Errata for

A First Course in Abstract Algebra: Rings, Groups, and Fields 2nd edition,
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- p. 16, line 15: "$r < |a|$" should read "$r' < |a|$".

- p. 31, next-to-last line: "$a \equiv b(\mathrm{mod}\ n)$" should read "$a \equiv b(\mathrm{mod}\ m)$".

- p. 48, proof of Root Theorem, 4th line: "$f = (x-a)g+r$" should read "$f = (x-a)q+r$".

- p. 54, problem 7: Eliminate the last sentence.

- p. 63, line -7: This should read

$$g = 45f = 15x^4 + 10x^3 + 140x^2 - 18x + 90 \in \mathbb{Z}[x].$$

- p. 70, part (3) of *Eisenstein's Criterion* should read "p^2 does not divide a_0".

- p. 297, Exercise 9: End of 1st paragraph should read: "... determinant must be ± 1."

- p. 310, Exercise 4: This problem is false as stated. Replace the last two sentences by:
  "Figure out which of the excluded permutations for the group of symmetries of the
  tetrahedron are mirror reflections. Specify the plane for each of these."

- p. 433, Exercise 8: Replace $\varphi : \mathbb{C}^* \to \mathbb{R}^*$ with $\varphi : \mathbb{C}^* \to \mathbb{R}^+$.

- p. 512, Example 41.2: Replace vector $(1, 1, 1)$ with $(1, 1, -1)$. The last of the displayed
  equations should then be $-x + y = -1$.

- p. 548, Exercise 3(b): The suggested approach to showing that f is irreducible does
  not work! The best approach to showing this polynomial is irreducible is by counting
  degrees using Theorem 44.2. Here in Chapter 43, it is best to just assume that f is
  irreducible, and proceed with the rest of the problem.

- p. 548, Exercise 3(c): In the constant terms of the quadratic factors, replace $\sqrt[2]{2}$ by
  $\sqrt[3]{2}$.

- p. 555, lower diagram: In the labels in the diagram, replace $\sqrt[3]{3}$ with $\sqrt[3]{2}$.

- p. 582, Exercise 2. End of 1st sentence should read "... along the lines of Warm-up
  Exercise (a) above."

- p. 600. Example 48.3. The values of $\mathrm{Fix}(\{\iota\})$ and $\mathrm{Fix}(S_3)$ should be exchanged.

- p. 638, Chapter 9, 3: The first of these two polynomials are identical as functions over
  $\mathbb{Z}_3$. This was not asked for in the problem. Eliminate this pair.

- p. 643, Chapter 17, 3. "$= \langle X \backslash b \rangle$" should read "$= \langle X \backslash \{x\} \rangle$".

- p. 643, Chapter 17, 10. Should read "Yes, if φ is not the zero homomorphism."

- p. 643, Chapter 18, d. "(1/2)" should read "(1/4)".

- p. 644, Chapter 19, 10. "$\varphi(a+b\alpha\ c\alpha^2) = [ax+by\ cz]_6$" should read "$\varphi(a+b\alpha+c\alpha^2) = [ax+by+cz]_6$".

- p. 646, Chapter 23, 7. should be $\begin{pmatrix} 0 & 0 & -1 \\ 1 & 0 & 0 \\ 0 & -1 & 0 \end{pmatrix}$.

- p. 650, Chapter 30, 5. 1 should be included in the list.