

Timeline + Corrections to “Algebra I: Groups, Rings, & Arithmetic”

- PDF uploaded on the website on June 1, 2019
- August 22, 2019, corrected misspelled “integer” on page 148, row -7
- September 4, 2019, corrected the following: on p. iv, row -5, “category” was misspelled, on p. v, second to last paragraph, “Needless” was misspelled, both found by Valerie Duran. On p. ii, row -14, “examples” was misspelled, and on p. 1, row +3, “that” replaced by “which”, both found by Chinaemerem Isika. On pages 4 and 7, in the statement of Exercise 1.1.13, the second “a)” should be “c)”, found by Ray Luis. In the proof on p. 9, misspelled “and”, found by Maria Rojas.
- September 9, 2019, on p.7, part a) of solution of 1.1.13, “nor” instead of “not”, found by Jennifer Monge.
- September 16, 2019, on p. 2, r. +6, “be” removed, found by Veronica Reyes.
- September 24, 2019, eliminated one open parenthesis on the first line of the solution to Exercise 1.4.5 xxvii), found by Ray Luis. Also replaced in the same solution $A \cap B \cap C$ by $(A \cap B) \cup (A \cap C) \cup (B \cap C)$. Then in Exercise 1.4.11 replaced “Which” by “Which of” (also in the solutions section), found by Ray Luis.
- September 30, 2019, corrected misspelled “isomorphism” in the solution to Exercise 15.4.1515 v), found by Jose Dominguez.
- October 21, 2019, added a closed parenthesis in the solution to Exercise 1.3.3, ii), found by Veronica Reyes. Corrected misspelled “Acquiring” and “ocurrence” on pages i and v of the introduction, both found by Jose Dominguez. Replaced “an” by “a” on page v of the introduction.
- October 23, 2019, corrected misspelled “order” in the proof of Proposition 1.7.13, found by Valerie Duran.
- October 30, 2019, in the solution to Exercise 1.4.13, changed S_n to S_3 , found by Daniel Farina.
- November 6, 2019, corrected b_b to b_n in Exercise 2.1.2, also in the solutions section, found by Karen Garcia. Changed x_{-1} to x^{-1} in the solution to Exercise 2.1.12 i).
- November 13, 2019, corrected misspelled “absorption” twice (in 2.2 and 2.3), replaced “ $x(y - y')$ ” by “ $(x - x')y'$ ” twice on p. 78 in 2.3, replaced ii) by i) in the proof of Proposition 2.2.11 iii).
- November 17, 2019, inserted “of” in Exercise 2.1.13, found by Jennifer Monge. Corrected misspelled “binomial” in Exercise 2.1.2, found by Jose Dominguez.

- November 18, 2019, deleted a “}” in Exercise 2.2.2 vii), found by Ray Luis. Replaced “ G ” by “ R ” in the solution to Exercise 2.3.4, found by Maria Barriga.
- November 20, 2019, reformulated the solutions to i) \Rightarrow ii) of Exercise 2.4.12 and to Exercise 2.4.16 (also added a closed parenthesis).
- November 23, 2019, added “i” to the statements of Exercises 2.4.15 and 2.5.2 in the solutions sections, both found by Veronica Reyes.
- November 24, 2019, deleted the second “is” in the statement of Proposition 2.6.1, corrected misspelled “property” after Exercise 2.6.14, added a comma in the statement of Proposition 2.6.16 ii), added a period at the end of Remark 2.6.17, all found by Miguel Reyes.
- November 25, 2019, corrected “ f^{k+l} ” in the solution to Exercise 2.5.2 iv), found by Karen Garcia. Moved vi) to new line. Corrected misspelled “Corollary” in the solution to Exercise 2.5.12, found by Ray Luis. Corrected misspelled “image of group morphism” in index, found by Jose Dominguez.
- November 27, 2019, changed “be” to “by” in the proof of Theorem 2.5.6, found by Miguel Reyes.
- December 1, 2019, corrected misspelled “isomorphic” in the statement of Proposition 1.7.13, found by Jose Dominguez.
- December 4, 2019, corrected misspelled “multiplication” on page 91, found by Jose Dominguez.
- December 11, 2019, removed one “the” from Exercise 1.4.4 (also in the solutions section), coorrected misspelled “homogeneous” before Theorem 2.7.11, corrected misspelled “polynomials” in the statement of Theorem 2.7.11, corrected misspelled “divisible” in the proof of Proposition 3.2.6, corrected misspelled “since” in the proof of Proposition 3.2.10, reformulated the last sentence in the proof of Theorem 3.3.4, corrected misspelled “domain” at the beginning of Section 3.4, removed one “and” in the solution to Exercise 3.5.16, all found by Jose Dominguez.
- December 17, 2019, corrected quotation marks around “tethered” on page 57. Added reference to the Chinese Remainder Theorem and constructive proof in the solution to Exercise 1.7.19 i).
- May 18, 2020, added the notation to Definition 1.2.2; changed “in” to “of” in the solution to Exercise 1.3.18 v); added solutions to iii)-v) for Exercise 1.3.12.
- May 19, 2020, changed Exercise 1.4.5 xx) to complex numbers, then in the solution to xviii) changed “The identity” to “the identity”, and H to Q_8 twice in the solution to xxvi).

