On Quaternions and Octonions errata
October 28, 2013

There have been three printings of the book. In the first printing, page 148 is blank. In the second printing, page 148 contains a theorem but no footnote; the footnote is in the third printing.

Thanks to all who have reported errors in the book (including Rob Arthan, Keith Conrad, Paco Larrión, Mark Newbold, Ted Nitz, Cherng-Tiao Perng, Alexey Shchepetilov, John Sullivan, Hal Switkay, and Shuji Yamada) and to those who find them in the future!

John Conway and Derek Smith (`smithder@lafayette.edu`)

Errors and typos in the first printing corrected by the second printing

- Page 18. Replace section number 2.5 with "Appendix".
- Page 27. In the caption to Figure 3.3, replace 2γ with -2γ.
- Page 32. The Dihedral group at the bottom of the figure should be D_{2n}, not D_n.
- Page 32. In the caption to Figure 3.8, replace *D(n)* with *G(n)*.
- Page 36. In the first paragraph, the terms "pro-prismatic" and "pro-antiprismatic" should be in bold.
- Page 36. In Table 3.1, swap the symbols $*332$ and $3*2$.
- Page 39. In Table 3.2, many names of the form 22 x should be 2 2 x.
- Page 58. Insert the following sentence at the beginning of the proof at the top of the page: "Here we switch to the alternative notations $[x]$ for $N(x)$ and $[x, y]$ for the corresponding inner product."
- Page 65. In the last line, replace 2 with 7.
- Page 77. In the final equation, replace indices $1, 2, \ldots, 8$ with $\infty, 0, \ldots, 6$.

- Page 101. In Figure 9.1, add four more lines between the octavian rings and the double Hurwitzian rings in the obvious way to complete the cyclic pattern.

- Page 126. In footnote 3, insert "some" before $\langle i \rangle$.

- Page 127. In the caption to Figure 10.4, swap 16 and 3.

- Page 127. In the fourth line from the bottom of the page, replace i_0 with $\pm i_0$.

- Page 135. In the line beginning with "norm 2 shapes", replace 0^7 with 0^6.

- Page 138. In the fourth line from the bottom, swap the symbols i_5 and j_5 to give $j_6 = -i_5, j_5 = -i_3$.

- Page 139. The second sentence should contain "...invariance under α and β and the facts ..."

- Page 140. In the fourth line from the bottom of the page, insert "up to symmetry" between "that" and "the".

Errors and typos in the first or second printing corrected by the third printing

- Page 59. In the proof of Theorem 3, replace the three instances of $\mathbb{H}$ with H.

- Page 89. Replace the displayed line with

$$a^{\mathtt{L}_{xy}} = a^{\mathtt{L}_y \mathtt{L}_x}, \quad a^{\mathtt{R}_{xy}} = a^{\mathtt{R}_x \mathtt{R}_y}$$

  Also, in line 12 replace $\mathtt{L}_x = \mathtt{R}_x$ with $a^{\mathtt{L}_x} = a^{\mathtt{R}_x}$.

- Page 100. The two instances of $\mathbb{Q}[\sqrt{-3}]$ should be replaced with $\mathbb{Z}[\sqrt{-3}]$.

- Page 148. $E6$ should be E_6.

Errors and typos that unfortunately still exist in the third printing

- Page 10. Change the web address to
  http://www.crcpress.com/product/isbn/9781568811345
  and the text following it to "which provides a link to the errata list and other useful information."

- Page 15. In the definition of Gaussian prime, replace "whose norm is an ordinary prime, so" with "such". (For example, the norm of 3 is 9, which is not an ordinary prime; but 3 is a Gaussian prime.)

- Page 29. The line immediately after the statement of Theorem 10 should begin "For the angle sum for a k-gon is at most $\frac{k\pi}{2}$, but ..."

- Page 36. In line 5, remove the spaces in $3 * 2$.

- Page 39. In Table 3.2 (continued), DD_{28} should be DD_{48}, and DD_{60} should be DD_{120}.

- Page 40. In the title of the appendix, $v \to \overline{v}qv$ should be $v \to \overline{q}vq$.

- Page 52. In line 1, remove the comma before "in H".

- Page 58. In line 1, replace $[X]$ with $[x]$.

- Page 63. In the statement of Theorem 5, insert "Hurwitz" before "unit-migration", and insert "$(l > 0)$" after "even norm". Also, the theorem applies to primitive Lipschitzians only.

- Page 69. In the proof of Product Conjugation, replace $C2$ with $C1$, and replace $xy.1$ with $1.xy$.

- Page 72. In the first line of Section 6.5, the second x should be overlined to make $x^{-1} = \overline{x}/[x]$.

- Page 75. The first of Hamilton's celebrated relations should of course be $i^2 = j^2 = k^2 = -1$.

- Page 78. In the sentence after Theorem 3, insert "in" before "which the z_k".

- Page 79. In line 4, $\overline{d}b$ should be $d\overline{b}$.

- Page 79. Spell "indefinitely" correctly.
- Page 80. In the third displayed equation, the final $\overline{b}^{-1}$ should simply be $\overline{b}$.
- Page 80. In the final displayed equation, the final i should move to the left-hand side to give $i(\{c\}b + \overline{a}\{d\})$. (This appendix does not appear in the first printing.)
- Page 80. Remove the sentence "For instance, i times one product of x and y is another product of ix and y."
- Page 91. In the first displayed equation, the final two subscripts should be n, not $2n$.
- Page 93. In line -8, insert "(and define)" after "use".
- Page 109. In Figure 9.7, swap i_0 and i_∞, and replace $i_{\infty 124}$ with i_{0124}.
- Page 126. In the caption to Figure 10.3, insert "ring" after "ordinary integer".
- Page 131. In the displayed box at the top of the page, replace $\overline{043}5$ with $\overline{043}6$.

Other remarks about the third printing

- Page 44. The component generators are defined in Theorem 12 on page 33. Also, the semicolon simply separates generators with a trivial component from those without.
- Page 47. A lone $*$ refers to simple conjugation, as defined on page 42.
- Page 55. One can check that the Hurwitz integers do form an integer ring.
- Page 56. H and L refer to the Hurwitz and Lipschitz integers, respectively.

- Pages 57, 58, 63, and 115. It would be best to have all of the factorizations begin with P_0 or begin with P_1.
- Page 77. The H in the first line is the subalgebra defined on page 69.
- Page 97. In the proof of Theorem 12, ":" is another symbol for multiplication.