Vector Calculus, Linear Algebra and Differential Forms: A Unified Approach 5th Edition, Second Printing

Complete List of Errata and Notes as of December 24, 2019

You have the first printing if the copyright page contains, after "Printed in the United States of America" the numbers 10 9 8 7 6 5 4 3 2 1. You have the second printing if the numbers end with 2: 10 9 8 7 6 5 4 3 2.

We thank Roderich Gross and Nathaniel Schenker for their contributions to this list.

The list is divided into three sections: errata; minor typos; and notes and clarifications.

Errata

Page 295 Last line of the caption to Figure 3.1.12: "$y_2 - y_3$ is the same multiple of $x_2 - x_3$", not "$y_2 - y_3$ is a multiple of $x_2 - x_3$".

Page 307 Line 3: Add C^1: "graph of a C^1 function".

Minor errata

Page 165 Exercise 2.1.1, part a: "using the format of equation 2.1.2", not "using the format of Exercise 1.2.2".

Page 175 The discussion following Proposition 2.3.1 should have been labeled as a proof.

Page 221 Line immediately before Definition 2.7.3: λTV should be $\lambda T\mathbf{v}$.

Page 285 In Definition 3.1.2., the words "smooth k-dimensional manifold" should be in italics.

Page 289 Line 1: "no longer than" rather than "shorter". In the last margin note, change "the two angles above" to "two angles". The angles are described in the exercise.

Page 290 Caption to Figure 3.1.9: "they can't move", not "they can't moved".

Page 302 Exercise 3.1.5: Replace "the set of equation $X_c = x^2 + y^3 = c$ by "the set X_c of equation $x^2 + y^3 = c$".

PAGE 311 There should be a $\square$ at the bottom of the page to indicate the end of the proof.

PAGE 314 Exercise 3.2.11, part d: $F^{-1}(0)$ should be $F^{-1}([0])$.

PAGE 314 Second paragraph of the first margin note, problem with parentheses: "Part a, together with the associativity of matrix multiplication)" should be "Part a (together with the associativity of matrix multiplication)".

PAGE 319 At the end of the first line, $a_k z^k$ should be $a_k x^k$.

PAGE 404 A period is missing at the end of Definition 4.1.3.

Notes and clarifications

PAGE 85 Since "neighborhood" is not defined until page 86, we are changing the end of the margin note to read "every open interval centered at a rational number contains irrational numbers, and every open interval centered at an irrational number contains rational numbers."

PAGE 275 Exercise 2.10.1: In keeping with our usual practice, all the F should be $\mathbf{F}$. But other authors may use different conventions.

PAGE 277 Exercise 2.10.15: Same comment as for Exercise 2.10.1.

PAGE 279 Exercise 2.15 repeats part c of Exercise 2.9.

PAGE 282 Exercise 2.37, part b: This should be stated as "if and only if":

Let p_1 and p_2 be polynomials of degree k_1 and k_2. Then p_1 and p_2 are relatively prime if and only if there exist unique polynomials q_1 and q_2 of degree at most $k_2 - 1$ and $k_1 - 1$ such that $p_1 q_1 + p_2 q_2 = 1$.

Note for page 296: If V were not open, it would still be true that $W = \mathbf{f}^{-1}(V)$ would be open, but this requires a characterization of continuity not given in the book. To include it would require a definition of what it means for a subset V of a subset $X \subset \mathbb{R}^n$ to be open; our definitions of open and closed sets are limited to subsets of $\mathbb{R}^n$.

PAGE 296 Proof of Theorem 3.1.16: That W is open follows from V being open and $\mathbf{f}$ continuous. Since $\mathbf{f}$ is continuous, if $\mathbf{y}$ is in W and $\mathbf{z}$ is a point in $\mathbb{R}^n$, then for all $\epsilon > 0$ there exists $\delta > 0$ such that

$$|\mathbf{z} - \mathbf{y}| < \delta \implies |\mathbf{f}(\mathbf{y}) - \mathbf{f}(\mathbf{z})| < \epsilon$$

Since V is open, there exists $\epsilon > 0$ such that $B_\epsilon(\mathbf{f}(\mathbf{y}))$ is in V. Thus the ball of radius δ centered at $\mathbf{y}$ is a subset of W. So for every $\mathbf{y} \in W$, there exists δ such that $B_\delta(\mathbf{y})$ is a subset of W, so W is open.

PAGE 304 Exercise 3.1.17: add "with the points restricted to a plane" ("In Example 3.1.8, with the points restricted to a plane, show that...").

PAGE 309 Proof of Proposition 3.2.7: U_1 is open since γ is a continuous function defined on an open set; see the note for the proof of Theorem 3.1.16.

PAGE 313 Exercise 3.2.7: So that the notation is consistent with that used in the solution, replace $\mathbf{x}_0$ by $\mathbf{a} = \begin{pmatrix} a \\ b \\ c \end{pmatrix}$.

PAGE 314 Second sentence of Section 3.3: we are changing "at a point $\mathbf{x}$, the function and its derivative differ only ... " by "at a point $\mathbf{x}$, the function and this linear approximation differ only ... ".

PAGE 317 Last line of last margin note: Corollary 3.3.10 would be a better reference.