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 $\to$ element of some

Page 4, Section 1.1, line 3: where points $\to$ where ordered n-tuples of numbers can represent points

Page 7, line 5: Insert an equal sign after the 3×3 matrix.

Page 8, line 6: point point $\to$ point

Page 9, Exercise 7b: c $\to$ $\mathbf{c}$

Page 9, line 7 of §1.2: notation and $\to$ notation

Page 12, Exercise 8: is a $\to$ is

Page 13, line 2 after (1.7): $\delta' = \delta$ $\to$ $\delta' = \delta/\sqrt{n}$

Page 13, line 3 after (1.7): $\delta = \delta'/\sqrt{n}$ $\to$ $\delta = \delta'$

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 $\to$ 1.15

Page 23, Exercise 5: The f's should be $\mathbf{f}$'s.

Page 25, line 3 of proof of Theorem 1.16: all n $\to$ all k

Page 38, Exercise 4: S and T $\to$ 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: $g(a)[f(x)$ $\to$ $g(a)][f(x)$

Page 54, last line of Example 1: $\partial_1 f$ $\to$ $\partial_3 f$

Page 60, line 7: $\lim_{t=0}$ $\to$ $\lim_{t\to 0}$

Page 60, line -10: $f(\mathbf{a} + t\mathbf{u}$ $\to$ $f(\mathbf{a} + t\mathbf{u})$

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: $2e^{2y} \sin(x^3 + e^{2y})$ $\to$ $2e^{2y} \cos(x^3 + e^{2y})$

Page 82, line 5: The second $\sin^2 \theta$ should be $\cos^2 \theta$.

Page 82, line 6: $\partial^2 u/\partial r/\partial\theta$ $\to$ $\partial^2 u/\partial r\partial\theta$

Page 84, line 5: Sorry about the formula sticking out into the margin!

Page 89, line 1: 2.63 $\to$ 2.62

Page 90, line following (2.66): $k \to j$

Page 92, line -4: $P_j(t\mathbf{h}) \to P(t\mathbf{h})$

Page 94, Exercise 5b: $y^3 \to y^2$

Page 95, last line of Exercise 10: $\alpha \in S \to \mathbf{a} \in S$

Page 99, line 11: $12 - 6x \to 12 - 6x - 8y$

Page 99, lines 15 and -9: alternatively $\to$ alternately

Page 108, lines -7 to -5: $T \to L$ (in several places)

Page 109, line -5: Exercises $\to$ Exercise

Page 110, line 3: to to $\to$ to

Page 114, lines -9, -8, and -6: $f \to F$ (5 places)

Page 118, line 3 of Theorem 3.9: $\partial F_i/\partial x_j \to \partial F_i/\partial y_j$

Page 120, Exercise 9: 3 $\to$ 6

Page 122, 2nd line of proof of Theorem 3.11: $\mathbf{f}'(t_0) \neq 0 \to \mathbf{f}'(t_0) \neq \mathbf{0}$

Page 125, Exercise 3, line 1: the set $\to$ the set $S =$

Page 125, Exercise 6b: $F \to F_3$

Page 126, line -8: nonegeneracy $\to$ nondegeneracy

Page 130, line -14: potential $\to$ potential

Page 135, caption of Figure 3.8: Insert comma after v^2

Page 137, 4th line of proof of Theorem 3.18: solvablity $\to$ solvability

Page 139, Exercise 3, line 1: $u = \to$ Let $u =$

Page 160, Theorem 4.17a: $c_1 f_+ c_2 f_2 \to c_1 f_1 + c_2 f_2$

Page 160, Theorem 4.17b: Then f is integrable on S_1 and S_2 if and only if f is integrable on $S_1 \cup S_2$, $\to$ 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 $\to$ 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: $c \to C$ (two places; to avoid conflict with another use of "c" in the same exercise).

Page 174, last line of Example 4: $e^{-3} \to e^{-1}$

Page 184, line -4: $r^3 \to r^4$ and $12 \to 8$.

Page 184, line -2: $\frac{1}{12\pi} \to \frac{1}{8\pi}$ and $\frac{1}{6} \to \frac{1}{4}$

Page 184, line -1: $\frac{1}{6} \to \frac{1}{4}$ and $\frac{16}{9} \to \frac{8}{3}$

Page 187, Exercise 5: center of mass $\to$ mass

Page 190, second line after (4.49): $B(r, y_0) \to B(r, x_0)$

Page 192, last line before exercises: Exercise 7 $\to$ Exercise 8

Page 195, display before Corollary 4.57: $b^{p-1} \quad \to \quad b^{1-p}$

Page 201, Exercise 2c: $x - 1 \quad \to \quad 1 - x$

Page 207, line -10: earlier in this section, $\quad \to \quad$ in §4.2,

Page 208, line 2: sup $\quad \to \quad$ inf

Page 208, line 4: inf $\quad \to \quad$ sup

Page 219, line -4: $L'_P(C) \quad \to \quad L_{P'}(C)$

Page 227, line 3: regular $\quad \to \quad$ regular region

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

Page 233, line 7: furface $\quad \to \quad$ surface

Page 235, line -9: $S^3 \quad \to \quad S_3$

Page 245, line -11: destoyed $\quad \to \quad$ destroyed

Page 246, line -5: diasppeared $\quad \to \quad$ disappeared

Page 249, lines 4, -11, and -8: $|\eta| \quad \to \quad |\mathbf{y}|$

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 $\quad \to \quad$ f is C^1 and g is C^2

