ERRATA TO "ADVANCED CALCULUS"

(3rd and later printings)

G. B. Folland

Last updated February 4, 2021

Additional corrections will be gratefully received at `folland@math.washington.edu` .

"line $-n$" means "line n from the bottom."

Page 15, line 12: $cx^3 \quad \to \quad cx^4$

Page 21, line -13: $\mathbf{l} \quad \to \quad \mathbf{L}$

Page 19, Exercise 9: Assume also that the closure of $\mathbf{f}(S)$ is contained in V. (Extra credit: Find an example where this additional assumption is necessary.)

Page 21, line -12: $\mathbf{x}_k \quad \to \quad x_k$

Page 22, Theorem 1.15b: $\{\mathbf{x}_k\}$ *sequence* $\quad \to \quad$ *sequence* $\{\mathbf{x}_k\}$

Page 26, line 6: $(x_{k-1} - ax_{k-1}^{-1})^2 \quad \to \quad \frac{1}{4}(x_{k-1} - ax_{k-1}^{-1})^2$

Page 29, Exercise 7, line 1: $\mathbf{a} \quad \to \quad \mathbf{x}$

Page 31, proof of Theorem 1.22, line 2, and proof of Corollary 1.23, line 3: $V \quad \to \quad S$

Page 45, line 2: Add $f'(a)g'(a)h^2$ to the expression on the right.

Page 61, Example 4, line 2: direction $\quad \to \quad$ in the direction

Page 68, Figure 2.3: There should be a line joining y to s.

Page 68, line -9: in $S \quad \to \quad S$

Page 73, line -1: so there $\quad \to \quad$ so

Page 74, line 6: going to going to $\quad \to \quad$ going to

Page 74, Example 1b, line 1: as as $\quad \to \quad$ as

Page 96, line 9: $\mathbb{R} \quad \to \quad \mathbb{R}^n$

Page 128, line 15: $\mathbb{R}^2 \quad \to \quad \mathbb{R}^3$

Page 103, line 3: may derived $\quad \to \quad$ may be derived

Page 109, proof of Theorem 2.86: The subscript k should be replaced by another letter (since k is already the dimension of the domain of $\mathbf{g}$).

Page 124, Example 8, line 4: that does $\quad \to \quad$ whose closure does

Page 126, line -10: parametrically $\quad \to \quad$ parametrically by

Page 127: The comma at the end of (3.13) should be a period.

Page 129, line -12: $\mathbf{f}(u, v)$, the vectors $\partial_u \mathbf{f}(\mathbf{a})$ and $\partial_v \mathbf{f}(\mathbf{a}) \quad \to \quad \mathbf{f}(u, v)$ and $\mathbf{a} = \mathbf{f}(b, c)$, the vectors $\partial_u \mathbf{f}(b, c)$ and $\partial_v \mathbf{f}(b, c)$

Page 141, line 6: $-x - 2y + z \quad \to \quad -3x - 6y + 3z$

Page 150, proof of Lemma 4.5, line 5: $s'_Q f \quad\to\quad s_{Q'} f$

Page 150, proof of Lemma 4.5, line 6: $s_Q f \quad\to\quad S_Q f$

Page 150, line before Theorem 4.6: are easy $\quad\to\quad$ easy

Page 162, line -1: $\int_Z \quad\to\quad \iint_Z$

Page 163, line 1: $R_m \quad\to\quad R_M$

Page 163, Corollary 4.23: Replace $\int$ by $\iint$ throughout, and in part (a), assume g is bounded.

Page 166, line 12: $d^n\delta\mathbf{x} \quad\to\quad d^n\mathbf{x}$

Page 183, Theorem 4.41: Assume that $\overline{T} \subset U$ (as in Theorem B.24, in order to avoid the possibility that the integral on the right of (4.42) might be improper because $\det D\mathbf{G}$ need not be bounded on U).

Page 186, line -4, and page 187, line 2: $\iint_S \quad\to\quad \iint_R$

Page 189, line -12: $\partial_{y_j} \quad\to\quad \partial_{x_j}$ (two places)

Page 189, Theorem 4.47: Replace the hypothesis "If f ... for each $\mathbf{y} \in S$" by "If f and $\nabla_{\mathbf{x}} f$ are continuous on $T \times S$".

Page 193, Exercise 4: To be clear, the integrand is $[\sin 2(x-y)][g(y)]$.

Page 203, line before (4.64): to define to define $\quad\to\quad$ to define

Page 209, line 10: the set $\quad\to\quad$ the Lebesgue measurable set

Page 223, lines after (5.15) and (5.16): ϕ'_1 and ϕ'_2 may be allowed to be infinite at the endpoints (so the curves $y = \phi_j(x)$ may have vertical tangents). Similarly for ψ_1 and ψ_2.

Page 223, line after (5.16): $[a,b] \quad\to\quad [c,d]$

Page 226, line 7 of Example 2: $-6\pi \quad\to\quad -3\pi$

Page 226, 2nd line after Example 3: as at $\quad\to\quad$ as a

Page 227, 4th line before the exercises: (29) $\quad\to\quad$ (5.18)

Page 230, line 5: $\mathbf{G}(v) \quad\to\quad \mathbf{G}(u,v)$

Page 232, line 2: on $\quad\to\quad$ in

Page 233, line -3: suface $\quad\to\quad$ surface

Page 234, line 3: $\mathbf{n}\cdot dA \quad\to\quad \mathbf{n}\, dA$

Page 239, line -3: The piecewise smoothness of ϕ_1 and ϕ_2 can be relaxed so that the surfaces $z = \phi_j(x,y)$ can have vertical tangent planes.

