

Basic Concepts of Mathematics

by

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Errata

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This list of errata records changes made since the version of October 29, 2001.

Version of February 12, 2007

- (1) Chapter 2, §14, proof of Theorem 2, change

$$r' = \frac{m'}{n'} \quad (m', n' \in N)$$

to

$$r' = \frac{m'}{n'} \quad (m', n' \text{ naturals in } F).$$

In the first paragraph after the proof, change “Thus, we have also proved that *the set F of all natural numbers ...*” to “Thus, we have also proved that *the set N of all natural numbers ...*”.

Thanks to Jonathan Ferron for his comments.

Version of January 5, 2007

- (1) Chapter 2, §14, Problem 6, change

$$(\forall n \in N) \quad (n) = n \cdot 1',$$

to

$$(\forall n \in N) \quad f(n) = n \cdot 1'.$$

- (2) Chapter 2, §15, Example 2, change

$$A = \{x \in R \mid x \leq 0 \text{ or } x^2 \leq 2\}, \quad B = \{x \in R \mid x > 0, x^2 > 2\}$$

to

$$A = \{x \in R \mid x \leq 0 \text{ or } x^2 < 2\}, \quad B = \{x \in R \mid x > 0 \text{ and } x^2 > 2\}.$$

- (3) Chapter 2, §16, after Corollary 1, change “Also, $\bar{L} \geq p_n \dots$ ” to “Also, $\underline{L} \geq p_n \dots$ ”.
- (4) Chapter 2, §16, Proof of Theorem 1, part (i), change “such n must occur in *each* set $A_n = \{x_m, x_{m+1}, \dots\}$ ” to “such x_n must occur in *each* set $A_m = \{x_m, x_{m+1}, \dots\}$ ”.
- (5) Chapter 3, §1, Problem 1, change “ $2\vec{u} - \vec{v} - 3\vec{w} + 5\vec{w}$ ” to “ $2\vec{u} - \vec{v} - 3\vec{w} + 5\vec{x}$ ”.
- (6) Chapter 3, §1, Problem 4, change “express \vec{w} as a linear combination of $\vec{u}, \vec{v}, \vec{w}$, \vec{x} ” to “express \vec{x} as a linear combination of $\vec{u}, \vec{v}, \vec{w}$ ”.

Thanks to Gregory Hersh for his comments.

Version of October 4, 2006:

- (1) Chapter 2, §7, “Induction Law for Integers,” change “ $p(n)$ ” to “ $P(n)$ ”.
- (2) Chapter 2, §13, Problem 2, change

$$\sum_{k=1}^r cr^k \text{ to } \sum_{k=0}^n cr^k \text{ (twice).}$$

- (3) Chapter 2, §14, Definition 2 and just before: We clarify that $n \cdot a$ and $r \cdot a$ mean the same as na and ra , respectively. Later on same page, change “Moreover, if $r \in N$, i.e., $r = m/l \dots$ ” to “Moreover, if $r \in N$, i.e., $r = m/1 \dots$ ”.
- (4) Chapter 3, §5, Problem 5, change $kP + kk'P' = 0$ to $kP + k'P' = 0$.

Thanks to Gregory Hersh for his comments.

Version of August 14, 2006:

- (1) Last line of Definition 3 of Chapter 2, §6, change

$$\prod_{k=1}^n x_k = x_1 \text{ to } \prod_{k=1}^1 x_k = x_1.$$

Thanks to Gregory Hersh for this change.

Version of March 16, 2005:

- (1) Chapter 2, §9, Theorem 1, change “nfimum” to “infimum”.
- (2) After Chapter 3, §5, Theorem 1, change “uit” to “unit”.
- (3) Chapter 3, §9, part II, change definition of complex dot product

$$x \cdot y = \sum_{k=1}^n x_k \bar{y}_k \text{ to } x \cdot y = \sum_{k=1}^n x_k \bar{y}_i.$$

Thanks to “Plareplane” for these three changes.

Version of September 25, 2004:

- (1) In Chapter 1, §5, Definition 1, change “iff the image $R[x]$ or every element $x \in D_R$ ” to “iff the image $R[x]$ for every element $x \in D_R$.”

Version of August 2, 2004:

- (1) Remove the “(in preparation)” note for *Mathematical Analysis I*.

Version of March 11, 2004:

- (1) Add entries in the Table of Contents for the Preface and the section “About the Author”.

Version of March 1, 2004:

- (1) Chapter 1, §2, Theorem 2: Change

$$(i) \quad E - \bigcup_i A_i = \bigcap_i (E - A_j)$$

to

$$(i) \quad E - \bigcup_i A_i = \bigcap_i (E - A_i).$$

- (2) Reorder frontmatter to publishing standards; recenter displayed equations in problem sets; ensure that new chapters start on odd-numbered pages. Unfortunately, this added five (blank) pages to the text and changed page numbers.

Version of December 14, 2001:

- (1) In the first line of Chapter 2, §16, Definition 1, change $\{x_n \subseteq E^*\}$ to $\{x_n\} \subseteq E^*$.