Page 263, line 12: $\int_0^z \quad \to \quad \int_c^z$

Page 273, line 3: Delete "gives"

Page 273, line 13: $T \quad \to \quad \mathbf{T}$

Page 282, line 2 of proof of Theorem 6.6: $R_k \quad \to \quad R_{k-1}$

Page 285, line -1: $\sum_1^k \quad \to \quad \sum_2^k$

Page 288, line 13: negiligibly $\quad \to \quad$ negligibly

Page 289, line 2: $r_n \quad \to \quad r^n$

Page 289, line 12: $a_{n+3} \quad \to \quad a_{N+3}$

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

Page 295, Exercise 23: $x \geq \frac{1}{2} \quad \to \quad x \geq 1/\sqrt{3}$

Page 305, Exercise 11: $\sum_0^\infty \quad \to \quad \sum_1^\infty$

Page 310, line 1: 7.4 $\quad \to \quad$ 7.3

Page 314, Theorem 7.5, line 1: sqeuence $\quad \to \quad$ sequence

Page 315, line -14: $(\delta, \infty] \quad \to \quad [\delta, \infty)$

Page 317, Example 2, line 1: $x_n \quad \to \quad x^n$

Page 317, Example 2, line 6: is it $\quad \to \quad$ it is

Page 318, line 2: Weirestrass $\quad \to \quad$ Weierstrass

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

Page 322, Exercise 5, line 2: $\sum_1^\infty \quad \to \quad -\sum_1^\infty$

Page 324, line 1 of Theorem 7.17: $\sum_0^\infty a_n \quad \to \quad \sum_0^\infty a_n x^n$

Page 329, lines 7 and 8: $-a$ (in exponent) $\to$ $-\alpha$

Page 332, Exercise 6c: $1+t$ $\to$ $1+2t$

Page 338, line -1: n $\to$ k (two places)

Page 339, line 2: n $\to$ k (two places)

Page 341, Exercise 5: $\frac{\log}{b} a$ $\to$ $\log \frac{a}{b}$

Page 341, Exercise 13: e^{xt^2} $\to$ 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: $\cos\theta \pm i\sin\theta$ $\to$ $\cos n\theta \pm i \sin n\theta$

Page 359, line 8: $\dfrac{\theta e^{-in\theta}}{in}$ $\to$ $\dfrac{\theta e^{-in\theta}}{-in}$

Page 362, Exercise 9: integrable $\to$ piecewise continuous

Page 364, line -5: $|f(\theta)|^2$ $\to$ $|f(\theta)|^2\, d\theta$

Page 365, formula (8.14): $\frac{1}{2\pi}\int_{-\pi}^{\pi}$ $\to$ $\int_{-\pi}^{\pi}$

Page 369, line 7: $\sin(2m-1)\theta$ $\to$ $(-1)^{m-1}\sin(2m-1)\theta$

Page 376, line -2: $0 \le \theta \le \pi$ $\to$ $0 < \theta < \pi$

Page 377, line 4: $(2\pi)^{\infty}$ $\to$ $(2\pi)^{-1}$

Page 377, Exercise 6a: $\sum_{-\infty}^{\infty}$ $\to$ $\sum_{n\neq 0}$

Page 383, equation (8.35): $\exp(-n^2\pi^2 ktl^2)$ $\to$ $\exp\left(\dfrac{-n^2\pi^2 kt}{l^2}\right)$

Page 386, line 5: the the $\to$ the

Page 386, formula (8.38): $\sin n\pi ctl$ $\to$ $\sin \dfrac{n\pi ct}{l}$

Page 389, Exercise 1, line 3: cm/sec^2 $\to$ cm^2/sec

Page 390, Exercise 3, line 5: insulated $\to$ constant-temperature

Page 390, Exercise 3, line 6: $\partial_x u(0,t) = \partial_x u(l,t) = 0$ $\to$ $u(0,t) = u(l,t) = 0$

Page 390, Exercise 4, line 3: an $\to$ and

Page 391, Exercise 6b, line -2: $\sinh c(l-y)$ $\to$ $\sinh c(L-y)$

Page 399, line -15: Delete "turns"

Page 399, Exercise 1: x $\to$ nx (two places)

Page 409, line 5: $(BA)^*$ $\to$ $(AB)^*$

Page 414, line 4: A35 $\to$ A.35

Page 415: Formula (A45) should be (A.45)

