ERRATA TO “ADVANCED CALCULUS”
(first two printings)
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The errata listed below were corrected in the third printing. Additional errata found since these corrections were made are in a separate document.

“line \(-n\)” means “line \(n\) from the bottom.”

Page 3, line 10: element some \(\rightarrow\) element of some
Page 4, Section 1.1, line 3: where points \(\rightarrow\) where ordered \(n\)-tuples of numbers can represent points
Page 7, line 5: Insert an equal sign after the \(3 \times 3\) matrix.
Page 8, line 6: point point \(\rightarrow\) point
Page 9, Exercise 7b: \(c \rightarrow c\)
Page 9, line 7 of §1.2: notation and \(\rightarrow\) notation
Page 12, Exercise 8: is a \(\rightarrow\) is
Page 13, line 2 after (1.7): \(\delta' = \delta \rightarrow \delta' = \delta / \sqrt{n}\)
Page 13, line 3 after (1.7): \(\delta = \delta' / \sqrt{n} \rightarrow \delta = \delta'\)
Page 19, Exercise 2b: Insert “\(f(x, y) =\)” at the beginning.
Page 19, Exercise 7: Insert “and \(q > 0\)” at the end of the first line.
Page 23, Exercise 4, line 2: 115 \(\rightarrow\) 1.15
Page 23, Exercise 5: The \(f\)’s should be \(f\)’s.
Page 25, line 3 of proof of Theorem 1.16: all \(n \rightarrow \) all \(k\)
Page 38, Exercise 4: \(S\) and \(T \rightarrow S_1\) and \(S_2\)
Page 38, Exercise 11b: On the first line, insert “is continuous and” before “satisfies.” At the end, replace “conclude that \(f\) must be discontinuous at \(t_0\)” by “derive a contradiction”.
Page 47, line 2 of proof of Theorem 2.9: \(g(a)[f(x) \rightarrow g(a)][f(x)]\)
Page 54, last line of Example 1: \(\partial_1 f \rightarrow \partial_3 f\)
Page 60, line 7: \(\lim_{t=0} \rightarrow \lim_{t \to 0}\)
Page 60, line -10: \(f(a + tu) \rightarrow f(a + tu)\)
Page 77, Exercise 4: Replace “\((x, y), (x, z),\) or \((y, z)\)” by “\((x, y)\) or \((x, z)\)” and “all” by “both”.
Page 78, line 4 of Example 1: \(2e^{2y} \sin(x^2 + e^{2y}) \rightarrow 2e^{2y} \cos(x^2 + e^{2y})\)
Page 82, line 5: The second \(\sin^2 \theta\) should be \(\cos^2 \theta\).
Page 82, line 6: \(\partial^2 u/\partial r/\partial \theta \rightarrow \partial^2 u/\partial r/\partial \theta\)
Page 84, line 5: Sorry about the formula sticking out into the margin!
Page 89, line 1: 2.63 → 2.62
Page 90, line following (2.66): k → j
Page 92, line -4: \( P_j(th) \rightarrow P(th) \)
Page 94, Exercise 5b: \( y^3 \rightarrow y^2 \)
Page 95, last line of Exercise 10: \( \alpha \in S \rightarrow \mathbf{a} \in S \)
Page 99, line 11: \( 12 - 6x \rightarrow 12 - 6x - 8y \)
Page 99, lines 15 and -9: alternatively → alternately
Page 108, lines -7 to -5: \( T \rightarrow L \) (in several places)
Page 109, line -5: Exercises → Exercise
Page 110, line 3: to to → to
Page 114, lines -9, -8, and -6: \( f \rightarrow F \) (5 places)
Page 118, line 3 of Theorem 3.9: \( \partial F_i / \partial x_j \rightarrow \partial F_i / \partial y_j \)
Page 120, Exercise 9: \( 3 \rightarrow 6 \)
Page 122, 2nd line of proof of Theorem 3.11: \( f'(t_0) \neq 0 \rightarrow f'(t_0) \neq 0 \)
Page 125, Exercise 3, line 1: the set → the set \( S = \)
Page 125, Exercise 6b: \( F \rightarrow F_3 \)
Page 126, line -8: nonegencracy → nondegeneracy
Page 130, line -14: potential → potential
Page 135, caption of Figure 3.8: Insert comma after \( v^2 \)
Page 137, 4th line of proof of Theorem 3.18: solvability → solvability
Page 139, Exercise 3, line 1: \( u = \rightarrow \) Let \( u = \)
Page 160, Theorem 4.17a: \( c_1 f + c_2 f_2 \rightarrow c_1 f_1 + c_2 f_2 \)
Page 160, Theorem 4.17b: Then \( f \) is integrable on \( S_1 \) and \( S_2 \) if and only if \( f \) is integrable on \( S_1 \cup S_2 \), → If \( f \) is integrable on \( S_1 \) and \( S_2 \) then \( f \) is integrable on \( S_1 \cup S_2 \),
Page 163, line -1: is → in
Page 167, Exercise 4: A better hint: For any rectangle that does not intersect \( S \), there are slightly smaller rectangles that do not intersect \( \overline{S} \).
Page 168, line 2: \( c \rightarrow C \) (two places; to avoid conflict with another use of "c" in the same exercise).
Page 174, last line of Example 4: \( e^{-3} \rightarrow e^{-1} \)
Page 184, line -4: \( r^3 \rightarrow r^4 \) and \( 12 \rightarrow 8. \)
Page 184, line -2: \( \frac{1}{12 \pi} \rightarrow \frac{1}{8 \pi} \) and \( \frac{1}{6} \rightarrow \frac{1}{4} \)
Page 184, line -1: \( \frac{1}{6} \rightarrow \frac{1}{4} \) and \( \frac{16}{9} \rightarrow \frac{8}{3} \)
Page 187, Exercise 5: center of mass → mass
Page 190, second line after (4.49): \( B(r, y_0) \rightarrow B(r, x_0) \)
Page 192, last line before exercises: Exercise 7 → Exercise 8
Page 195, display before Corollary 4.57: \( b^{p-1} \rightarrow b^{1-p} \)

