Vector Calculus, Linear Algebra and

Differential Forms: A Unified Approach

4th Edition, Second Printing

New errata posted July 10, 2015

Thanks to Adam Lutoborski, Daniel Bettendorf, and Johan De Schrijver for their contributions to this list.

Page 70   The equation in the caption of Figure 1.4.3 should have absolute values:

$$|\vec{\mathbf{x}} \cdot \vec{\mathbf{y}}| = |\vec{\mathbf{x}}||\vec{\mathbf{y}}|\,|\cos\alpha|.$$

Page 128   In equation 1.7.23 and the line immediately after the equation, $\overrightarrow{D_i\mathbf{f}}$ should be $\overrightarrow{D_i\mathbf{f}}(\mathbf{a})$:

"$L(\vec{\mathbf{e}}_i) = \overrightarrow{D_i\mathbf{f}}(\mathbf{a})$, where $\overrightarrow{D_i\mathbf{f}}(\mathbf{a})$ is . . . "

Page 129   Two lines before equation 1.7.35, $\overrightarrow{D_i\mathbf{f}}$ should be $\overrightarrow{D_i\mathbf{f}}(\mathbf{a})$.

Page 130   Three lines after equation 1.7.27, $\overrightarrow{D_i\mathbf{f}}$ should be $\overrightarrow{D_i\mathbf{f}}(\mathbf{a})$.

Page 210   Exercise 2.5.18 last line: $\in \mathbb{R}^{k+1}$, not $\in \mathbb{R}^k$.

Page 243   Line after inequality 2.8.53: $[\mathbf{D}\widetilde{f}]$ should be $[\mathbf{D}\widetilde{\mathbf{f}}]$.

Page 281   Last line of Exercise 2.28: "the inverse function at $\mathbf{f}\begin{pmatrix} 0 \\ \pi \end{pmatrix}$", not "the inverse function at $\begin{pmatrix} 0 \\ \pi \end{pmatrix}$".

Page 307   First line after Definition 3.2.1: "tangent line to a curve", not "tangent line to a plane".

Page 460   Exercise 4.6.4: On the right side of the displayed equation, f should be p.

Page 543   In Exercise 5.3.15, the description of the map γ should be

$$\gamma : \begin{pmatrix} \theta \\ \varphi \\ \psi \end{pmatrix} \mapsto \ldots \quad \text{or} \quad \gamma\begin{pmatrix} \theta \\ \varphi \\ \psi \end{pmatrix} = \ldots$$

PAGE 547   Equation 5.4.19 should have squares on the cos and sin:

$$U_r = \left\{ \begin{pmatrix} \rho \\ \theta \end{pmatrix} \;\middle|\; \rho \le r - \frac{r^3}{6} \left(a\cos^2\theta + b\sin^2\theta \right)^2 + o(r^3) \right\}.$$

PAGE 548   Equation 5.4.23: In the second line, the upper limit of integration for the second integral should include a square:

$$\int_0^{r - \frac{r^3}{6}(a\cos^2\theta + b\sin^2\theta)^2 + o(r^3)} .$$

In the third line, $b\sin^2 t$ should be $b\sin^2\theta$.

PAGE 551   To be consistent with our usual notation, $|d\mathbf{x}|^2$ should be $|d^n\mathbf{x}|$ (in Theorem 5.4.6, the line before the theorem, and the discussion following it).

PAGE 672   In the line immediately after formula 6.22.14, k not n: "a direct basis for $CP_{\mathbf{x}}(\vec{\mathbf{v}}_1, \ldots, \vec{\mathbf{v}}_k)$".

PAGE 674   In equtions 6.12.21 and 6.12.22, $\mathbf{x}_0$ should be $\mathbf{x}$.

PAGE 682   First margin note: The right side of the displayed equation should have a minus sign:

$$\mathbf{d}\left(\frac{1}{r}\right) = -W_{\vec{\mathbf{r}}/r^3}$$

PAGE 744   First line in equation A18.9: The sum is over $P \in \mathcal{P}_{N''}$, not over $P \in \mathcal{P}_N''$.

PAGE 783   Equation A24.8: The first sup is over $I \in \mathcal{I}_n^2$, not $I \in \mathcal{I}_n^{k+2}$.

PAGE 795   In equation A26.17, the domain of the integral immediately following the equality marked 4 is ambiguous. It would be better to write it as $W_i \cap \partial Z_i$.

