

Errata for “Mathematical Logic and Computation”

The line counts ignore displayed equations and “ $l - n$ ” means “line n from the bottom of the page.” I am grateful to Aeacus Sheng for most of these corrections.

p 19 l 18

There is an extra space in $t[x := s]$.

p 172 Definition 7.2.3

The definition violates stipulation established in Section 1.6 that the value of a function defined on the set of the formulas cannot depend on the choice of bound variable. Fix that by allowing arbitrary substitutions for the bound variable, as in Definition 6.1.3.

p 179 Exercise 7.3.3

Clarification: you only need to consider the case where $A \rightarrow B$ is in Γ .

p 187 l 17

A space is missing before A^S .

p 214 Exercise 15.1.1 Clarification: intuitionistic logic suffices.

p 215 l 6 “in natural deduction”

Clarification: in a natural deduction system, the substitution rule should be formulated as “from $\Gamma \vdash A$ conclude $\Gamma[t/x] \vdash A[t/x]$.” In other words, the term t should be substituted for x in both the set of hypotheses and the conclusion.

p 218 Proposition 9.1.6

$A(x, 0)$ should be $A(0, y)$.

p 220 l -4

“when we” should be “we.”

p 244 l -8

Δ_1 should be Δ_n .

p 283 l 5

$\varphi_e(s)$ should be $\varphi_e(x)$.

p 284 Exercise 11.2.1

In both parts, f_x should be φ_x .

p 286 l -2

“ $x \in A$ if $f(x) \in B$ ” should be “ $x \in A$ if and only if $f(x) \in B$.”

p 290 l 10

“not not” should be “not.”

p 292 l 11

“the map $x \mapsto (x, e)$ ” should be “the map $x \mapsto (e, x)$.”

p 304 Lemma 11.7.4

The lemma should read: if $s \Rightarrow t$, then $t \Rightarrow s^*$.

p 353 l -5

In the itemized list, the clauses “if $s \rightarrow_{\beta,1} t$ then $(s, u) \rightarrow_{\beta,1} (t, u)$ ” and “if $s \rightarrow_{\beta,1} t$ then $(u, s) \rightarrow_{\beta,1} (u, t)$ ” should be added.

p 356 l 11

$C_j^{(i+3)}$ should be $C_j^{(i+2)}$.

p 377 l 2

Since we haven’t established confluence yet, instead of saying “the length of the normal form of t ,” we should say “the least upper bound on the length of all the normal forms of t .” König’s lemma implies that there are only finitely many normal forms.

pp 402–405 Theorems 14.5.1, 14.5.2, and 14.5.3 and Corollaries 14.5.5 and 14.5.7

The phrase “tuple of terms $\vec{t}$ such that ...” should be replaced by “tuple of terms $\vec{t}$ such that $\vec{y}$ is not free in $\vec{t}$ and ...”

p 410 l 3

“a function symbol $\text{app}_n(R, \vec{x})$ ” should be “a relation symbol $\text{app}_n(R, \vec{x})$.”

p 425 l 11

“is clearly true” should be “is clearly false.”

p 427 l -19

“ Δ_1 formula” should be “ Δ_1^1 formula.”

p 430 Exercise 15.5.4

Clarification: “set” here means “collection of sets.”

p 442 l 8

U should be Y

p 443 second displayed item

At the top of the proof tree, $S(\vec{y}, \vec{z})$ should be $S(\vec{y}, \vec{Z})$.

p 445 l -4

“With a more work” should be “With more work.”

p 447 last line

After “since,” swap f and g .

p 449 l 13

Clarification: if A is Σ_1 (resp. Π_1, Δ_1) then A' is Σ_1^0 (resp. Π_1^0, Δ_1^0 .)

p 449 Exercise 16.2.1

Change “ Δ_0^0 ” to Σ_0^1 in part (a).

p 450 l 19

“are beyond” should be “is beyond”

p 450 Definition 16.3.1

Clarification: $(x_i)_{i \in \mathbb{N}}$ is a sequence of rationals.

p 462, line 9

“Here A is an arithmetic formula” add “in which F occurs only positively”

p 463, last displayed formula

In the definition of ID_1 , the second conjunct of the displayed formula should be replaced by a schema consisting of each first-order instance of the formula after the existential quantifier.

p 465, Theorem 16.6.2

$\exists Y$ should be $\exists C$ in the displayed formula.

p 465, l -2

“of and only if” should be “if and only if”