Page 417, line 6: from B $\to$ from A

Page 423, line -4: 4.1 $\to$ 4.3

Page 425, line -9: 4.39 $\to$ 4.37

Page 426, line 3: a the $\to$ the

Page 426, line −1: $\mathbf{F}(\mathbf{y})| \quad \to \quad \mathbf{F}(\mathbf{y})\|$

Page 427, line 8: $\|\mathbf{x}-\mathbf{y}| \quad \to \quad \|\mathbf{x}-\mathbf{y}\|$

Page 434, line −11: $D(S,T) \quad \to \quad d(S,T)$

Page 439, line −12: $\widetilde{F}^1 \quad \to \quad \widetilde{F}_1$

Page 441, Section 1.5, 1(b): $3 \quad \to \quad 2$ and $-\frac{1}{2} \quad \to \quad -1$

Page 442, Section 2.5, 4: Delete "$2yz^2 - 2y^2z^{-3} + 6y$"

Page 442, Section 2.6, 3a: $8x^3 f_{13} \quad \to \quad 16x^3 f_{13}$

Page 442, Section 2.7, 1: (a) $\quad \to \quad$ (b)

Page 442, Section 2.7, 2(a): $C = \frac{2}{3} \quad \to \quad C = 4$

Page 443, Section 2.7, 6: $\frac{3}{2}hk^2 \quad \to \quad \frac{1}{2}hk^2$

Page 443, Section 2.9, 1: $\frac{1}{4} \quad \to \quad \frac{1}{2}$

Page 443, Section 2.9, 3: min $= (308 - 62\sqrt{31})/27$, max $= 2/3\sqrt{3}$

Page 443, Sectioni 2.9, 15: $(\frac{22}{9}, \frac{4}{3}, \frac{14}{9}) \quad \to \quad (2,0,2)$

Page 443, Section 2.10, 1: $-y^2z^2 = 6xy^3z \quad \to \quad -y^2z^2 - 6xy^3z$

Page 444, Section 3.3, 2(a): should be $2x - y - z = 3$

Page 444, Section 3.3, 3(a): $\mathbf{f}(u,v)$ should be $(u\cos v,\ u\sin v,\ f(u))$

Page 444, Section 3.4, 1(a): $Df \quad \to \quad D\mathbf{f}$

Page 444, Section 3.4, 2(a): $(v-2u,\ 2v-u) \quad \to \quad (2v-u,\ v-2u)$

Page 445, Section 4.3, 3(b): Delete comma after dy.

Page 445, Section 4.3, 5(a): $\frac{9}{8} \quad \to \quad \frac{17}{8}$

Page 445, Section 4.3, 5(b): $\sin 1 - \sin 2 \quad \to \quad \sin 2 - \sin 1$

Page 445, Section 4.3, 12: $123 \quad \to \quad 126$

Page 446, Section 4.4, 15: $\frac{1}{2}\pi^2 \quad \to \quad \frac{1}{2}\pi^2 R^4$.

Page 446, Section 4.5, 2(b): $2\cos x^4 \quad \to \quad 2x^{-1}\cos x^5$

Page 446, Section 4.5, 2(c): $4 \quad \to \quad 2$

Page 446, Section 4.7, 2(d) $\frac{1}{4} \quad \to \quad \frac{1}{2}$

Page 446, Section 5.1, 4: $\frac{2}{3} \quad \to \quad \frac{1}{3}$

Page 446, Section 5.1, 5: (c) should be -2π, (d) should be $\frac{9856}{45}$.

Page 447, Section 5.3, 4: The numerator of the coefficients of log and arcsin should be $2\pi ab^2$ rather than b.

Page 447, Section 5.3, 8(c): $\frac{14}{3} \quad \to \quad 2$

Page 447, Section 5.4, 1(c): The $+$ after $\mathbf{i}$ should be $-$.

Page 447, Section 5.7, 2: $\pi a^2/\sqrt{2} \quad \to \quad -\pi a^2/\sqrt{2}$

Page 448, Section 6.1, 1(c): $x + x^{-1} \quad \to \quad 1 + x^{-1}$

Page 448, Section 6.2, 11: Converges $\quad \to \quad$ Diverges

Page 449, Section 6.4, 18: $|x| = 1 \quad \to \quad x = 1$

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 $\dfrac{\pi^2}{3} + 4\sum_1^\infty \dfrac{(-1)^n}{n^2}[\cos\frac{1}{4}n\pi\cos n\theta + \sin\frac{1}{4}n\pi\sin n\theta]$.

Page 452, Section 8.4, 1(d): $(-1)^{n+1} \quad \to \quad (-1)^{m+1}$

Page 452, Section 8.4, 2(b): $(-1)^{n+1} \quad \to \quad (-1)^{m+1}$

Page 452, Section 8.5, 2: $2\pi in\theta \quad \to \quad in\theta$ (two places) and $(2\pi n)^2 \quad \to \quad n^2$

Page 452, Section 8.5, 4(a): $2l^2 \quad \to \quad 2l^2m$