

COMPUTABILITY AND LOGIC

FIFTH EDITION

ERRATA CHAPTERS 1-10 & 12-18

CHAPTER 1

p. 6, two lines after displayed definition of $s(n)$: read "of other sorts" for "of others sorts"

p. 15, problem 1.5(a), first line: read "positive rational numbers less than one" for "rational numbers"; last line: add "and $m < n$ " before final period.

CHAPTER 2

[None known at present]

CHAPTER 3

p. 24, line 7: read "write smaller and smaller" for "writer smaller and smaller"

p. 24, line 15 from bottom: read "for most of us" for "for most us"

p. 26, line 13: read "of the box" for "of box"

p. 27, line 4 from bottom: reader "shortened" for "shorted"

p. 31, two lines above specification (a): read "values are represented" for "values represented"

CHAPTER 4

p. 37, three lines below **Theorem 4.1**: read "we were able to compute" for "we were able compute"

p. 38, line 11 from bottom: read "standard" for "stardard"

p. 39, line 14: delete the remark in parentheses. [Hints are not longer at the back of the book, but are now in the Instructor's Manual.]

p. 42, Example 4.6: read " $\geq 2n$ " for " $\geq 2p(n)$ "

p. 42, statement of Example 4.6, read " $\geq 2n$ " for " $\geq 2p(n)$ "

p. 43 Figure 4-3: replace each of the three occurrences of "k" by "j"

[alternatively, leave the figure as is, and change the text of the last paragraph on p. 43 through the end of the proof on p. 44, replacing each "j" by "k" and the three occurrences of "k" in the last three lines of the proof by "j"]

CHAPTER 5

p. 45, Abstract, line 3 from bottom: read "an abacus" for "a abacus"

p.51, middle, paragraph (b), first line: read "stones in some" for "stones is some"

p. 52, two lines below displayed equation: 1 should be the subscript, not superscript; r should be the superscript, not subscript.

four lines below displayed equation: read "stones" for "strokes"

p. 58, four lines from bottom: read "function f " for "functions f "

p. 60, lines 5 and 6 from bottom: read i for j both places

p. 60, line 2 from bottom: read " $f(x, 0) = 0$ " for " $f(x, 1) = 0$ "

p. 61, line 1: read "placed" for "place"

p.62, problem 5.8, first line: read "given" for "give"

CHAPTER 6

p. 64, line 11: read "any" for "any any"

p. 72, problem 6.6, the first minus sign should be a plus sign

CHAPTER 7

p. 75, 2nd displayed formula, read f_m for f_n

p.77, end of proof of Theorem 7.4: replace the last words "only replace y by $y-1$ " by "to make some slight changes"

p. 78, Example 7.7, 2nd line after displayed formula:

add "or ($y = 0$ & $z = x$)" after " $y \cdot z < x$ "

p.78, Corollary 7.8, first line read "regular primitive recursive function" for "regular primitive function"

p. 79, line 10 from bottom: read "argue" for "agree"

p. 82, line 7 read R_2x for R_2y

line 11 read R_1x for R_1y

p.86, Problem 7.3, line 6:

add " $z > 0$ and " before $x \mid z$ "

and line 7:

add before period at end of next-to-last sentence:

"[except that, by convention, we let $\text{lcm}(x, 0) = \text{lcm}(0, y) = 0]$ "

p.87, problem 7.15, three displayed lines (definition of β -code):

first line: read \leq for $<$

second line: add $+ 1$ at the end

CHAPTER 8

p. 91 displayed 3-line definition, last line: read " $a \geq 3$ " for " $a = 3$ "

p. 92, displayed definition of newstat: add at end before period: " $\cdot \text{sg}(q)$ "

p.93 displayed equation defining stdh: the last term should be:

$$\text{nstd}(\text{left}(\text{conf}(m, x, t)), \text{right}(\text{conf}(m, x, t)))$$

p.97, proof of Corollary 8.8: Replace the third sentence by "If it were recursive, its characteristic function c would be a recursive function." and delete the words "the complement of" from the fifth sentence.

CHAPTER 9

p. 104, Example 9.2, line 3: delete second "of the language"

p.110, line 6: read "Then note that if" for "Then note that".

p.112, problem 9.2, first line: read "at" for "of at"

p.113, problem 9.3 (b): add before last parenthesis " $\& y \neq z$ "

p.113, problem 9.8: read "How could we change the definition of formula" for "How could we change the definition".