- May 29, 2020, made changes in Exercise 1.3.18 (also in the solutions section): in i) changed " $A_i \cup A_j$ " to " $A_i \cap A_j$ ", and in v) changed " ${}_nP_k$ " to " ${}_nP_m$ ".
- June 8, 2020, added the signature of a permutation at the end of 1.7, changed the order of generators in the dihedral groups lists of elements, and added the relations.
- June 10, 2020, changed " $b't'st$ " to " $b's'st$ " in the proof of Proposition 2.5.4.
- November 20, 2020, corrected typos in references [22] and [26].
- November 21, 2020, changed colors in Figure 3.1 on page 143.
- August 31, 2021, corrected the last sentence in the proof of the Division Algorithm for integers, Theorem 1.2.1 on page 9, so that the statement is true for all integers $b \neq 0$, not only for positive ones.
- September 11, 2021, in the solution to Exercise 1.3.5, iv), on page 21, replaced $|AB|$ by $|AC|$, found by Gagandeep Singh.
- September 15, 2021, reformulated the solution to Exercise 1.3.12, v), on page 22, found by Gagandeep Singh.
- September 16, 2021, added remark on different uses of the term range on page 2, suggested by Matthew G. Jones.
- October 25, 2021, in Exercise 1.5.13, vi), on page 41, added two closed parentheses, in the solution to Exercise 1.5.8, ii), changed 1_G to $1_{G'}$, on row +1 on page 36, changed $(x'y')$ to (x', y') , on page 48, changed "Proposition 1.6.6" to "Theorem 1.6.6", all found by Gagandeep Singh. Also, on page 2, changed "preimage" to "inverse image (or preimage)", in the proof of Proposition 1.6.7 on page 48, changed 1_G to $1_{G'}$ three times.
- December 13, 2021, in Exercise 2.2.7, iv), v), on pages 73 and 76, extended brackets and vertical bar, in Proposition 2.5.4, page 91, extended vertical bar.
- December 8, 2022, replaced "two sided" by "two-sided" in Exercise 2.2.7; added the solution to vi) for Exercise 2.2.7, found by Brenda Mendoza; changed "if and only the constant term" to "if and only if the constant term" in Exercise 2.6.12 (also in the solutions section), found by Christian Smith.
- October 8, 2023, replaced the title of Theorem 3.6.10 with "Zariski's Lemma over \mathbb{C} "; in the proof of Theorem 3.6.10, corrected misspelled "contradicts"; in the statement of Exercise 3.6.11 (also in the solutions section), added the title "(Weak form of Hilbert's Nullstellensatz over \mathbb{C})"; in the third row of the statement of Corollary 3.6.18, changed "algebraic" to "integral"; in the statement of Exercise 3.6.25, solutions section, removed one "." at the end; at the end of Section 3.6, added the Zariski Lemma for

arbitrary fields, Theorem 3.6.26, and the weak form of the Nullstellensatz for arbitrary algebraically closed fields, Corollary 3.6.27; added two publications used in the proof of Theorem 3.6.26 to the list of references, [5] and [12].

- October 11, 2023, in the sentence before Corollary 3.6.27, changed “Exercise 1.6.11, ii)” to “Exercise 3.6.11, ii)”;
- in the proof of Theorem 3.6.26, removed unnecessary parentheses around x^{-1} .
- October 14, 2023, removed powers in Theorem 1.2.23, and added comment about the maximum power of a prime dividing a number; in Exercise 1.2.26, replaced “power of p on a side” with “maximum power of p dividing a side” (three times).
- October 23, 2023, after Exercise 1.7.22, replaced “consist” with “consists”;
- removed indentations in the introduction and inside 1.6, 1.7, 2.3, 2.5, 2.7, 3.1, 3.2, 3.3, 3.5, and 3.6; replaced dogs by birds in the introduction.
- October 29, 2023, in the solution to Exercise 2.1.7, xii), corrected misspelled “addition”.
- December 20, 2023, in Section 1.7, in the paragraph after the table of the Klein Four Group, corrected misspelled ”Interesting”;
- updated index pages.
- January 4, 2024, changed the statement of the fundamental theorem of arithmetic, Theorem 1.2.23, to refer to integers different from 0 and ± 1 .
- May 2, 2024, added an extra “)” in the second line of the proof of Theorem 1.3.15.