
Index

- Ackermann function, 102, 105, 106, 108, 110
- alephs, 69
- arithmetic progression, 85
- arrow notation, 2
- axiom of choice, 63, 67

- Banach-Tarski paradox, 64
- binary string, 46
- bounded μ -operator, 107
- Burali-Forti paradox, 57

- cardinal, 67
 - inaccessible, 83, 197
 - limit, 81
 - Ramsey, 83, 197
 - regular, 82
 - singular, 82
 - strong limit, 81
- cardinal arithmetic, 68
- cardinality (of a set), 67
- Church-Turing thesis, 163
- closed, 51
- cofinality, 82, 111
- coloring, 2
 - edge, 14
- combinatorial
 - s -space, 118
- combinatorial line, 114
- compactness, xi, 49, 86, 123, 144
 - sequentially compact, 52
 - topological, 52
- complete (proof system), 142, 160
- complete (theory), 159
- computable, 162
- continuum hypothesis, 69
 - generalized, 70, 81
- cut, 149

- definable, 149, 155
- degree (graphs), 6
- dominating function, 99
 - eventually, 99

- equivalence relation, 8, 66

- free variable, 134
- fundamental sequence, 111

- Gödel β -function, 155, 190
- Gödel number, 164
- Goldbach conjecture, 129
- graph, 5
 - k -partite, 11
 - bipartite, 10, 31
 - clique, 10
 - complement, 6
 - complete, 9
 - complete bipartite, 11
 - connected, 9
 - cycle, 8

- hypergraph, 34
- independent, 10
- induced subgraph, 7
- isomorphic, 5
- order, 5
- Paley graph, 26
- path, 8
- subgraph, 7
- tree, 12
- Turán, 32
- Grzegorzczak hierarchy, 109, 123, 124
- Hales-Jewett numbers, 115
- halting problem, 166
- homogeneous, 41
 - min-homogeneous, 182, 192
- inconsistent, 143
- indiscernibles, 171
 - diagonal, 173
 - order, 172
- induction scheme (axiom), 135
- Knuth arrow notation, 101, 103
- least number principle (LNP), 136, 181
- metric, 50
 - discrete, 51
 - Euclidean, 51
 - path, 53
- neighborhood, 51
- non-standard number, 147
- open, 51
- order
 - linear, 45
 - order type, 62
 - partial, 13, 45
 - well-ordering, 59
- ordinal, 55
 - addition, 57
 - exponentiation, 59
 - limit, 57
 - multiplication, 58
 - successor, 56
- overspill, 151
- pairing function, 65
- Peano arithmetic, 135, 139, 145, 152, 161, 168, 171, 188
 - non-standard model, 145, 171, 189
 - standard model, 139
- pigeonhole principle, 17, 18, 34, 39, 90, 118, 186
 - infinite, 41, 42, 72
- power set, 34
- primitive recursive, 106, 126, 156, 163
- principle (*), 185, 187, 188
- probabilistic method, 29
- proof, 136
 - system, 137
- provably total, 193
- Ramsey number, 21
 - generalized, 22
- regressive, 185
- relatively large, 123
- reverse mathematics, 195
- satisfiable, 143
- sentence (formula), 134
- Shelah
 - s-space, 119
 - line, 117
 - point, 118
- soundness (proof system), 142
- star word, 115
- structure, 138
- tetration, 100
- theorem
 - Bolzano-Weierstrass, 52
 - Cantor cardinality theorem, 68
 - Cantor normal form, 111
 - Cantor-Schröder-Bernstein, 65
 - Chinese remainder theorem, 154
 - compactness (logic), 144
 - Erdős-Rado, 76
 - fast Ramsey, 170, 185, 187, 189, 195
 - finite Ramsey, 34, 43, 48, 123, 152, 183, 192
 - first Gödel incompleteness, 168
 - Gödel incompleteness, xi

- Gödel completeness, 142
- Greenwood and Gleason bound, 22
- Hales-Jewett, 113
- Heine-Borel, 52
- infinite Ramsey, 41, 52, 71, 124, 172
- König's lemma, 48, 49, 54, 124
- Paris-Harrington, xi, 170, 193
- Ramsey (for graphs), 16, 37
- Schur, 21
- second Gödel incompleteness, 195, 197
- Szemerédi, 98
- Turán, 31, 98
- unsolvability
 - Entscheidungsproblem, 167
 - unsolvability of halting problem, 166
- van der Waerden, ix, 86, 115, 159
- tree, 12, 46
 - binary, 46
 - finitely branching, 47
 - infinite path, 47
- Turing machine, 162
- van der Waerden number, 86
- Wainer hierarchy, 113
- well-ordering principle, 63
- Zermelo-Fraenkel set theory with choice (ZF), 69
- Zermelo-Fraenkel set theory with choice (ZFC), 196