Page 201, Exercise 2c: \( x - 1 \rightarrow 1 - x \)

Page 207, line -10: earlier in this section, \( \rightarrow \) in §4.2.

Page 208, line 2: sup \( \rightarrow \) inf

Page 208, line 4: inf \( \rightarrow \) sup

Page 219, line -4: \( L^p(C) \rightarrow L^{p'}(C) \)

Page 227, line 3: regular \( \rightarrow \) regular region

Page 228, Exercise 3: Assume \( C \) is positively oriented with respect to the region inside it.

Page 233, line 7: surface \( \rightarrow \) surface

Page 235, line -9: \( S^3 \rightarrow S_3 \)

Page 245, line -11: destroyed \( \rightarrow \) destroyed

Page 246, line -5: disappeared \( \rightarrow \) disappeared

Page 249, lines 4, -11, and -8: \( |\eta| \rightarrow |y| \)

Page 252, Exercise 2, line 2: Delete “potential and” and replace “are” by “is”.

Page 257, Exercise 7, last line: Replace the formula for curl \( \mathbf{F} \) by \( 3\mathbf{j} + (z\mathbf{i} - x\mathbf{k})/(x^2 + z^2)^2 \).

Page 258, line 2: \( f \) and \( g \) are \( C^1 \) functions \( \rightarrow \) \( f \) is \( C^1 \) and \( g \) is \( C^2 \)

Page 263, line 12: \( \int_0^x \rightarrow \int_c^x \)

Page 273, line 3: Delete “gives”

Page 273, line 13: \( T \rightarrow \mathbf{T} \)

Page 282, line 2 of proof of Theorem 6.6: \( R_k \rightarrow R_{k-1} \)

Page 285, line -1: \( \sum_1^k \rightarrow \sum_2^k \)

Page 288, line 13: negligibly \( \rightarrow \) negligibly

Page 289, line 2: \( r_n \rightarrow r^n \)

Page 289, line 12: \( a_{n+3} \rightarrow a_{N+3} \)

Page 292, line 5: \( n[1 - (a_{n+1}/a_n)] < q \rightarrow n[1 - (a_{n+1}/a_n)] < q \)

Page 295, Exercise 23: \( x \geq \frac{1}{2} \rightarrow x \geq 1/\sqrt{3} \)

Page 305, Exercise 11: \( \sum_0^\infty \rightarrow \sum_1^\infty \)

Page 310, line 1: 7.4 \( \rightarrow \) 7.3

Page 314, Theorem 7.5, line 1: sequence \( \rightarrow \) sequence

Page 315, line -14: \( (\delta, \infty] \rightarrow [\delta, \infty) \)

