

# ERRATA IN ANALYSIS ONE

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## 1. INTRODUCTION

The text was first issued in August 2018.

The pdf electronic version was made available free (on logicpress.ie and on lulu.com), and readers were invited to send in corrections. Subsequent corrected versions were issued in September 2017, October 2017, January 2018, February 2018, April 2018. Corrections may involve changes to the numbering of results, and to pagination. Accordingly, readers sending in corrections or other suggestions are requested to specify the date of the edition they are reading. This date will be found on the title verso, the back of the title page. My intention is to implement changes to the electronic version as soon as conveniently possible.

The first hardcover edition was submitted for ISBN registration in January 2018, and is now available through retail outlets and wholesalers.

The sections of this document will track errata and amendments to the hardcover edition (or editions).

The notation 45+14 refers to line 14 (excluding the header) on page 45, and 45-14 refers to line 14 from the bottom (including any footnote) on page 45.

## 2. CORRECTIONS TO THE FIRST HARDCOVER EDITION

v-3: bygone (spelling, hereafter sp)

2-4: respectively (sp)

9+13: In the definition of  $\min(x, y)$ , it should be  $x$  if  $x < y$ .

40+3: In part (b), it should be  $\alpha = 1/n$  for some  $n \in \mathbb{N}$ . For other  $\alpha \in (0, 1)$ , the statement is false for some functions  $f$ .

46+9:  $\sqrt{(x^2)} \rightarrow \sqrt{x^2}$

46+14: Insert the following definition:

The *complex conjugate* of the complex number  $z = x + iy$  is defined by

$$\overline{x + iy} := x - iy, \forall x, y \in \mathbb{R}.$$

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- 48+2: Should be  $a^{\frac{1}{n}} \leq 1 + \frac{a-1}{n}$ .
- 51-3, 51-3, 52+2 and 52+4:  $x \rightarrow b$
- 65+8:  $(a - \delta, \delta] \rightarrow (a - \delta, a]$
- 65-2: exists  $\rightarrow$  exist
- 69-1:  $q(h(2)) \rightarrow q(h_2)$
- 82+6:  $\sum a_j \rightarrow \sum a_j^p$
- 82+7:  $\sum b_j \rightarrow \sum b_j^q$
- 83+4:  $(p-1) \rightarrow (p-1)$
- 84+3: delete the exponent  $\frac{1}{2}$ .
- 88+6: The equation should read:  $f'(\xi) = (f(x) - f(a))/(x - a)$ .
- 89-4: In the footnote,  $\frac{d^2x^3}{dx} \rightarrow \frac{d^2x^3}{dx^2}$
- 90-2 and 90-4:  $(n-1)! \rightarrow (n-1)!$
- 91+8: Take  $p = 0$ .  $\rightarrow$  Take  $p = 1$ .
- 92+9:  $f''(x) < 0 \rightarrow f''(x) > 0$
- 100-9:  $a_k, x \rightarrow a_k, t$
- 102+11:  $k_{j-1} \rightarrow k_{j-1}$
- 106+4: prove  $\rightarrow$  Prove
- 115-0: Should have noted another property (used without comment later): (4)  $wvar_{\nu_1} \leq wvar_{\nu}$  if the net  $\nu_1$  is a refinement of  $\nu$ .
- 117+5, 117-6, 117-4:  $f(x) + g(x) \rightarrow (f(x) + g(x))$
- 120+6: refinement (sp)
- 120+7:  $nu_1 \rightarrow \nu_1$
- 121+11: start new line before (3)
- 121+14: start new line before (4)
- 125+8: added  $\forall x \in [a, b]$
- 153+7: exercise  $\rightarrow$  exercises
- 159+12 and 159-7:  $a_n + b_n \rightarrow (a_n + b_n)$
- 162-5:  $frac{5n}n \rightarrow \frac{5}{n}$
- 185-6, 186+5, 187-11 and 187-9:  $\sum_0^\infty \rightarrow \sum_1^\infty$
- 197-8:  $a_n + b_n \rightarrow (a_n + b_n)$
- 202+7: delete ]
- 202-1: footnote label should be 1, not 0.
- 203+1: Replace

Then whenever  $n < N(x)$  and  $y \in [a, b]$ , etc

by

Take

$$\delta := \min\{\delta_3(x_1), \dots, \delta_3(x_n)\},$$

and

$$N := \max\{N(x_1), \dots, N(x_n)\}.$$

Then whenever  $n > N$  and  $y \in [a, b]$ , etc

204-3:  $|f_n(x) = f(x)| \rightarrow |f_n(x) - f(x)|$

204-206: All  $\|\cdot\|$  should be read as  $\|\cdot\|_D$ .

205+4: Replace

$$\forall x \in D \ n > N \implies |f_n(x) - f(x)| < \frac{\epsilon}{2}.$$

by

$$\forall x \in D, \ n > N \implies |f_n(x) - f(x)| < \frac{\epsilon}{2}.$$

206-3:  $+|f(y - f_n(y)| \rightarrow +|f(y) - f_n(y)|$

208-9: that that  $\rightarrow$  that

208 and 209: All  $\|\cdot\|$  should be read as  $\|\cdot\|_{[a,b]}$ .

209+7:  $\lim_{M \uparrow \infty} \rightarrow \lim_{m \uparrow \infty}$

209+9:  $S^* \rightarrow S^*$

214-3: the the  $\rightarrow$  the

219-1: delete (

222-6: Delete the final =

235+11:  $(-\pi, \pi) \rightarrow (-\frac{\pi}{2}, \frac{\pi}{2})$

237+7:  $\tan \rightarrow \tan$

243+8: differentiable (sp)

244-2: tak-  $\rightarrow$  Tak-

264+5:  $10^{=7} \rightarrow 10^{-7}$

289-8:  $<= \rightarrow \leq$

295+7: extension (sp)

310+3: Thus  $f(1/n) = 1 \rightarrow$  thus  $f(1/\frac{1}{n}) = 1$

311+8:  $\lim x \rightarrow a \rightarrow \lim_{x \rightarrow a}$

311+15: Delete = 1

313-13: conditions (sp)

316+7: and and  $\rightarrow$  and

321-13:  $[a, c] \rightarrow [a, c]$

322-2:  $\nu u_2 \rightarrow \nu_2$

323-14:  $-I- \rightarrow |I|$

325+4: Let Let  $\rightarrow$  Let

326+1: This is the solution to Exercise 12.4.13.4, and lacks the label.

327+2:  $(2n! \rightarrow (2n)!$

327+3:  $((2n + 1)! \rightarrow (2n + 1)!$

327-9:  $= -(x \times y \rightarrow = -(x \times y)$