Misprints and errors in **Notes on set theory**

The notation "p. 5 +9 " means "line 9 of page 5", and p. 5 −9 means "line 9 from the bottom of page 5". (Chapter headings don't count, but the lines in footnotes are considered as lines of text.)

- p. *xii* −4 should be:
  Axiom (**VII**) of Dependent Choices, **DC** 122
  (Embarrassing; see also p. 122 −11 below.)
- p. 5 −9 should be:
  x.15. For every $f : X \to Y$ and all sequences of sets $B_n \subseteq Y$, $A_n \subseteq X$,
  (Just bad English.)
- p. 19 −10 should be:
  (**GCH**) $(\forall X \subseteq \mathcal{P}(A))[X \leq_c A \vee X =_c \mathcal{P}(A)]$

  (This is the worst blooper in the book.)
- p. 21 +1 should be:
  The *twin prime conjecture* asserts that $C = N$, ...
- p. 23 −12 should be:
  ometry, which for 2000 years had been considered the "perfect" example of a
  (The word "years" is missing.)
- p. 35 +10 should be:
  is evidently definite for any two sets A, B, and hence to verify **4.2**, it is enough
  (Just bad English.)
- p. 35 −1 should be:

$$Pair(z) \iff z = (First(z), Second(z)).$$

- p. 50
  Problem **x4.25** is too difficult to do at this stage—it is much easier after the next Chapter.
- p. 56 +15 should be:

$$\Longrightarrow (\exists n \in N_1)[\pi(S_1 n) = S_2 \pi(n) = S_2 m]$$

- 58+11. Not really an error, but it helps to add the underlined comment:
  since $0 \notin Domain(p)$ for every $p \in \mathcal{A}$ <u>and $\mathcal{A} \neq \emptyset$</u>. If $n \in Domain(p)$ ...

- p. 59 +8 should be:
  Proof. For each $y \in Y$, we define the function $h_y : E \to E$ by the
  (This and the next are leftovers from a previous version of the proof.)
- p. 59 +13 should be:

$$f_y : N \to E$$

- p. 69 +1 should be:
  proves that $\bigcup_{n=0}^{\infty} N^{(n+1)} \leq_c N \times N$, from which ...
- p. 72 +5 should be:
  so in particular each $h(x) \neq \emptyset$. Prove that there exists an injection $f : B \rightarrowtail G$
  (Bad error: as stated, the problem would admit polyandric solutions.)

The next two errors are only two lines apart and related; they are not real errors, only a confusing choice of notation:

- p. 95 −11 should be:
  ... With each $y \in V$
- p. 95 −10 should be:
  ... strictly below y
- p. 95 −9 should be:

$$\mathbf{seg}(y) = \mathbf{seg}_V(y) =_{\text{df}} \{x \in V \mid x <_V y\} \subsetneqq V$$

- p. 99 +16 should be:
  ... $\sigma_0 = \emptyset$. If $t = S_v$
- p. 99 +18 should be:

$$\sigma_t = \sigma_v \cup \{(v, h(\sigma_v))\};$$

- p. 107 +10 should be:

$$\iff [\mathbf{seg}_U(x)/\sim_A] <_{\chi(A)} [\mathbf{seg}_U(y)/\sim_A].$$

- p. 121 −11 should be:
  ... By Hartogs' Theorem **7.34**, $h(A) \not\leq_c A$,
- p. 122 −11 should be:
  8.12. (VII) Axiom of Dependent Choices, DC. *For each set A and*
  (This is the source of the **DC** = Axiom **VI** in the Table of Contents.)

- p. 124 +9 should be:

  8.16. Exercise. *Prove that a linear ordering* $(P, \leq)$ *is*

  (Leftover from a previous version where "grounded" was defined using descending chains, and so the result needed **DC**.)

- p. 125 +22 should be:

  theorems do not need it, and in particular *all the results of Chapter 2 can*

  (Wrong reference to Chapter 3 instead of to Chapter 2.)

- p. 132 −1. Displayed equation (9.2) should be

$$T_u = \{w \in T \mid w \sqsubseteq u\} \cup \bigcup \{T_v \mid v \text{ is a child of } u\} \tag{9.2}$$

  (Thanks to Serge Bozon. Without the first part, the equation fails if u is terminal.)

- p. 140 −10 should be:

  is (easily) a function of A_i into B_i, and by the hypothesis it cannot be a surjection;

  (h_i is not, in general an injection, and the rest of the proof does not require it to be one.)

- p. 141 +11, +12

$$\mathit{cf}(\kappa) =_{\mathrm{df}} \mathit{inf}_c(\{I \subseteq \kappa \mid \text{for some indexed family } (i \mapsto \kappa_i)_{i \in I}, \\ (\forall i \in I)[\kappa_i <_c \kappa] \,\&\, \kappa =_c \sum_{i \in I} \kappa_i\}).$$

  (The only ']' in this formula had been typeset as ')'.)

- p. 142 +2 should be:

$$\textstyle\sum_{i \in \lambda} \kappa_i <_c \prod_{i \in \lambda} 2^{\kappa}$$

- p. 147 +6 should be:

  be the **Cantor set**[1] of all infinite, binary sequences, then $\mathcal{C} \subseteq \mathcal{N} \subseteq \mathcal{P}(N \times N)$

  (The $\mathcal{P}$ is missing again.)

- Footnote 4 on page 153 should start with

  [4]We stick to Baire space here because there are many competing definitions of "analytic sets" which are not equivalent ...

  (Confusing, double use of "inequivalent".)

- p. 150 −6 should be:

  10.8. Prposition. ... *has* (not "had") ...

- p. 156 +9 should be:

  ... and again, $\overline{x}(n) \in B$. Thus,

- p. 157 +6 should be:

$$\sigma : \{0,1\}^* \rightharpoonup T$$

- p. 164 +8 should be:
  ized Continuum Hypothesis **GCH**, (9.7*), so, in particular, the Continuum*
  (The numbered reference to the GCH is wrong.)
- p. 177 $+17, +18$: The axiom list "(**II**) – (**V**)" in these two lines should be enlarged to "(**I**) – (**VI**)"
- p. 178 -12 should be:
  and pairwise disjoint sets, there exists some set $S \in M$ which is a
  (Superfluous and confusing "then".)
- p. 181 +7 should be:
  for some a,
  (Superfluous and confusing "$\in X$".)
- p. 184 +8 should be:
  ... the transitive closure of A
- p. 187 -6 should be:
  grounded graph G and some $x \in G$, such that $A = d(x)$.
  (Extra parenthesis.)
- p. 192 +13. In the displayed equation, replace $t <_V y$ with $t <_U y$.
  p.198-11: (12.32) should read $|A| = |B|$ (not $=_c$) is what Hinman wants — correct but not needed
- p. 201 +4 *and* + 5 should be:
  tion that "every infinite cardinal is an aleph,"

$$(\forall \text{ infinite } A)(\exists \alpha)[A =_c |A| = \aleph_\alpha].$$

- p. 202. In the diagram, $V_\omega \cdot 2$ should read $V_{\omega \cdot 2}$.
- p. 229+5 The reference is wrong: it should be "(1) of Lemma **A.36**".