Page 317, Example 2, line 1: \( x_n \rightarrow x^n \)

Page 317, Example 2, line 6: is it \( \rightarrow \) it is

Page 318, line 2: Weierstrass \( \rightarrow \) Weierstrass

Page 322, Exercise 1: \( \sum_1^\infty (-1)^{n-1}n^{-3} \rightarrow \sum_{n=1,3,5,\ldots}n^{-3} + 2 \sum_{n=2,6,10,\ldots}n^{-3} \)

Page 322, Exercise 5, line 2: \( \sum_1^\infty \rightarrow -\sum_1^\infty \)

Page 324, line 1 of Theorem 7.17: \( \sum_0^\infty a_n \rightarrow \sum_0^\infty a_n x^n \)
Page 329, lines 7 and 8: $-a$ (in exponent) $\rightarrow -\alpha$
Page 332, Exercise 6c: $1 + t \rightarrow 1 + 2t$
Page 338, line -1: $n \rightarrow k$ (two places)
Page 339, line 2: $n \rightarrow k$ (two places)
Page 341, Exercise 5: $\log_b a \rightarrow \log_2 b$
Page 341, Exercise 13: $e^{xt^2} \rightarrow e^{-xt^2}$
Page 346, lines 3, 4, and 5: A factor of 4 is missing.
Page 348, Example 1, line 5: Delete “so”.
Page 357, line 1: $\cos \theta \pm i \sin \theta \rightarrow \cos n\theta \pm i \sin n\theta$
Page 359, line 8: $\frac{\theta e^{-in\theta}}{in} \rightarrow \frac{\theta e^{-in\theta}}{-in}$
Page 362, Exercise 9: integrable $\rightarrow$ piecewise continuous
Page 364, line -5: $|f(\theta)|^2 \rightarrow |f(\theta)|^2 d\theta$
Page 365, formula (8.14): $\frac{1}{2\pi} \int_{-\pi}^{\pi} \rightarrow \int_{-\pi}^{\pi}$
Page 369, line 7: $(2m-1)\theta \rightarrow (-1)^{m-1}\sin(2m-1)\theta$
Page 376, line -2: $0 \leq \theta \leq \pi \rightarrow 0 < \theta < \pi$
Page 377, line 4: $(2\pi)^{\infty} \rightarrow (2\pi)^{-1}$
Page 377, Exercise 6a: $\sum_{n=-\infty}^{\infty} \rightarrow \sum_{n\neq 0}$
Page 383, equation (8.35): $\exp(-n^2\pi^2kt/l^2) \rightarrow \exp\left(\frac{-n^2\pi^2kt}{l^2}\right)$
Page 386, line 5: the the $\rightarrow$ the
Page 386, formula (8.38): $\sin n\pi ct \rightarrow \sin \frac{n\pi ct}{l}$
Page 389, Exercise 1, line 3: cm/sec$^2$ $\rightarrow$ cm$^2$/sec
Page 390, Exercise 3, line 5: insulated $\rightarrow$ constant-temperature
Page 390, Exercise 3, line 6: $\partial_x u(0, t) = \partial_x u(l, t) = 0 \rightarrow u(0, t) = u(l, t) = 0$
Page 390, Exercise 4, line 3: an $\rightarrow$ and
Page 391, Exercise 6b, line -2: $\sinh c(l - y) \rightarrow \sinh c(L - y)$
Page 399, line -15: Delete “turns”
Page 399, Exercise 1: $x \rightarrow nx$ (two places)
Page 409, line 5: $(BA)^* \rightarrow (AB)^*$
Page 414, line 4: A35 $\rightarrow$ A.35
Page 415: Formula (A45) should be (A.45)
Page 417, line 6: from $B \rightarrow$ from $A$
Page 423, line -4: 4.1 $\rightarrow$ 4.3
Page 425, line -9: 4.39 $\rightarrow$ 4.37
Page 426, line 3: a the $\rightarrow$ the
Page 426, line −1: $\mathbf{F}(\mathbf{y})| \rightarrow \mathbf{F}(\mathbf{y})$
Page 427, line 8: $||\mathbf{x} - \mathbf{y}|| \rightarrow ||\mathbf{x} - \mathbf{y}||$
Page 434, line −11: $D(S,T) \rightarrow d(S,T)$
