

Corrections and Comments for *Limits, Limits Everywhere*

p.3, two lines up “than” should be “that”.

p.11 Line 1 of course should read  $(-7) \times (-4) = - - 28 = 28$ .

p.13 Exercise 9a) The tilde in  $\tilde{p}$  has been displaced to the right in both places on the second line, so this line should commence “by  $\tilde{p}$  where  $\tilde{p}$  is ...”

p.16, line 4 should read  $\frac{1}{7} = 0.14285\dot{7}$ . At present the final  $\cdot$  is misplaced.

p.19. Line 2 should read  $a^2 = b^2p$  and consequently line 14 should then be

$$2^{2m_1} 3^{2m_2} 5^{2m_3} \dots q^{2m_N} = 2^{2n_1} 3^{2n_2} 5^{2n_3} \dots r^{2n_M} p$$

p.21 one line up from bottom, “irrational” should read “rational”.

p.27, line 3. Same problem as on page 16. The number on line 3 should read  $0.\dot{1}2345678910$ .

Generally in Chapter 2 (and its Hints and Solutions), whenever you see a number  $x$  with a strange symbol above it which looks like a small  $\wedge$ , please read it as  $\dot{x}$ , e.g. the number on line 11 of page 16 should read  $0.1\dot{6}$ .

p.29, line 19.  $b \geq a$  should be  $b \leq a$ .

p.33, three lines below the figure, replace  $q < p$  with  $q < b$ .

p.37, line 4, the final  $(|a + b|)^2$  should be  $(|a| + |b|)^2$

49, + 1 Delete “ $\frac{1}{\epsilon} \geq n_0$ ” and replace with “ $\frac{1}{\epsilon} < n_0 + 1$  and by (L5) we have  $\frac{1}{n_0+1} < \epsilon$ . So given any  $\epsilon > 0$ , if  $n > n_0$  we have

$$\left| \frac{1}{n} - 0 \right| = \frac{1}{n} \leq \frac{1}{n_0 + 1} < \epsilon.”$$

p.52, +9 =  $\infty$  should be  $+\infty$ .

p.55, on 8th line of proof of Theorem 4.2.1,  $\epsilon + l$ , should be  $\epsilon + |l|$ .

p.56, +2 Insert “such” between “that” and “a”.

p.56, +3 Delete “neither convergent nor” and replace by “not”.

p.56 line 9.  $(-1)^n \frac{1}{n}$  is convergent so this is a bad example. It should be changed to  $(-1)^n \left(1 + \frac{1}{n}\right)$ . Then change  $[-1, 1/2]$  on line 11 to  $[-2, 1]$ .

p.58, line 4. It makes little difference, but to be precise it should read  $b_n \leq K$  instead of  $b_n < K$  (in fact the former always implies the latter, albeit with different  $K$ , since if  $x \leq y$ , then  $x < y + \epsilon$ ).

p.68, line 2. Strictly speaking this should read “no such  $n$  exists, for some  $\epsilon > 0$ ”.

