

Errata for “Partial Differential Equations”, AMS Press
Third Printing
by Lawrence C. Evans

The errata listed here represent mistakes which made it into the third printing.

Last modified: August 28, 2008.

CHAPTER 1

page 4, line -1: Change u_t to u_{tt} .

CHAPTER 2

page 23, line 9: What’s written is confusing: Add the phrase “(wrong!)” to formula (9)

page 31, line -11: Use

$$\frac{k^k}{k!} < e^k$$

instead of Stirling’s formula.

page 33, line 14. Change nN to $n(N + 1)$.

page 51, line 2: Change $\mathbb{R}n$ to \mathbb{R}^n .

page 68, line -12: Change \mathbb{R}^n to \mathbb{R} .

page 73, line -8: Add a slash through the second integral.

page 79, line -5: Change (37) to (35).

CHAPTER 3

page 93, line 11: Change “columns” to “rows”

page 133, line 3: Change to **b**

page 136, line -1: Should be §3.3.3

page 142, line -1: Change \mathbb{R}^n to \mathbb{R} .

page 152, lines 2 and 5: Change v to v^ϵ .

page 154, line 1: Should read “. . . has compact support and estimate (46) . . . ”

page 164, line 8: Change both \mathbb{R} to \mathbb{R}^n .

page 164, line -11: Change to “compact support in $\mathbb{R} \times [0, T]$ for each time $T > 0$.”

CHAPTER 4

page 183, line -8: Should be §4.3.1

page 187, line 3: Change the first sentence to read: “Even though \hat{B} is not in L^1 or L^2 for large n , we may proceed as follows to compute B .”

page 190, lines -2 and -4: Change $(2\pi)^{\frac{n}{2}}$ to $(2\pi)^{\frac{1}{2}}$.

page 196, line -8: Change to bold \mathbf{g} .

page 196, line -2: Change to “calculate p up to an additive constant”.

page 205, line 8: Change \mathbb{R}^n to \mathbb{R} .

page 209, line 3: Should be §4.3.1

page 210, lines 3 and 4: Integrals should be over \mathbb{R}^n , not \mathbb{R}^m

page 218, lines -3 and -4: Change to “electric potential”.

page 220, line -6: Should be (65)(a)

page 221, line -1: Change to

$$\frac{\partial^j u}{\partial \nu^j} := \sum_{|\alpha|=j} \binom{j}{\alpha} D^\alpha u \nu^\alpha = \sum_{\alpha_1 + \dots + \alpha_n = j} \binom{j}{\alpha} \frac{\partial^j u}{\partial x_1^{\alpha_1} \dots \partial x_n^{\alpha_n}} \nu_1^{\alpha_1} \dots \nu_n^{\alpha_n}$$

CHAPTER 5

page 248, line -5: Remove extra).

page 254, line 4: Change “= $CN\delta$ ” to “ $\leq C(N+1)\delta$ ”.

page 261, line -10: Change reference to §5.3.

page 269, line 15. Add “Suppose first that $n < p < \infty$.”

page 269, line -4: Change to “...complete the proof if $n < p < \infty$. The case $p = \infty$ is easy to prove directly.”

page 270, line -9: Change to “Gagliardo–Nirenberg–Sobolev”

page 271, line 11: Change to “Gagliardo–Nirenberg–Sobolev”

page 277, line -3: Should be “ $h \int_0^1 u_{x_i}(x + t e_i) dt$ ”

page 277, line -1: Change h to $|h|$.

page 287, line -10: Change from “ $(\dots)_{L^2}$ ” to “ $\langle \dots \rangle$ ”

CHAPTER 6

page 318, line 1: Change (3) to (40).

page 318, line 10: Remove first minus sign

page 326, line -8: Change to “ $D^2 u(x_0)$ ”.

page 331, line 7: Change to δ_{ij} .

page 339, line -1: Change to read “either (16) or (17) holds”

page 340, line -7: Rewrite these sentences to read “... boundary conditions, such

that if $\lambda \in \mathbb{C} \dots$ ”

page 342, line 14: Change to “ $\|v_\epsilon\|_X \geq \frac{1}{\epsilon}$ ”.

