

Index

- λ -abstraction, 275
- Γ_0 , 140, 156
- absoluteness of uncountability, 29
- abstract/concrete distinction, 91
- abstracta*, 1
- ACA₀, 120
- accumulation principle, 25
- actualist view of existence and modality, 58
- analyticity, 1, 2, 78
- anti-foundationalism, 50
- apartness, 271
- arithmetical comprehension, 80, 140
- array, 145
- assertibility conditions, 194
- assertory axioms, 52
- ATR₀, 156
- axiom of choice, 2, 196
- axiom of induction, 119
- axiom of infinity, 2, 62, 63, 159
- axiom of power sets, 75
- axiom of replacement, 63, 65, 66, 151
- Bayes' theorem, 160
- Beth trees, 207
- BHK explanations, 194, 200, 201, 203
- blip function, 265
- Boolean relation theory, 10, 148
- boundary number, 252
- Brouwer continuity theorem, 199
- build up, 129
- Burali-Forti paradox, 54
- Cantor's principle, 78, 79
- Cantor's theorem, 2
- categorical component, 3, 24
- categorical foundations, 45
- categorical structuralism, 45
- causal theories of knowledge, 91
- Church's thesis, 218
- closed graph theorem, 214
- closure principles, 127
- consistency of Peano arithmetic, 79
- consistency strength, 146
- constancy principle, 262
- constructibility quantifiers, 81
- constructible hierarchy, 75
- constructions of the natural numbers, 123
- constructivism, 88
- constructivist physics, 95
- continuum hypothesis, 155
- coordinate ring, 279
- correspondence principle, 231
- credibility, 161
- Dedekind finite, 111, 115
- Dedekind finite class, 119
- Dedekind isomorphism theorem, 251, 252
- Dedekind's categoricity proof, 25
- deductivism, 2, 238
- definable sets, 74
- defining conditions, 44, 252
- definitional extension, 21
- determinateness of identity, 269
- diagonalization, 8, 28, 30, 75, 142
- domains of sets, 252
- Ehrenfest equations, 231
- elementary theory of finite sets and classes, 27, 105
- elementary theory of the category of sets, 46
- elliptical geometry, 243
- Euclidean parallels postulate, 2
- expansive linear growth, 157
- extendability of stages, 63, 66
- extendability principle, 4, 58, 167, 253
- external standpoint, 130
- factual emptiness, 181
- fan theorem, 199
- fictionalism, 242
- Field's commitment, 33
- finite-set induction, 132
- flexible types, 81

Index

285

- formalism, 237
- Fregean conception of axioms, 44
- fruitfulness, 160, 161
- full induction, 133
- functors, 51
- geometric strategy, 92
- Gödel sentence, 154
- Gödel's doctrine, 149, 150
 - defanging, 157
- Gödel–Friedman program, 146
- haecceities, 276
- Hartogs' theorem, 55
- height-actualism, 155
- height-potentialism, 62, 156
- Hellinger–Toeplitz theorem, 214, 224
- hermeneutic conception, 90
- Hilbertian conception, 44, 52
- Hume's principle, 78
- hyperbolic geometry, 243
- hyper-inaccessible cardinal, 167
- hypothetical component, 3, 24, 165
- if-thenism, 2, 13
- impredicative definition, 8, 125, 139
- impredicative principles, 103
- impredicativity of induction, 127
- indefinite extendability, 46
- indefinite extensibility, 4, 5
- indefinitely extensible, 66
- indispensability arguments, 7, 40, 80, 212
 - Quine–Putnam anti-nominalist, 94
- integration principle, 262
- internal point of view, 131
- iterative conception, 61, 62
- Kock–Lawvere axiom, 14, 47, 261, 264
- Kruskal's theorem, 29, 147, 156
- large cardinals, 62
- large domains, 43
- law of excluded middle, 10, 12, 206
- least upper bound principle, 8, 30
- Lebesgue outer measure, 29
- linguistic doctrine of logical truth, 175
- Lipschitz condition, 272
- Markov's principle, 203, 206, 222
- measure spaces, 36
- method of weak counterexamples, 205, 207
- metric spaces, 35
- minimal closure, 132, 139
- mixed modal strategy, 93
- modal-existence postulates, 23
- modal-structuralism, 3
- modal-structuralist interpretation, 82
- model-descriptions, 242, 245, 250
- momentum operators, 230
- morphism, 51
- n*-dimensional manifolds, 38
- nilpotent, 256
- nilsquare, 256, 259, 264, 270
- nominalism, 88
- nominalistic reconstructions, 86
- non-standard analysis, 14
- non-standard numbers, 134
- Occam's razor, 95
- pare down, 129
- pervasive correlation, 91
- Plato's beard, 22, 23, 26
- plethyntiology, 93
- Poss ∞ , 64
- Poss Ex, 166
- Poss Ext, 63, 66
- Poss Stages of Values, 64
- Poss ZF C , 69
- Pour-El–Richards theorem, 218
- predicative Dedekind arithmetic, 107
- predicative foundations, 26
- predicative logicism, 116
- predicative mathematics, 103, 139
- predicative provability given the natural numbers, 126
- predicative structuralist, 130
- predicatively definable, 142
- predicativity relative to the structure of real numbers, 126
- principle of microaffineness, 260
- principle of microcancellation, 261
- principle of microstraightness, 259
- principle of open data, 199
- problem of old evidence, 161
- problem of vacuity, 239, 244
- product spaces, 38
- product topology, 38
- projective determinacy, 158
- proof conditions, 12, 201
- proof-conditional criterion of meaningfulness, 226
- proper class, 5
- proper end-extension, 71
- pseudo-atoms, 75
- purely modal strategy, 92
- quasi-categoricity, 166, 252
- quasi-concreteness, 20

286 Index

- Ramsey's partition theorem, 155
rational reconstruction, 96
 RCA_0 , 114, 157
reductio ad absurdum, 11
referential opacity, 274
reflection scheme, 149
revolutionary conception, 90
robust realism, 247
Russell's paradox, 71

satisfaction, 4, 26, 49, 81
schematic character, 50
second-order comprehension scheme, 26
second-order reflection, 70
self-standing character of finite sets, 124
set-theoretic structuralism, 4
sheaf, 39
simple theory of types, 81
simply infinite system, 25, 104, 122, 251
smooth infinitesimal analysis, 14, 47
spectral theorem, 214
Stone's theorem, 217
strongly inaccessible cardinals, 68
structuralism
 sui generis, 4
 mathematical, 121, 122, 124
surrogates, 84

syntactic priority thesis, 78
synthetic differential geometry, 256

theory choice, 95
topological spaces, 37
truth-value gaps, 269

unbounded linear operators on Hilbert
 spaces, 13
unification, 160, 162

vacuity, problem of, 3
vague objects, 273
variety of evidence, 162
vicious circle principle, 8, 139
von Neumann–Bernays–Gödel, 54,
 106

Waring problem for cubes, 125
weak second-order comprehension axiom,
 106, 118
weak second-order formula, 105,
 118
weak second-order logic, 131
weakly effectively decidable, 220

Zermelo–Fraenkel algebras, 44