

Corrections and Minor Revisions of *Mathematical Methods in the Physical Sciences,* third edition, by Mary L. Boas

Updated June 7, 2010 by Harold P. Boas

This list includes all the known errors in the first printing at the stated time of update. If you have a later printing, some of these errors may have been corrected. In addition to corrections, a few minor revisions for clarity are included. Please send any additional corrections to `boas@tamu.edu`.

Note that the previous website for errata no longer exists. The current location for errata is http://www.phys.washington.edu/Boas_MathematicalMethods_errata.pdf.

Page	Location	Correction
viii	Line 20	For “futher” read “further”.
ix	Line 15	The opening quotation marks around “To the Student” are reversed.
34	Last line	6^2 should be 2^6 .
51	Figure 5.1	In the first label (1, 1) for the point, there is a missing opening parenthesis.
79	Problem 12	Insert the missing left parenthesis before each summation sign.
86	Example 2	In the last matrix, element (3, 4) should be 10 instead of -20 . In the next line, similarly replace -20 by 10.
121	(6.17)	In the second line, the second expression in parentheses should be $k - \frac{k^3}{3!} + \frac{k^5}{5!} + \cdots$ with ellipsis dots.
136	Problem 21	In line 2, insert a missing “of” to read “in the form of a determinant.”

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152	(11.21)	As mentioned on page 50, the notation λ^* is an alternate notation for $\bar{\lambda}$ (the complex conjugate of λ). But to be consistent with the notation used elsewhere in the book, the instances of λ^* in the paragraph containing formula (11.21) should be changed to $\bar{\lambda}$.
167	(12.25)	For $\lambda = 1$: $\mathbf{R} = (X, Y) = (\sqrt{2}, \sqrt{3})$; for $\lambda = 6$: $\mathbf{R} = (3\sqrt{2}, -2\sqrt{3})$.
208	Example 6	Two lines after (7.8), at the end of the sentence, insert the parenthesis: (see page 189).
212	Last line	The number 1 should be the letter l . Also replace the final period by a comma and add: and $V = w^2l = l^3/2$.
226	(10.3a)	The equations should be $4z + 2y = 0$ and $4y + 2z = 0$.
235	Line -6	In the second integral, dt is missing.
239	Last line	Replace $(\lambda/2)$ in the exponent by λ .
294	(6.8)	Replace $r \sin \phi$ by $r \sin \theta$.
306	Example 6	For “two of the equations corresponding to (8.17) do not hold” read “one of the equations corresponding to (8.17) does not hold”.
311	Line 2	For “w” read “we”.
311	Line 5	The opening quotes of “simply connected” are slanted the wrong way.
312	(9.12)	At the end of the line, $\mathbf{j}x$ should be $\mathbf{j} dx$.
313	Problem 1	The reference to Figure 9.2 should be to Figure 9.1.
329	Line -6	For “ $ \mathbf{H} $ same at all points” read “ $ \mathbf{H} $ is the same at all points”.
330	Line -17	For <i>earths’</i> read <i>earth’s</i> .
336	Problem 17(g)	The integrand of the first integral on the right-hand side should be $(\mathbf{V} \times \nabla\phi) \cdot \mathbf{n} d\sigma$, not $(\nabla \times \nabla\phi) \cdot \mathbf{n} d\sigma$.
337	Problem 16(b)	The W at the end of the sentence is a scalar and so should not be boldface.
354	Example 2	In the last line, $\sin(x + 3\pi/2)$ should be $\sin(3x + 3\pi/2)$.
367	Line 4	After “cosine series” add the bracket [(9.5) and the comments following it].
371	Headline	In the page header, read “Section 9” instead of “Section 10”.
380	(12.3)	The exponent should be $i\alpha_n x$ with an i .
381	(12.13)	Both integrals should be with respect to $d\alpha$.
381	(12.14)	In the second equation, $g_s(x)$ should be $g_s(\alpha)$.
382	(12.15)	In the integrand of the first equation, $g_c(x)$ should be $g_c(\alpha)$.
382	(12.17)	In the first integral, dx should be $d\alpha$. In the second line, there is a missing right-hand parenthesis in the numerator of the first integral.
383	Above (12.20)	The cross reference “from (12.1)” should be “from (12.2)”.
387	Problem 4(a)	In the differential equation, the lowercase c should be a capital C .

