Errata for
Mathematics by Experiment: Plausible Reasoning in the 21st Century
First Printing (Oct 2003) Copyright 2004

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Since the release of the first volume of our book in October 2003, a number of colleagues have graciously provided reports of various errors and glitches. We list here those errors that we regard as serious enough to possibly impede the understanding and/or usage of this book. This and others we hope to address when the book is reprinted.

1. Citation errors. Due to an unfortunate error in the production of the printed copy, some of the citations of references do not point to the correct item in the bibliography. Here is the "algorithm" for determining the correct item in the bibliography:

Citation Number	Bibliography number
[1]–[85]	Citation number is correct
[86, pg 100]	[86]
[86, pg 2]	[87]
[87]–[156]	Add one to citation number
[157]	[159]
[158, pg 139]	[158]
[158, pg 97]	[160]
[159–196]	Add two to citation number

2. Page 28 and numerous other locations: Replace all instances of these URLs as follows:
   Replace `http://www.cecm.sfu.ca/projects/ezface+`
   with `http://oldweb.cecm.sfu.ca/projects/ezface+`
   Replace `http://www.cecm.sfu.ca/projects/IntegerRelations`
   with `http://oldweb.cecm.sfu.ca/projects/IntegerRelations`
   Replace `http://www.cecm.sfu.ca/projects/ISC`
   with `http://oldweb.cecm.sfu.ca/projects/ISC`

3. Page 8, near top: The reference [79] is not correct. The correct reference here should be:

   R. Crandall, E. Mayer and J. Papadopoulos, J. "The Twenty-Fourth Fermat Number Is Composite," *Mathematics of Computation*, vol. 72 (2003), pg. 1555-1572.

4. Page 8, center: Avogadro's number is 6.022×10^{23}.

5. Page 25, near bottom: $I(a)$ should read $I(\alpha)$.

6. Page 30, item 19: This particular URL no longer points to a note about primes in π, and in any event the eminent Donald Knuth was not the author.

7. Page 52, center: The 2 at the start of the second line of this constant is redundant with the 2 at the end of the previous line and should be omitted.

8. Page 56, center. Replace "Bernoulli" by "Euler" in these two lines.

9. Page 63, eqn 2.25: This should read $a_n = \lfloor \tau(2^{(n-1)/2} + 2^{(n-2)/2}) \rfloor$.

10. Page 77, Problem 15. The second answer should read $\sqrt[3]{\frac{3}{2}\sqrt[3]{9} - 3/2}$.

11. Page 79, Theorem 2.1: This should read $3, 5, 7, ..., 2 \cdot 3, 2 \cdot 5, 2 \cdot 7, ..., 2^2 \cdot 3, 2^2 \cdot 5, 2^2 \cdot 7, ..., 2^3 \cdot 3, 2^3 \cdot 5, 2^3 \cdot 7, ...2^5, 2^4, 2^3, 2^2, 2, 1$.

12. Page 89, in 34(b): in the first line for $V/\sqrt{3}$, the second term is missing "F". The ? is not required in this part.

13. Page 91, in 35(d), near top: L_2 should be Li_2.

14. Page 91, in 35(e): the factor of 2 in the first expression for V should be deleted.

15. Page 129, center: The formula for $\log(9/10)$ should sum from $k = 1$ instead of $k = 0$.

16. Page 131, near top: Page 131, (3.51): The denominator should read $1 - \tan(r)\tan(s)$.

17. Page 137, Algorithm 3.7: In the line above "Algorithm 3.7." the expression "in $\log(D)$ steps" should be omitted. In the first line of the algorithm, $n < N$ should be replaced by "$n < N = \lceil \log_2(D/1.36) \rceil$". Also, the third line should read

$$\left(\frac{k_N}{4}\right)^{-1/2^{N-1}}$$

.

18. Page 138, two lines after eqn 3.64: This should read $\partial I_0(z)/\partial\nu$.

19. page 155: A better proof of this result is given in the paper
`http://crd.lbl.gov/ dhbailey/dhbpapers/dhb-mm-hotspot.pdf`.

20. Page 190: In the proof of Theorem 5.8 $z = x/\|x\|_p^p$ and $w = y/\|y\|_q^q$ should be $z = x/\|x\|_p$ and $w = y/\|y\|_q$.

21. Page 192, bottom: This inequality should be reversed.

22. Page 193, equation (5.35): $x\log(x+1/n)$ should be replaced by $x\log(1+1/n)$.

23. Page 195, twice just above and once in equation (5.43): P_{2m} should be replaced by P_{2k}.

24. Page 207, item 4 (a). The expression here should read: $\Psi(n) = \sum_{k=1}^{n-1} -\gamma$. In part (b), the LHS should read: $\Psi(-z) - Psi(z)$.

25. Page 210, $-\log(x)\log(1-x)$ should be $+\log(x)\log(1-x)$. Also $3\sqrt{5}/2$ should be $\frac{3-\sqrt{5}}{2}$.

26. Page 236, near top: $K_0 7$ should be K_0.

27. Page 236, item 3. The second displayed equation should read:

$$\frac{10^{1999}-6}{3} < 10^{1000}\sqrt{N} < \frac{10^{1999}-4}{3}.$$

28. Page 277, item 159 (Odlyzko reference): page numbers are 139–144.