

Corrections to **A Modern Formal Logic Primer**

Here is a list of corrections to the regrettably many printing errors in **A Modern Formal Logic Primer** and the answer manual, and correction to the one substantive error which have so far come to my attention. Where not otherwise indicated, the changes are indicated by underlining. 'l*' ('ll*') means line (lines) counted up from page bottom. These notes use notation similar to that found in the answer manual: ' \rightarrow ' for the conditional, ' \leftrightarrow ' for the biconditional, (u) for universal quantifier, and (Eu) for existential quantifier.

Volume I

p. 50, on the left of the truth take, there should be single quotes around the horseshoe

p. 54, l. 9, substitute 'conditionals' for 'conditions.'

p. 54, Truth table definition of the biconditional, at page bottom: The annotation at the left of the truth table should have a triple bar, in single quotes.

p. 92, l. 24: ses the conclusion $T \rightarrow U$ as a conclusion of 1, by $\rightarrow I$; and $\rightarrow I$, similarly

p. 103, l* 12: (Traditionally called "Modus Tollens")

p. 111, Problem 7-7-d: Delete last square parenthesis.

p. 132, l* 14: 3-4.

p144, Problem 9-6 should refer to problem 9-5 instead of 9-4.

Inside back cover: Insert circles around conclusions in rules \sim , \sim , and $=I$.

Answer Manual

p. 2, Problem 1-4-d: Last line of the truth table should be $f f \underline{t} f f f$

p. 4, Problem 2-2-t: $(A \vee \sim A) \& [C \& (D \vee E)]$

p. 8, ll* 6 [Third line of problem 3-6-g]: Annotation should read: D, SLE

p. 14, third line of problem 4-6-c: Annotation should read: C, SLE

p. 49, 8-4-c, line 4: annotation should read ' \rightarrow ', not ' \rightarrow ' (rule for conditional, not negated conditional).

p. 51, 8-4-h, lines 5 and 6: In both lines the annotation should read ' \rightarrow ', not ' \rightarrow ' (rule for conditional, not negated conditional).

p. 51, 8-4-i: There is a second counterexample, M&N.

p.62, 9-2-t: Insert line numbers for lines 19 and 18. Also add ' $\&\sim A$ ' to the statement of the counterexample.

p. 70, 9-6-d: There is a second counterexample, $\sim P \& F$.

Volume II

There is an important substantive error on pp. 153 and 154, in the rewrite rule for the (The **u**) operator. (1a) on p. 153 should read: $(\exists x!)Lxe \& (x)(Lxe \rightarrow Bx)$. The rewrite rule, p. 154, ll* 11-13, should read:

Rule for rewriting *Definite Descriptions Using '(The u)'*: $Q[\text{The } u]P(u)$ is shorthand for $(\exists u!)P(u) \& (u)[P(u) \rightarrow Q(u)]$, where $P(u)$ and $Q(u)$ are open formulas with **u** the only free variable.

Then on page 155 the corresponding corrections need to be made in (2a): "...rewritten as $(\exists x!)Lxe \& (Ax)(Lxe \rightarrow \sim Bx)$ " and in (2b): "...rewritten as $\sim[(\exists x!)Lxe \& (Ax)(Lxe \rightarrow Bx)]$."

This formulation eliminates cases in which, for example there are two **P**s and two **Q**s, but only one thing which is both **P** and **Q**. We require that there be exactly one **P**, and any **P** be a **Q**, so that if there is one **P**, it is **Q** also.

p. 16, l. 19: fixes a list of objects of which the predicate is true. If the predicate is a two

p. 22, problem 2-2-e: $(x)(Bx \vee Lax)$

p. 18, problem 2-1-f: $(x)(Kx \& Rax) \rightarrow (\exists x)(Mx \vee Rcx)$

p. 44, l. 13 (line 8 of informal proof): Change annotation to read ' $\sim A_s$ '

p. 47, l*10: miles an hour it is easy to hear 'A car can go very fast.' as meaning that

p. 51, l. *1 Change last 'x' to 's'.

p. 54, l*4: (18d) $(x)[(Bx \& Lxe) \rightarrow \sim(Ex \& Cx)]$.

p. 59, problem 4-8, ll: If anyone has a son, that person loves Eve.

p. 75, 1-2. a) should be 'Cc', not 'Ca'

p. 81. l* 12: the same subderivation using the name 'b' instead of 'a', using \rightarrow to write

p. 82, Second line of 4-2: rule should have 'S
'subscribed" ' $\sim(Eu)_S$ '

p. 84, ll. 13, 17, l* 13, 10, p. 85, l. 1: the 'R's should all be followed by an open variable, 'x'.

p. 85, In box, eliminate the first horizontal line.

p. 86, missing '[' in n: " $(x)(y)[\dots$ ", and a missing '(' in r: " $(x)(y)[(\dots$ "

p. 89, problem 5-7-l: Second premise starts with a universal, not an existential quantifier.

p. 95, l.3: arguments:

p., 96, problem 6-1-q: The conclusion should read: ' $(x)Px \vee (x)Qx$ '.

p. 102, l. 17: Eliminate "and 6-8".