PAGE 798   Margin note: "Two lines in $\mathbb{R}^3$ are never transversal" should be "Two intersecting lines in $\mathbb{R}^3$ (in particular, two 1-dimensional vector subspaces) are never transversal".

PAGE 800   In three places (A26.42, A26.43, and the line before A26.43) $\begin{bmatrix} I_k \\ [\mathbf{Df}(g(\mathbf{y}))] \end{bmatrix}$ should be $\begin{bmatrix} I_k \\ [\mathbf{Df}(\mathbf{x})] \end{bmatrix}$.

PAGE 801   First line after A26.44: "if at least", not "if and only if at least".

Notes

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PAGE 18   Possible additions to Definitions 0.5.1 and 0.5.2:
   If X is unbounded above, $\sup X$ is defined to be $+\infty$.
   If X is unbounded below, $\inf X$ is defined to be $-\infty$.

PAGE 322   We should have added the following to Definition 3.3.14: If $\mathbf{f}\colon U \to \mathbb{R}^n$ is a C^k function, its Taylor polynomial is the polynomial map $U \to \mathbb{R}^n$ whose coordinate functions are the Taylor polynomials of the coordinate functions of $\mathbf{f}$.
   nonmath

PAGE 15   The sentence after Definition 0.4.12 is missing a period.

PAGE 44   Figure 1.2.1, second line of caption: "the entries $a_{i,k}$ of the matrix A", not "the entries of the $a_{i,k}$ of the matrix A".

PAGE 113   Three lines after formula 1.6.18: The solutions are presented in Appendix A.2, not in Section 0.7.

PAGE 182   Four lines from the bottom: "makes it is easy to analyze" should be "makes it easy to analyze".

PAGE 192   In the second line and in the fourth line, a comma is missing: $\vec{\mathbf{v}}_1, \ldots \vec{\mathbf{v}}_k$ should be $\vec{\mathbf{v}}_1, \ldots, \vec{\mathbf{v}}_k$.

PAGE 202   Comma missing two lines after equation 2.5.13: $p(0), \ldots p(k)$ should be $p(0), \ldots, p(k)$.

PAGE 229   Comma missing one line before Theorem 2.7.6:
   "for $i = 1, \ldots n$" should be "for $i = 1, \ldots, n$".

PAGE 232   Comma missing in Exercise 2.7.4, first line: $\lambda_1, \ldots, \lambda_n$, not $\lambda_1, \ldots \lambda_n$.

PAGE 292   Line 3: "it does not represent", not "it does not represents".

PAGE 308   Second line of Example 3.2.3: $S \subset \mathbb{R}^3$, not $S \subset R^3$.

PAGE 373   Caption to Figure 3.8.2: At the end of the second paragraph, "at f w $\begin{pmatrix} 0 \\ 1/2 \end{pmatrix}$" should be "at $\begin{pmatrix} 0 \\ 1/2 \end{pmatrix}$".

PAGE 409   In part b of Exercise 4.1.18, an end parenthesis is in the wrong place: $f(x_{i+1}^2) - f(x_i^2)$, not $f\big((x_{i+1})^2\big) - f(x_i^2)$.

PAGE 476   There is an extra "is" in part c of Exercise 4.8.2; it should be "For each n, for what values of a and b is the matrix in part b not invertible?"

PAGE 482   in equation 4.9.21, the dots should be raised:

$$[T] = E_k E_{k-1} \cdots E_1.$$

PAGE 518   In Exercise 4.25 the word "by" is missing; "defined by the inequalities".

PAGE 558   Six lines from the bottom: "are actually two instances", not "but are actually two instances"

PAGE 568   Margin note at bottom of page: The word "than" is missing. It should be "quite a bit harder than parts 1 and 3".

PAGE 619   A comma is missing from the dislayed equation in Exercise 6.6.3: $\Omega(\vec{\mathbf{v}}_1, \ldots, \vec{\mathbf{v}}_{n-1})$, not $\Omega(\vec{\mathbf{v}}_1, \ldots \vec{\mathbf{v}}_{n-1})$.

PAGE 648   Example 6.10.8: Hiero, not Creon

PAGE 753   An end parenthesis is missing from the caption to Figure A20.4: the point $\Phi^{-1}([\mathbf{D}\Phi(\mathbf{0})]\mathbf{x})$, not the point $\Phi^{-1}([\mathbf{D}\Phi(\mathbf{0})]\mathbf{x}$.