## Index

## A

Ambiguity, 4
And (see Conjunction)
Antecedent, 54
Arguments, 1
conclusions, 1
deductive, 2-3
inductive, 2-3
premise, 1
sound, 49
valid, 47
Argument by cases, 99-102
Associative law, 36
Assumption, 67,
discharging, 88

B

Biconditional, 54-55
derived rules, 103
elimination, 70-71 elimination,
introduction, 70-71
law of, 55
truth table definition of, 54
truth tree rules, 126
Boldface letters, 18
Both. . and. . . , 23
Branches, 115, 119
closed, 116-17, 128 open, 118, 128
But, 21-22

## C

Commurative law, 36
Completeness, 72
Completeness, 72 Compound sentence, 6, 7, 11-15, 16
Compound sen
Conclusion, 1
Conditional, $50-54$
derived inference rule, 104
elimination, $59-60$.
introduction, 64-65
law of, 54
sentence, 50,54
truth table definition of, 50
truth tree rules, 1.25

Conjunction, 6, 18 elimination, 69, 70 introduction, 69-70 truth table definition of, 18
truth tree rules, 124-25
Conjuncts, 6, 16
Connective:
biconditional, 54-55
components of, 6
conditional, 50-54
conjunction, 6, 16
disjunction, 6,16
main, 15
negation, 6, 16
Consequent, 54
Consistency, truth tree test for, 143 ,
144-46

Contingent sentence, 39
Contradiction, 98
derivation test for, 110
truth tree test for, 139 .
Contradictory disjunct, law of, 39
Contraposition:
derived rule, 104
law of, 54
truth table definition of, 18
Counterexample, 47, 119-14, 122-23, 128

D
Deduction theorem, 110
De Morgan's laws, 30
derived rules, 110
Denying the consequent, derived rule, 103
Derivation, 61, 88
outer, 65, 88
without premises, 106-10
subderivation, $64-68,88$
Derived rule, 98
Discharging an assumption, 67, 88
Disjunction, 6, 16, 18
derived rules, 103
elimination, 60
inclusive sense, 6-7
introduction, 62
truth table definition of, 18
truth table definition

Disjunctive normal form, 40-42
Disjuncts, 6, 16
Distributive laws, 32
Double negation, law of, $\mathbf{3 0}$

## E

Either: . .or. . ., 22-23
Expansion, law of, 39
Expressive completeness, 42-43

F
Formation, rules of, 16

I
Inconsistency, derivation test for, 111 Invalidity, 47-48

## $L$

License, 62, 88

## Logic:

interest of, 2
as the science of arguments, 2
Logical equivalence, 29
derivation test for, 111
truth tree test for, 142
Logically true conjunct, law of, 39
Logical truth, 38
derivation test for, 107
truth tree test for, 141-42

## M

Main connective, 15
in derivations, 84-87
in truth trees, 135-36
Model, 143
Modus ponens, 59

## $N$

Negation, 4, 16
elimination, 70, 71
introduction, 70, 71, 72
truth table definition of, 16
truth tree test for, 127
Non-truth functional sentence 51-53, 57
Not (see Negation)

## 0

Or (see Disjunction)
Or, inclusive sense of, 6-7
Outer derivation, 65, 88

## $P$

Parentheses, 11-12, 16
Paths (see Branches)
Premise:
of an argument, 1
in a derivation, 61, 88
Primitive rule, 98

## $R$

Reductio ad absurdum, 71, 82
derived inference rule, 103
Redundancy, law of, 37
Reiteration, 66, 90-91
Rule of inference, 60, 88
$S$
Scope line, 62, 88-92 hopping, 91
Sentence:
abiguous, 4
atomic, 5-7, 16
compound, 6, 7, 11-15, 16
contingent, 39
declarative, 2,5
letter, $6,7,16$
non-truth functional, 51-53, 57
truth functional, 9-10
Sheffer stroke, 42-43
Sound argument, 49
Stack, 119-20
Subderivation, 65, 88-92
Subscripts, 16
Substitution of logical equivalents, 34
$T$
Tautology, 38
Transcription, 21 ff
adequate, 24-26
test, 24, 25
Transitivity of logical equivalents, 35
Translation, 21
Truth function, 9-10, 42, 43, 51, 53
Truth functional compound, $9-10$
Truth functional connective $9-10$
Truth functional sentence, $9-10$
Truth preserving rule, 62
Truth table, 7-9
Truth trees, 113 ff
branch, 115, 119
rules 124-27
Truth value, 8
assignment, 9

## V

Validity, 46-47
truth tree test for, 128, 146
Valuation, rules of, 17
Venn Diagrams, 30-33

W

Weakening, 98