Page	Location	Correction
414	Problem 11	A letter y is missing. The equation should be $4y'' + 12y' + 9y = 0$.
431	Line 8	For $p \, dy/dx$ read $p = dy/dx$.
442	Line 13	The period at the beginning of the line belongs at the end of the preceding equation.
446	Example 2	In the first line of the three-line display, the second integral has unbalanced parentheses. It should be $\int_0^t (e^{-\tau} - e^{-2\tau})e^{-(t-\tau)} \, d\tau$.
457	Example 5	The third equation for ρ should have $r^2 \sin \theta$ instead of $r \sin \theta$.
493	(7.1)	The first equation should be parallel to the second one: $Y(x, \epsilon) = y(x) + \epsilon \eta(x)$.
499	(2.7)	Delete the z 's in column 3 of the matrix.
506	Example 1	In the second paragraph, the cross reference “(3.5) to (3.8)” should be “(3.6) to (3.9)”.
514	Example 1	Starting in the middle of line 7, revise as follows: “the z components of \mathbf{U} and \mathbf{V} change sign and the x and y components do not; these are then requirements for all vectors. But the z component of $\mathbf{U} \times \mathbf{V}$ does not change sign while the x and y components do (Problems 3 and 4).” Continue as in the text.
515	Polar and ...	Starting at the end of the third line, revise as follows: “If a vector under rotations has the property that under reflections the signs of its components are opposite to those of a displacement vector, then it is called an <i>axial</i> vector.” Continue as in the text.
520	Problem 2	The unit vector \mathbf{e}_{22} should be \mathbf{e}_2 .
526	(9.7)	On the right-hand side, after the equals sign, the unit vector \mathbf{e}_1 should be in boldface type.
535	Problem 18	The problem should read: Using (10.19), show that $\mathbf{a}^i \cdot \mathbf{a}_j = \delta_j^i$.
542	Problem 3	There is a missing left parenthesis in the binomial coefficient.
543	Problem 3	Both binomial coefficients are missing a left parenthesis.
549	Line -7	In the integral to the right of the equals sign, the integrand is missing the factor $1/t^3$.
567	Problem 1	$P_l(l)$ should be $P_l(1)$, that is, the argument should be “one” instead of “ell”.
568	Problems 4,5	There is a missing left parenthesis in front of the differential operator in each case.
568	(4.1)	In the denominator, 2^1 should be 2^l , that is, the exponent should be the letter “ell” instead of the number “one”.
569	Problem 2	In the second line, the exponent on $(x - 1)$ should be the letter “ell” instead of the number “one”.
582	Problem 16	The last equation should be: $I = \int_{-1}^1 f^2(x) \, dx + (b_0 - c_0)^2 + (b_1 - c_1)^2 + (b_2 - c_2)^2 - c_0^2 - c_1^2 - c_2^2$.
583	Line above (10.6)	Replace “are are” by “and are”.

Page	Location	Correction
615	Problems 2 & 3	There is a missing left parenthesis in the binomial coefficient.
618	Problem 26	In the last sentence, the subscript on j should be the letter “ell” instead of the number “one”.
621	Section 2	At the end of the first paragraph, there is a missing period at the end of the parenthetical sentence.
647	Line 9	Replace 1^1 by 1^2 .
651	Problem 18	The delimiters are unmatched in the displayed equation: the expression $[V(r) - E]$ should be $[V(r) - E]$.
655	Figure 8.4	In the caption, “FIgure” should be “Figure” (lowercase i).
671	Last paragraph	The equation in the second line should read $\nabla^2\phi = \partial^2\phi/dx^2 + \partial^2\phi/\partial y^2 = 0$.
677	Problem 5	The first integral needs a dz .
677	Problem 9	In the denominator of the integrand, x should be z .
711	Example 1	Line 5 should read: “at any point of the plate [see equation (13.3.7)].”
787	Problem 8.23	The $\lambda = 8$ solution should be $y = -2x$.
787	Problem 10.3	$\cos(\mathbf{B}, \mathbf{D}) = 17/\sqrt{345}$.
792	Problem 10.5	The answer should be $4\pi \cdot 5^5$.
799	Problem 11.23	In both (a) and (c), the denominator of the third answer (spherical coordinates) should be $r^2 \sin \theta$ instead of $r \sin \theta$.