

# Index

- 3-sphere, 143
- A Mathematician's Apology, 106, 191
- Adleman, Leonard, 203
- Alexander Horned Sphere, 115, 196
- Alexander, J. W., 195
- annulus, 144
- Arrow, Kenneth, 110
  
- Banach, Stefan, 161
- Barber Paradox, 24
- Bertrand's Postulate, 140
- Bertrand, Joseph, 140
- Bletchley Park, 107
- Bolyai, János, 178
- Bonaparte, Napoleon, 36
- Brouwer Fixed Point Theorem, 193
- Brouwer, L.E.J., 144
  
- Cantor, Georg, 151, 169
- catenary, 136
- Chebyshev, Parfnuty, 140
- cipher, 126
- coconut, 144
- complex plane, 113
- cone, 92, 181
- conic sections, 181
- Contact, 186
- continuous function, 41
- countable set, 169
  
- Debreu, Gerard, 110
- diagonalization argument, 66, 169
- differentiable function, 42
- Dirichlet, P. G. L., 171
- Drawer Principle, 171
  
- ellipsoid, 182
  
- enigma machine, 107
- Euclid, 154
- Euclidean geometry, 177
- Euler, Leonhard, 199, 204
  
- Fermat's Last Theorem, 36, 153, 204
- Fermat's Little Theorem, 204
- Fermat, Pierre de, 153, 204
- Four Color Theorem, 192
- fractal, 160
- Frege, Gottlob, 149
  
- Gambler's Ruin, 189
- Gauss, Carl Friedrich, 80, 153, 177, 191
- genus two surface, 144, 145
- geodesic, 177
- Germain, Marie-Sophie, 35, 153
- Goldbach's Conjecture, 154
- Grelling-Nelson paradox, 150
  
- Hairy Ball Theorem, 11, 143
- Hall, Monty, 19, 54
- Ham Sandwich Theorem, 47, 161
- Hardy, G.H., 105, 191, 200
- Hayes, Tom, 13
- heliotrope, 80
- Hilbert curve, 29, 139, 151
- Hilbert Hotel, 8, 61, 139
- Hilbert list of problems, 139, 199
- Hilbert space, 139
- Hilbert, David, 8, 139, 151
- homeomorphic, 195
- hyperbolic geometry, 178
- hyperbolic paraboloid, 182
- hyperboloid, 135
- hyperboloid of one sheet, 182
- hyperboloid of two sheets, 182

- infinite series, 200
- infinite sum, 120, 158
- integers from nothing, 111
- Intermediate Value Theorem, 157, 162
- Jordan-Schoenflies Theorem, 195
- Koch snowflake, 158
- Koch, Niels, 158
- Law of Sines, 83
- Legendre Conjecture, 154
- Legendre, Adrien-Marie, 36
- Let's Make a Deal, 19, 147
- linear equation, 181
- Lobachevsky, Nikolai, 178
- Möbius band, 144, 173
- measure, zero, 103
- Mengoli, Pietro, 199
- Mersenne prime, 154
- Millennium Prize, 199
- Monty Hall Problem, 20, 147, 165
- Nash, John, 110
- National Museum of Mathematics, 135
- non-Euclidean geometry, 178
- nowhere differentiable, 41
- orientation reversal, 75, 173
- orientation reversing path, 173
- Pólya, George, 187
- Pancake Theorem, 161
- paraboloid, 181
- parallel postulate, 177
- Peano curve, 151
- Peano, Giuseppe, 151
- Perelman, Grigori, 143
- perfect number, 37, 154
- Philadelphia, 171
- pi, digits of, 67
- Pigeonhole Principle, 69, 171
- pizza, 163
- Planck satellite, 179
- Poincaré Conjecture, 143
- Poincaré, Henri, 143
- primes
  - infinitude of, 35
- Principia Mathematica, 149
- private key, 127, 204
- prix extraordinaire, 153
- public key, 127, 204
- quadric surface, 135, 181
- quantum computer, 205
- quantum mechanics, 193
- Ramanujan, Srinivasa, 191
- random walk, 102, 188
- Real Number Hotel, 169
- Riemann Hypothesis, 119, 199
- Riemann zeta function, 199
- Riemann, Bernhard, 199
- Rivest, Ron, 203
- RSA encryption, 127, 203
- Russell's Paradox, 149, 193
- Russell, Bertrand, 24, 149
- saddle, 94, 182
- Sagan, Carl, 186
- Selvin, Steve, 147
- Shamir, Adi, 203
- Sierpinski curve, 152
- Sierpinski, Warclaw, 152
- simply connected, 196
- situs inversus, 174
- Sophie Germain prime, 154
- spherical geometry, 177
- tangent vector field, 143
- torus, 144
- trap door, 127
- Traveling Salesperson Problem, 58, 152, 167
- triangle, area of, 83
- Turing, Alan, 107
- Twin Prime Conjecture, 154
- uncountability of the reals, 64, 169
- universe, curvature of, 87, 179
- vector, 13
  - tangent, 13
  - unit, 13
- vector field, 13
- Vehicle Routing Problem, 167
- von Neumann, John, 110, 193
- vos Savant, Marilyn, 148
- Weierstrass function, 41, 157
- Weierstrass, Karl, 42, 157
- Whitehead, Alfred North, 149
- Wiles, Andrew, 36, 154
- Wilkinson Microwave Anisotropy Probe, 179

Zermelo, Ernst, 149

Zermelo-Fraenkel set theory, 150, 193