CHAPTER 10

p.119, line 2: read "of terms" for "of term"

CHAPTER 12

p. 152, problem **12.21**, line 4: read " $j(a_1) <_B j(a_2)$ " for " $j(a_1) <_A j(a_1)$ "

p. 152, problem **12.22**, first line: insert "show that" after "Continuing the preceding problem,"

CHAPTER 13

p. 153, displayed formula (**S5**): delete brackets from " $\{\exists xB(x)\}$ " and delete "or in $\exists xB(x)$ "

p. 154, statement of Lemma **13.2**, second line: read "all sets of sentences" for "all sets of formulas"

p. 154, proof of Lemma **13.2**,

line 1, end: "is a" for "is"

line 9: read " $\Gamma_0 \cup \{B\}$ " for " $\Gamma \cup \{B\}$ "

line 10: read " $\Gamma \cup \{B\}$ " for " $\Gamma_0 \cup \{B\}$ "

second line from end, read "property (S0) of S" for "property (S1) of S"

p. 159, second indented biconditional: read " $[c1]^*, \dots, [cn]^*$ " for " $[c1], \dots, [cn]$ "

p. 160, paragraph 2 of §13.4, last line: read (S1) for (S0)

p. 162, line 6 from bottom: read "for every sentence" for "for every formula"

p. 164, Problem 13.8, line 2, read "12.1" for "13.1"

p. 164, Problem 13.8, line 5, read "and" for "and and"

p.165. Problem 13.14 read "another interpretation P in Q" for "P in another interpretation Q"

CHAPTER 14

p. 169, last paragraph, line 4: read "one or another" for "one of another"

p. 171, last full paragraph on page, line 4: read "string of symbols constitutes" for "string symbols constituties"

p. 172, Example 14.5, annotation to line (2): read (R2a) for (R2b)

p. 172, Example 14.6, annotation to line (2): read (R2a) for (R2b)

p. 172, Example 14.6, annotation to line (4): read (R2b) for (R2a)

p. 172, Example 14.8, annotation to line (2): read (R2a) for (R2b)

p. 172, Example 14.8, annotation to line (5): read (R2b) for (R2a)

p. 173, Example 14.10, annotation to line (5): read (R2a) for (R2b)

p. 177, line 8: read "satisfaction properties" for "satisfiability properties"

p. 178, verification of (S2): exchange annotations (R2a), (R2b)

p. 178, verification of (S4), last annotation: read (R2b) for (R2a)

p. 179, verification of (S6), last annotation: read (R2a) for (R2b)

p. 179, verification of (S8), second annotation: read (R2a) for (R2b)

CHAPTER 15

p. 188, line 2 after table: read "7, " for "7', " (i.e. transpose accent and comma)

p. 189, 1st full ¶, line 5 from bottom: read Γ for Γ_0

p. 190, 1st line of proof of Cor. 15.5: read "(soundness and) completeness" for "completeness"

p. 191, 3rd displayed formula, insert space between \mathbf{n} and D .

p. 191, last ¶, 2nd line: read T for T

p. 192, 3rd line from end of proof of Cor. 15.7: read "recursive total function" for "recursive function"

p. 193, lines 12-13 below table: replace all four occurrences of 36 by 8

p. 193, lines 13 below table: replace 89 by "over 50"

p. 195, second paragraph, lines 9-10: read "less than" for "less that"

CHAPTER 16

p. 201, line 2: the first subscript in the displayed formula should be 2, not 3, and the last subscript should be 3, not 2.

p. 201, line 4: the first subscript should be 3, not 2

p. 203, lines 9 and 8 from bottom: read $N + 1$ for N both places

p. 204, Theorem 16.6 (b) read "recursive or semirecursive set or relation" for "recursive set".

p. 204 Add at end of proof of Theorem 16.6: The semirecursive case requires adding a quantifier \exists .

p. 204, example 16.7, displayed formula: replace all four instances of $<$ by \leq

p. 205, add at end of statement of Lemma 16.8: Likewise any semirecursive relation.

p. 206, , add at end of statement of Lemma 16.11: Likewise any semirecursive relation.

p. 208, 1st ¶ of proof of Theorem 16.13, line 3: read "successor" for "sucursal"

p. 212, proof of Theorem 16.16: the boldface **0** on the last line should be **1**.

p. 214, lines 3-4, read "can be proved by mathematical induction" for "follows from the principle of mathematical induction"

p. 215, last line: read $\mathbf{m}' \neq \mathbf{n}$ for $\mathbf{m} \neq \mathbf{n}$

p. 217, problem 16.4, read "16.13" for "16.3".

p. 218, Problem 16.9: omit the words "containing **Q**".

p. 219, Problem 16.18. The italicized sentence at the end is not part of the problem and should be on a separate line

CHAPTER 17

- p. 223, next to last line of proof of Theorem 17.6: read $f(a)$ for $f(n)$
- p. 223, last line of proof of Theorem 17.6: 17.5 for 17.4
- p. 223, third line after proof of Theorem 17.6: read "semidecidable" for "decidable"
- p. 223, line 2 from bottom, delete "as it is in the axioms of \mathbf{Q} ,"
- p. 224, section 17.2, first paragraph, line 8: read "Theorem 17.5" for "Theorem 17.4"
- p. 224, bottom line: read Disprf_T for Disprf
- p. 225, first line of proof of **17.8**. Read "then there is some n " for "then there is some a "
- p. 226, paragraph after proof of **17.9**: corners around $G_{\mathbf{Q}}$ are missing in all three instances of " $\text{Prf}_{\mathbf{Q}}(G_{\mathbf{Q}}, \dots)$ "
- p. 229, problem 17.2, line 3: read "in T " for "in P ".

CHAPTER 18

- p. 234, line 9 from bottom: read "Theorem 18.3" for "Theorem 18.1"
- p. 234, line 7 from bottom: read Prv_T for Prv