Page 439, line −12: $\hat{F}^\prime_1 \rightarrow \hat{F}_1$
Page 441, Section 1.5, 1(b): 3 \rightarrow 2 and $-\frac{1}{2} \rightarrow -1$
Page 442, Section 2.5, 4: Delete “$2yz^2 - 2y^2z^3 + 6y$”
Page 442, Section 2.6, 3a: $8x^3 f_{13} \rightarrow 16x^3 f_{13}$
Page 442, Section 2.7, 1: (a) \rightarrow (b)
Page 442, Section 2.7, 2(a): $C = \frac{2}{9} \rightarrow C = 4$
Page 443, Section 2.7, 6: $\frac{3}{2}hk^2 \rightarrow \frac{1}{2}hk^2$
Page 443, Section 2.9, 1: $\frac{1}{4} \rightarrow \frac{1}{2}$
Page 443, Section 2.9, 3: $\min = (308 - 62\sqrt{31})/27$, $\max = 2/3\sqrt{3}$
Page 443, Section 2.9, 15: $(\frac{22}{9}, \frac{4}{3}, \frac{14}{9}) \rightarrow (2, 0, 2)$
Page 443, Section 2.10, 1: $-y^2z^2 = 6xy^3z \rightarrow -y^2z^2 - 6xy^3z$
Page 444, Section 3.3, 2(a): should be $2x - y - z = 3$
Page 444, Section 3.3, 3(a): $f(u,v)$ should be $(u \cos v, u \sin v, f(u))$
Page 444, Section 3.4, 1(a): $Df \rightarrow Df$
Page 444, Section 3.4, 2(a): $(v - 2u, 2v - u) \rightarrow (2v - u, v - 2u)$
Page 445, Section 4.3, 3(b): Delete comma after $dy$.  
Page 445, Section 4.3, 5(a): $\frac{9}{8} \rightarrow \frac{17}{8}$
Page 445, Section 4.3, 5(b): $\sin 1 - \sin 2 \rightarrow \sin 2 - \sin 1$
Page 445, Section 4.3, 12: $123 \rightarrow 126$
Page 446, Section 4.4, 15: $\frac{1}{2} \pi^2 \rightarrow \frac{1}{2} \pi^2 R^4$
Page 446, Section 4.5, 2(b): $2 \cos x^4 \rightarrow 2x^{-1} \cos x^5$
Page 446, Section 4.5, 2(c): $4 \rightarrow 2$
Page 446, Section 4.7, 2(d) $\frac{1}{4} \rightarrow \frac{1}{2}$
Page 446, Section 5.1, 4: $\frac{2}{3} \rightarrow \frac{1}{3}$
Page 446, Section 5.1, 5: (c) should be $-2\pi$, (d) should be $\frac{3356}{45}$.
Page 447, Section 5.3, 4: The numerator of the coefficients of log and arcsin should be $2\pi a b^2$ rather than $b$.
Page 447, Section 5.3, 8(c): $\frac{14}{3} \rightarrow 2$
Page 447, Section 5.4, 1(c): The $+ \text{ after } i \text{ should be } -$.
Page 447, Section 5.7, 2: $\pi a^2 / \sqrt{2} \rightarrow -\pi a^2 / \sqrt{2}$
Page 448, Section 6.1, 1(c): $x + x^{-1} \rightarrow 1 + x^{-1}$
Page 448, Section 6.2, 11: Converges \rightarrow Diverges
Page 449, Section 6.4, 18: $|x| = 1 \rightarrow x = 1$
Page 449, Section 7.1, 2: Parts (e), (f), (g) should be (d), (e), (f).
Page 450, Section 7.6, 7: Replace $n$ by $k$ throughout.

Page 451, Section 8.2, 2: Should be $\frac{\pi^2}{3} + 4 \sum_{1}^{\infty} \frac{(-1)^n}{n^2} \left[ \cos \frac{1}{4} \pi n \cos n\theta + \sin \frac{1}{4} \pi n \sin n\theta \right]$.

Page 452, Section 8.4, 1(d): $(-1)^{n+1} \rightarrow (-1)^{m+1}$
Page 452, Section 8.4, 2(b): $(-1)^{n+1} \rightarrow (-1)^{m+1}$
Page 452, Section 8.5, 2: $2\pi in\theta \rightarrow in\theta$ (two places) and $(2\pi n)^2 \rightarrow n^2$
Page 452, Section 8.5, 4(a): $2l^2 \rightarrow 2l^2m$