p. 118, , exercise 7-3e: In conclusion, 'E' should be reversed.

p. 97, l* 8: will also use a trivial reformulation of the rules $\sim I$ and RD expressed in

p. 125, l* 10: contradiction so that **X** and **Y** are logically equivalent. If there is an open

p. 135, problem 8-5-f: $(x)[(y)Txy \ \& \ (Ey)\sim Tyx]$

p. 139, l*11: With this notation we can give the $_!$ rule:

[Note: Throughout I have used the notation, ' $(Ex!)$ ', etc, putting the exclamation mark AFTER the variable or metavariable. Traditional usage actually puts it after the sign of existential quantification, ' $(E!x)$ ' etc.

p. 139, l* 9. sign for universal quantification missing in $\dots(\underline{Av})P(v)\dots$

p. 141, l. 6: (Add to transcription guide) Lxy : x loves y

p. 144, (Line 6 of the derivation): $\hat{A} \equiv \hat{B} \ _ \rightarrow (F\hat{A} \ _ \rightarrow F\hat{B})$

p. 145, l. 15 'R' should be bold faced in ' $(Ax)\underline{R}(x,x)$ '

p.146, Problem 9-5-d: $Pa \leftrightarrow (x)(x=a \rightarrow P\underline{x})$

p. 152, l* 3 (Conclusion of problem d): $(Ex)(Ey)(f(x) \neq y)$ [Insert parentheses around x]

p. 154, l. 17: In both occurrences, the Greek letter iota should be printed upside down.

p. 148, l*5: for writing in one, two, or more arguments (with the arguments separated by commas when there are more than one).

p. 167, l*16: D6': The set **Z** of sentences is *Consistent* iff $Z \ \ A \ \& \ \sim A$.

p. 252 (Page facing inside back cover): Should be the same as corresponding page in volume I.

Inside back cover: Insert circles around conclusions in rules \sim , \sim , and $=I$.

Answer Manual

p. 4, Problem 2-4-i: $(R\&B)\&\sim H$ (R: Roses are red. B: Violets are blue. H: Transcribing this jingle is hard to do.) [The answer originally given did not make the negation explicit, and so was not as detailed a transcription as we can give.]

- p. 76, problem 2-2-i: First substitution instance is true, not false.
- p. 77, problem 2-3-i: True, not false
- 78, problem 2-6-e: $D = \{e\}$; $\sim Be$ & Lee.
- p. 82, In problem 4-1 and 4-2 'S' has to be read as a subscript when immediately following a quantifier (No subscript was available on the program that prepared the answer manual!) Also in problem 4-2, line 6 add 'DN' to the annotation. And in line 7 the annotation should read $\sim(Eu)$
- p. 83, ll. 2-3: Exercises g) and h) have been reversed.
- p. 83, problem 4-3-n: Remove an extra left parenthesis: $(x)[Px \rightarrow (Ey)(Py \& Lxy)]$.
- p. 83, Problem 4-4-j: $(x)(Cx \rightarrow \sim Dx)$
- p. 83, problem 4-4-y: Insert a left parenthesis: $(x)[(Px \& \dots$
- p. 83, problem 4-4-aa: Insert a left parenthesis: $\sim(x)[(Px \& \dots$
- p. 84, Problem 4-7-g: All dogs love all cats.
- p. 84, Problem 4-7-h: All dogs love all cats.
- p. 85, problem 4-8-hh: $(Ex)(Px \& Lxx \& Lxx)$
- p. 88, problem 5-2-d: Throughout 'Tx' should read Txd and ' $T\hat{A}$ ' should read $T\hat{A}d$.
- p. 103, problem 6-1-q: Line 14 should read: $Pa \vee Q\hat{b}$. Line 15 should read: $Q\hat{b}$. (Put hats on 'b')
- p. 110, problem 6-6-c: l. 4: 5-7. b) and u).
- p. 124, problem 7-3-g: The counterexample is $Ha \& \underline{Gb} \& \sim Ga \& \sim Hb$
- p. 135, problem 8-1-i: The counterexamples should read: $Na \& Ma$; Ma ; $\sim Na$
- p. 136, problem 8-1-k, first part: There are three more counterexamples, $\sim Ga$; Sa , Ka
- p. 152, problem 9-1-c: $(Ex)(Ey)(Ez)(Cx \& Cy \& Cz \& x \neq y \& y \neq z \& \underline{x \neq z})$
- p. 152, problem 9-1-e: $(x)(y)(z)(w)[(C\underline{x} \& \dots$
- p. 152, problem 9-2-h: $Pa \& \sim Sae \& (x)[Px \& x \neq a \& \underline{x \neq e} \rightarrow Sxe]$
- p. 152, problem 9-2-j: $(x)(Px \rightarrow (Ey)(Ez)[Myx \& \dots$
- p. 165, problem 9-11h. Line 3 should read: $(z)(g(\hat{b}, z)=a)$
- p. 170, problem 9-12-c: $(Ex)[Fxc \& (y)(Fyc \rightarrow y=x) \& a=x]$ (delete '& (y)(Fyc)')