 192, 203, 353
 Stillwell, John, 386
 Stirling, James, 133, 134, 182, 220, 222, 241
 Stirling's approximation, 124, 147
 Stone, Marshall, 67
 Stridsberg, E., 328
 Sturm, Charles-François, 160
 Sturmfels, Bernd, 180
 summability
 Abel, 182, 185, 186, 188, 189, 193, 197, 201, 202, 210
 Borel, 211
 Cesàro, 184, 185, 187, 193, 194, 196, 197, 200, 210
 Hölder, 184
 Lambert, 189, 190, 201, 202
 summation by parts, 119, 138, 141, 203
 sums
 Gauss, 401–403, 405, 407
 Jacobi, 401, 403, 405, 407
 Swinnerton-Dyer, Peter, 41, 59
 Sylvester, James Joseph, 12, 22, 34–37, 45, 47–53, 58, 64, 72, 125, 151, 153–157, 159, 164–166, 168, 170, 172–175, 177, 180, 321
Systematisches Lehrbuch der Arithmetik, 6
 Szegő, Gabor, 6, 67, 68, 74, 82–84, 185, 194, 368
 Szekeres, George, 59
 Takase, Masahito, 315
 Takebe Katahiro, 159
 Taniyama, Yutaka, 60
 Tannery, Paul, 344
 Tao, Terrence, 121
 Tauber, Alfred, 144, 183, 185, 186, 188, 211
 Taylor, Brook, 162, 165, 344, 345, 380
 Taylor polynomials, 185
 Taylor series, 210, 363
Théorie des nombres, 140
 theta functions, 4, 6, 43, 239, 240, 250, 251, 258, 316
 Thomae, Karl Johannes, 62, 63, 72, 90
 Thompson, J. J., 58
 Titchmarsh, Edward C., 144, 212, 361
 Toeplitz, Otto, 190
Traité des fonctions elliptiques, 255, 258
 triple product identity, 6, 13, 20–23, 27, 28, 32, 49, 54, 55, 66, 68, 77, 78, 82, 83, 88, 239, 241, 246–249, 252, 254, 259, 290
 Tschinkel, Yuri, 121
 Turán, Paul, 59, 68, 185
 unimodal polynomial, 156
 univalent functions, 363, 366–368, 370–372, 374, 376, 378, 380
 area inequalities, 372
 Bieberbach conjecture, 374
 Löwner's parametric method, 379
 Valiron, Georges, 353, 358, 361
 Vallée-Poussin, Charles de la, 108, 116, 117, 121, 128, 189, 205, 212
 value distribution theory, 345
 van der Waerden, Bartel, 121
 Vandermonde, Alexandre-T., 6, 25, 26, 267, 401, 402
 Vandermonde determinant, 326
 Vandermonde identity (Chu–Vandermonde identity), 25, 26
 q -extension, 26, 61
 Vandiver, H.S., 414
 Varadarajan, V. S., 254
 Veblen, Oswald, 367
 Vessiot, Ernest, 329
 Viète, François, 267, 281
 Vojta, Paul, 347
 von Neumann, John, 185
 Wallis, John, 2, 108
 Waring, Edward, 110, 267
 Watson, G. N., 41, 44, 216, 228, 254

Weber, Heinrich, 176, 330	Wilf, Herbert, 32
Weierstrass, Karl, 31, 98, 128, 151, 183, 185, 197, 244, 259, 260, 316, 321, 325, 327, 328, 337, 341–343, 358, 363, 364, 366, 407	Wilson, James, 87
Weierstrass approximation, 193, 196, 197	Wintner, Aurel, 67
Weil, André, 98, 149, 160, 254, 260, 331, 361, 390, 407, 409, 412–418, 421	Wolf, Christian, 181
Weil’s conjectures, 390, 409, 420, 421	Yandell, Benjamin H., 340
Weyl, Hermann, 194	Young, Alfred, 180
Wiener, Norbert, 128, 129, 190–193, 199, 200, 202–206, 208, 209, 212, 367	Zagier, Don B., 45
Wiener’s Tauberian theorem, 192, 200, 202, 203, 205, 206, 208	Zeilberger, Doron, 38
Wiles, Andrew, 364	Zelevinsky, A. V., 153, 160, 210
	Zermelo, Ernst, 364
	Zwegers, Sander P., 45
	Zygmund, Antoni, 367