- p.68, line 3, Change  $<$  to  $\leq$ .
- p.69, six lines up. The inequality should read  $\inf(a_n) + \inf(b_n) \leq \inf(a_n + b_n)$ .
- p.70, 14 and 16 lines from bottom. Change  $n \geq n_0$  to  $n > n_0$  in each case.
- p.73, line 2, Theorem 5.3.3 should be Theorem 5.2.1.
- page 75. Exercise 4. The inequality should read  $\inf(a_n) + \inf(b_n) \leq \inf(a_n + b_n)$ .
- page 76. Question 6. Change  $n > 1$  to  $n \geq 1$  on the first line. (a) should read “Show that  $2 \leq x_n \leq 3$  for all  $n$ .”
- page 76, 15 lines from bottom. Insert “ $x$  such that” after “any”.
- page 77, line 1 Change  $\frac{1}{2}(b_1 - a_1)$  to  $\frac{1}{2}(b_1 + a_1)$ . On lines 2 and 3 all  $c$ s should be changed to  $c_1$  and on line 4 change  $\frac{1}{2}(b_2 - a_2)$  to  $\frac{1}{2}(b_2 + a_2)$ .
- page 82. Figure 6.1. The triangle number representation for  $a_3$  needs one extra dot and that for  $a_4$  requires three extra dots.
- page 97, two lines up, change “the sum of the series” to “the sum of the series plus one”.
- page 104, four lines up. Here we have the production problem again with repeated decimals so we should have  $0.367\dot{9}$  and on the same line  $0.\dot{9} = 1$ .
- page 106, second line. Again we have migrating dots and strange symbols appearing instead of dots. In particular note that  $0.\dot{c} = 0.\dot{1}234$ .
- page 106, last line. Change  $\sum_{n+1}^{\infty}$  to  $\sum_{n=1}^{\infty}$ .
- page 116, four lines up. Change  $B_{2k+2}$  to  $B_{4k}$ .
- page 122, line 5. Change  $\sum_{s=0}^{n-k}$  to  $\sum_{s=k-n}^n$ .
- page 129, one line up. The denominator  $(2n + 1)^2$  in the infinite product should be changed to  $(2n - 1)(2n + 1)$ , so the product can in fact be written  $\prod_{n=1}^{\infty} \frac{4n^2}{4n^2 - 1}$ .
- page 130, 6 lines from bottom. Theorem 8.2.3. should read Theorem 8.2.1.
- page 131, line + 1 The first expression should be  $\frac{1}{(p_1^{n_1} p_2^{n_2} \dots p_k^{n_k})^r}$ .
- page 131, +4 Change “no larger than” to “less than”.
- page 131, six lines from bottom, add “all multiples of” before “powers”.
- page 131, four lines from bottom. Change  $\eta$  to  $\zeta$  and delete  $-1$ .

- page 132, line 10 and also footnote, “Mobiüs” should be “Möbius”.
- page 133, lines 10 and 12. Change  $\frac{p_i}{1-p_i}$  to  $\frac{p_i}{p_i-1}$ .
- page 136, eight lines up. Delete “(one for which there is no clean formula)”.
- page 137, six lines up. Change “stronger” to “equivalent”.
- page 141, five lines from bottom. Delete “with  $q_N = \text{hcf}(a, b)$ . ”
- p.147, line 14, “wasen’t” should be “wasn’t”.
- page 148. 12 lines up after “contradiction.”, insert “In fact the argument I’ve just given isn’t quite correct. As it stands it appears that there are nine possible ways to choose  $x_1, x_2, x_3, \dots$ . But recall (see section 6.11) that e.g. 1 and 0.9 are identified as the same number. So we must adapt the argument to avoid producing numbers whose decimal expansion ends with an infinite succession of nines. We can do this as follows: choose  $x_1$  so that  $x_1 \neq a_1$  and  $x_1 \neq 9$ , choose  $x_2$  so that  $x_2 \neq b_2$  and  $x_2 \neq 9$ , and so on. ”
- page 148, seven lines up. Change “out” to “put”.
- page 153, eight lines up from section 11.3,  $\frac{x_n}{2} + \frac{1}{x_n}$  should be  $\frac{1}{2} \left( x_n + \frac{1}{x_n} \right)$ .
- page 153 two lines up from section 11.3, change “given any” to “for some”.
- page 168, line 3. Change  $M_j$  to  $m_j$ .
- page 168, two lines up. Change “a definite” to “an indefinite”.
- p.169, line 7,  $\log(x)$  should be  $\log(|x|)$ .
- p.172, three lines up “Augustus Louis” should be “Augustin-Louis”.
- p.172, footnote “Encyclopédie” should be “Encyclopédie”
- p.191 Same problem as on page 16, so the solution to Exercise 2.2 should be 0.076923 while the first number in Exercise 2.10 is 0.12345678910120.
- P.192 Exercise 5.2 (d). Change “oscillates finitely” to “converges to 0.”

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