



Not always buried deep

Lies, Damned Lies, and Typos (Errata)

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p. 4, line below the first displayed equation: Replace “ $2^i \mid (\mathbf{Z}/p\mathbf{Z})^\times$ ” with “ $2^i \mid \#(\mathbf{Z}/p\mathbf{Z})^\times$ ”.

p. 8, Hacks’s proof: The reference to the transcendence of π was a bit glib. Replace the last sentence of the proof with the following:

The known proofs of the transcendence of π rely fairly explicitly on the infinitude of primes, so it is somewhat dangerous to appeal to this result directly. However, a weaker result which does not rely in an obvious way on this fact, and which nevertheless suffices for the current application, appears as Exercise 6 (cf. [AZ04, Chapter 6, Theorem 2]).

p. 17, next-to-last centered equation: “ $N(\alpha)$ ” should be “ $\mathcal{N}(\alpha)$ ”.

p. 20, Figure 3: The slope of line e_2 is a bit off; e_2 should be the reflection of e_1 about the y -axis.

p. 22, Theorem 1.15: This result should be starred, since it is not proved in the text.

p. 25, line below (1.12): The degree condition should read “ $\deg R < \deg G$ ”.

p. 30, first full paragraph: The claim that we know no even number $a > 1$ for which $a^{2^n} + 1$ is infinitely often composite is false; e.g., if $a = 8$,

then

$$8^{2^n} + 1 = (2^{2^n} + 1)(2^{2^{n+1}} - 2^{2^n} + 1).$$

More generally, whenever a is a k th power for some odd $k > 1$, there is an analogous algebraic factorization. The correct claim is that no *other* such a are proved to have the stated property.

p. 43, hint to Ex. 35: Delete “with respect to the same prime”.

p. 55, eq. (2.4): The first group of terms should read

$$\zeta^{g^0} + \zeta^{g^2} + \cdots + \zeta^{g^{p-3}};$$

in other words, the final term $\zeta^{g^{p-1}}$ should not be there.

p. 58, penultimate step in (2.5): Replace the summand “ ζ^e ” with “ ζ^u ”.

p. 62, proof of Theorem 2.18: Right below “we have,” the expansion of η_0 should only go to $\zeta^{g^{p-3}}$, not $\zeta^{g^{p-1}}$.

p. 65, proof of Lemma 2.24: In the displayed equation, replace the condition of summation “ $\alpha \in \mathbf{F}_p \setminus \{0, 1\}$ ” with “ $\alpha \in \mathbf{F}_p \setminus \{0, -1\}$ ”.

p. 69, first two words: The reference should be to Theorem 2.26, not Theorem 7.5.

p. 91, Lemma 3.9: We prove that “ $\sum_{d|n} \Lambda(d) = \log n$ ”, not “ $\sum_{d|n} \Lambda(n) = \log n$ ”.

p. 108, Exercise 12(a): There is a “ p ” missing from the inside of the product.

p. 127, Theorem 4.2: In (4.16), the condition “ $\chi = \psi^{-1}$ ” should read “ $\chi = \psi$ ”.

p. 223, equations (7.18): This sequence of equations should begin with “ $\sum_{ab=n} \mu(a)(\sum_{d|b} \Lambda(d))^2$ ” instead of “ $\sum_{ab=n} \mu(a)(\sum_{d|b} \Lambda(b))^2$ ”.

p. 257, final paragraph: Replace “number $(\log x)$ -smooth” with “number of $(\log x)$ -smooth”.

p. 258, end of proof of Theorem 8.4: Delete one occurrence of “most” in “number of perfect numbers $\leq x$ is at most most $x^{W/\log \log x}$ ”.

Five lines from the bottom: “Supposing that p^e does exactly divide m^2 ” should read “Supposing that p^e does exactly divide $\sigma(m^2)$ ”.

p. 264, bottom of the proof of Lemma 8.19: Replace “the primes p_1, \dots, p_{K+1} satisfy (8.15) ...” with “the primes p_0, \dots, p_{K+1} satisfy (8.15) ...”.

pp. 272–273: Exercise 29. Ignore the reference to Exercise 6.25. That estimate is only necessary to prove the quantitative result that for some $\delta > 0$, there are $\gg x^\delta$ values of $n \leq x$ for which $\sigma(n)$ is a square.

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