Page 251, line 10: (5.30) $\quad\to\quad$ (5.31)

Page 259, line 8: $F_j \quad\to\quad G_j$

Page 259, first display: $x+t \quad\to\quad x_1+t$

Page 260, first display: $\int_{L(\mathbf{a},\mathbf{x})}$ and $\int_{L(\mathbf{a},\mathbf{x}+\mathbf{h})}$ should be switched.

Page 261, line -1: $2x + x^2y \quad\to\quad 2y + xy^2$

Page 263, bottom half: $+\partial_y\psi(x,y) \quad\to\quad -\partial_y\psi(x,y)$ (4 places)

Page 265, Proposition 5.65 and the following 2 lines: $\mathbf{F} \quad\to\quad \mathbf{H}$ (6 places)

Page 267, line −8: $\partial_1 G_{n-1} \quad \to \quad \partial_{n-1} G_1$

Page 269, from (5.67) to line −6: all A's should be F's.

Page 272, lines 7 and 13: $\mathbf{T}(u) \quad \to \quad \mathbf{T}(\mathbf{u})$

Page 272, line 8: $x \quad \to \quad \mathbf{x}$ and $dx_j \quad \to \quad dx_m$

Page 272, line 12: $C_{lm}(x) \quad \to \quad C_{lm}(\mathbf{x})$

Page 272, line −2: $C^{(1)} \quad \to \quad C^1$

Page 273, line 8 $\mathbb{R}^3 \quad \to \quad \mathbb{R}^n$

Page 273, line 13: $C^{(1)} \quad \to \quad C^1$

Page 277, line 9: Delete the factor of c.

Page 280, line 1: an $\quad \to \quad$ to an

Page 289, line 13: $m \geq 0 \quad \to \quad m > 0$

Page 289, Theorem 6.14, line 1: Supppose $\quad \to \quad$ Suppose

Page 292, line 5 of Example 7: $5n^3 + 9n^2 + 3 \quad \to \quad 5n^3 + 9n^2 + 3n$

Page 296, line −3: $\dfrac{1}{k} \quad \to \quad \dfrac{1}{k+1}$

Page 314, line −2: $1/2k \quad \to \quad 1/\sqrt{3}\,k$ and $16k/25 \quad \to \quad 9k/8\sqrt{3}$

Page 315, line 7: $k > 1/2\delta \quad \to \quad k > 1/\sqrt{3}\,\delta$

Page 315, line 10: $k > \dfrac{1}{2\delta} \quad \to \quad k > \dfrac{1}{\sqrt{3}\,\delta}$

Page 327, line 9: $f(k) \quad \to \quad f^{(k)}$

Page 330, line −7: $x^{x+1} \quad \to \quad x^{n+1}$

Page 352, line 6: 7.61 $\quad \to \quad$ 7.60

Page 352, line 7: 7.62 $\quad \to \quad$ 7.61

Page 363, sketch for Exercise 7: π is the midpoint of the interval where f is negative, not the right endpoint.

Page 368, last line of Exercise 1: 5 $\quad \to \quad$ 7

Page 376, line 7: hence $f \quad \to \quad$ hence its sum (which is f, assuming f is standardized)

Page 388, line 3: exp $\quad \to \quad b_n \exp$

Page 398, Corollary 8.45: $L^2(\pi, \pi) \quad \to \quad L^2(-\pi, \pi)$

Page 405, line 4 of Section A.1: $c\mathbf{x}_1 \quad \to \quad c_1\mathbf{x}_1$

Page 429, line 6: B.9 $\quad \to \quad$ B.13

Page 437, first line of last paragraph: region $\quad \to \quad$ a region

Page 438: *piecewise smooth* $\quad \to \quad C^1$

Page 439, line 9: $w - \phi(u, v) \quad \to \quad w + \phi(u, v)$

Page 441, Section 1.2, 1c: $x \geq 1 \quad \to \quad x \geq 0$ and $y \geq 1 \quad \to \quad y \geq 0$

Page 442, Section 2.5, 3: $2yz \quad \to \quad 2yzt$ and $-4z^4 e^{yz} \quad \to \quad +2z^4 e^{yz}$

Page 442, Section 2.6, 3a, line 3: $3x \cos 3y \quad \to \quad 6x \cos 3y$

Page 445, Section 4.3, 5a: $\frac{33}{8} \quad \rightarrow \quad \frac{17}{8}$
Page 446, Section 5.1, 4: $\frac{1}{3} \quad \rightarrow \quad \frac{2}{3}$
Page 447, Section 5.4, 1(a): $y - y^2 \quad \rightarrow \quad y - 2xy$
Page 448, Section 5.8, Problem 2b: $xyz - \frac{1}{2}x^2 - \frac{1}{2}z^2 \quad \rightarrow \quad xyz + \frac{1}{2}x^2 + \frac{1}{2}z^2$
Page 458: Insert entry “inverse mapping theorem, 137”.