

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

Updated 24 March, 2009

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 them may have been corrected. In addition to corrections, a few minor revisions for clarity are included. Please send any additional corrections to MLBoas@aol.com.

Note that my previous website for errata no longer exists. The new one is www.phys.washington.edu/Boas_MathematicalMethods_errata.pdf. In the future, check for further errata in www.phys.washington.edu/Boas_MathematicalMethods_errata.pdf.

| Page | Location | Correction |
|---------|-------------|---|
| Preface | page viii | row 20 from the top, for “futher” read “further”. |
| 34 | bottom 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 and similarly in the next line, replace -20 by 10. |
| 136 | problem 21 | In line 2, insert a missing “of” to read “in the form of a determinant.” |
| 167 | eq.(12.25) | For $\lambda = 1$: $\mathbf{R} = (X, Y) = (\sqrt{2}, \sqrt{3})$; for $\lambda = 6$: $\mathbf{R} = (3\sqrt{2}, -2\sqrt{3})$. |

| Page | Location | Correction |
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| 208 | Example 6 | 2 lines after (7.8), at the end of the sentence, insert the parenthesis: (see page 189.) |
| 212 | last sentence | 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 | eqs. (10.3a) | The equations should be $4z + 2y = 0$ and $4y + 2z = 0$. |
| 235 | line -6 | In the 2nd integral, dt is missing. |
| 239 | last line | Replace $(\lambda/2)$ in the exponent by λ . |
| 294 | eq.(6.8) | Replace $r \sin \phi$ by $r \sin \theta$. |
| 306 | Example 6 | “two of the equations” should be “one of the equations” |
| 311 | line 2 | For “w” read “we”. |
| 311 | before Ex. 1 | The opening quotes of “simply connected” are slanted the wrong way. |
| 312 | equation (9.12) | At the end of the line, $\mathbf{j}x$ should be $\mathbf{j}dx$ |
| 329 | line -5 | At the end of the line “ $ \mathbf{H} $ same at all points” should be “ $ \mathbf{H} $ is the same at all points” |
| 330 | line -17 | earths’ should be earth’s |
| 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, the $n = 3$ entry should read $\sin(3x + 3\pi/2) = -\cos 3x$ |
| 367 | line 4 | After “cosine series” add the bracket [(9.5) and the comments following it.] |
| 380 | equation (12.3) | The exponent should be $i\alpha_n x$. |
| 381 | eqs. (12.14) | In the second equation, $g_s(x)$ should be $g_s(\alpha)$. |
| 382 | eqs. (12.15) | In the first equation, $g_c(x)$ should be $g_c(\alpha)$. |
| 382 | equation (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) | “from (12.1)” should be “from (12.2)” |
| 387 | Problem 4(a) | In the differential equation, replace c by C . |
| 431 | line 8 | For pdy/dx read $p = dy/dx$. |
| 442 | line 13 | The period at the beginning of the line belongs at the end of the preceding equation. |

| Page | Location | Correction |
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| 446 | Example 2 | At the end of the first line of the last equation, the final parenthesis should be in the exponent. |
| 457 | Example 5 | The third equation for p should have $r^2 \sin \theta$ instead of $r \sin \theta$. |
| 493 | Under (7.1) | In the first of two equations under (7,1), $y(x) = \epsilon\eta(x)$ should be $y(x) + \epsilon\eta(x)$. |
| 499 | equation (2.7) | Delete the z 's in column 3 of the matrix. |
| 506 | Example 1 | In the second paragraph, (3.5) to (3.8) should be replaced by (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 text. |
| 515 | Polar and ... | Starting at the end of the 3rd 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 text. |
| 520 | Problem 2 | The unit vector \mathbf{e}_{22} should be \mathbf{e}_2 |
| 526 | Equation (9.7) | After the equal sign, the unit vector \mathbf{e}_1 should be boldfaced. |
| 535 | Problem 18 | The problem should read: Using (10.19), show that $a^i \cdot a_j = \delta_j^i$. |
| 542 | problem 3 | There is a missing left parenthesis in the binomial coefficient. |
| 543 | problem 3 | In two matrices, there is a missing left parenthesis in the binomial coefficient. |
| 549 | line -7 | In the integral, after the = sign, the integrand is missing the factor $1/t^3$. |
| 567 | problem 2.1 | $P_l(l) = 1$ should be $P_l(1) = 1$, that is, the argument should be "one" instead of "ell". |
| 568 | Problems 4,5 | There is a missing parenthesis in front of the differential operator in each case. |
| 568 | equation (4.1) | The exponent on the 2 in the denominator should be the letter "ell" instead of the number "one". |

| Page | Location | Correction |
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| 569 | problem 4.2 | 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 before(10.6) | Replace “are are” by “and are” |
| 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, for p.73) read p.73). |
| 647 | 2nd paragraph | In line 3 replace 1^1 by 1^2 |
| 651 | problem 18 | In the displayed equation, $[V(r) - E]$ should be $[V(r) - E]$. |
| 655 | Figure 8.4 | The caption FFigure 8.4 should be Figure 8.4 (lower case i). |
| 671 | last paragraph | The second line should read $\nabla^2\phi = \partial^2\phi/\partial x^2 + \partial^2\phi/\partial y^2 = 0$, |
| 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 | $\cos((vtB), (vtD)) = 17/\text{sqrt}(345)$ |
| 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 $r \sin \theta$. |