CHAPTER 7

page 350, line -5: Add “ = 0 ”

page 364, line 8: Should be “Theorem 2”

page 377, line 14: Change “2” to “3”.

page 386, line -10: Should be “ $C[u, v; t] = - \int_U \dots$ ”

page 386, lines -8 and -10: Change b_i to b^i , and a_{ij} to a^{ij} .

page 404, line -3: Change to $CT_1^{\frac{1}{2}}$

page 404, line -1: Change to “7.1.3”

page 406, line -2: Square the term on the left.

page 417, line -5: Should be “Example 1”.

page 423, line 13: The sum should be to n , not ∞ .

CHAPTER 8

page 442: Renumber the last two steps in the proof.

page 445, line -8: Change to “nonlinearity of L ”

page 449, lines 6-9: It is better to argue this way. Extending the trace g off ∂U and subtracting from each u_{k_j} , we reduce to the case $g = 0$. We then extend each u_{k_j} to equal 0 on $\mathbb{R}^n - U$ and deduce therefore that $u \equiv 0$ in $\mathbb{R}^n - U$. Hence the trace of u is zero, according to Theorem 2 in §5.5

page 453, line 6: Replace “right” by “left”.

page 464, line 7: Change 5.6 to 5.7

page 467, line -10: Change to $Du + D\tilde{u}$

page 471, lines 9-10: Change to “constraint”.

page 474, line 12: Change all U to V .

page 477, line -11: Change “level” to “value”.

page 479, after line 6: Add the comment that g is Lipschitz continuous on bounded sets.

page 488, line 4: The exponent of $1 + |Du|^2$ should be $-\frac{3}{2}$.

(My apologies: I have several times posted various incorrect fixes for this error.)

CHAPTER 9

page 512, line 9: Change w to w_1

page 521, line 4: Change x_0 to x^0 .

page 535, line 3: Change to “ $D_p L(Du) \cdot (Dw - Du)$ ”.

page 537, line -7: Change to “unique nonnegative solution”

CHAPTER 10

page 541, line -7: Should be u^{ϵ_j}

page 558, line -7: Put x_0 in place of x .

page 570, line -9: Change \mathbb{R}^n to \mathbb{R}

CHAPTER 11

page 573, line 14: Change \mathbb{R}^n to \mathbb{R} .

APPENDICES

page 615, line 2: Change to $C(x, t; r)$.

page 618, line 16: Change f to u .

page 618, line -15: Change v to u .

page 623, line 8: Missing “ U ” in the second integral

page 623, line 10: Should be “Hölder’s”.

page 623, line -7: Should be u_k , not u_i

page 630, line -6: Should be (§E.6).

page 630, line -3: Change to η_ϵ .

page 632, picture: On the right of the picture, change \mathbb{R}^m to \mathbb{R}^n

page 633, picture: On the right of the picture, change \mathbb{R}^m to \mathbb{R}^n

page 641, line -4: Should be “implies $u_{k_j} \rightarrow Ku = u$ ”.

page 644, line -12: The last ρ should be η .

page 648, line 8: Change “summable” to “measurable”.

page 648, line 12: Change to “ $0 \leq f_1 \leq f_2 \dots$ ”.

Thanks to R. Andrist, S. Armstrong, S. Becker, O. Bratelli, S. Chin, D. Dalmanik, J. Dorfman, D. Epstein, A. Gersborg-Hansen, J. Hulshof, J. Jacobsen, M. Jakszto, A. Krämer, J. Keller, C. Larsen, D. Li, C. Lim, G. Lysik, Y. Pinchover, P. Przybyłowicz, X. Qin, P. Rabinowitz, P. Sacks, O. Schnuerer, T. Schulze, M. Shubin, B. Sunday, R. Teixeira, J. Toland, M. Valadier, K. Vixie, H. Volmer, A.

Yilmaz and M. Yin for finding these mistakes and for various useful comments. I especially thank S. Williams for writing me a long letter with many comments and corrections.

Please let me know about any other errors you find, at evans@math.berkeley.edu. I am grateful (if also embarrassed) for my readers pointing out so many typos, and I will fix these in future printings.