Page 23, part (c) of Exercise 5: “Adapt the argument given at the end of the section” should be “Adapt the argument used for the circle $x^2 + y^2 = 1$”

Page 24, line 1: “adapt the argument given at the end of the section” should be “adapt the argument used for the circle $x^2 + y^2 = 1$”

Page 37, line 2 of part (c) of Exercise 16: “Binomial Theorem” should be “binomial theorem”

Page 39, line 6 of the paragraph beginning “To see why this algorithm works”: “By (5),” should be “By (1),”

Page 47, part (a) of Exercise 14: “where $h(a) \neq 0$” should be “where $r \geq 1$ and $h(a) \neq 0$”

Page 53, line 2 of Exercise 5: “affine algebraic varieties” should be “affine varieties”

Page 63, bottom display, second line underneath ): “$xy^2 - x$” should be “$x^2y - x$”

Page 63, bottom display, fourth line underneath ): “$x^2y - y$” should be “$xy^2 - y$”

Page 66, lines -5 and -6: “[using condition (ii) of the definition of a monomial order]” should be “[using Lemma 8 of §2]”

Page 81, line 1 of Exercise 2: “LT(I)” should be “⟨LT(I)⟩”

Page 82, last line of Exercise 13: “Exercise 14 of Chapter 1, §4” should be “Proposition 8 of Chapter 1, §4”

Page 89, part (d) of Exercise 5: “$z^2 - 3z$” should be “$z^2 - 3z$”

Page 93, line -3: “⟨LT(G\{p}\)⟩” should be “⟨LT(G\{g}\)⟩”

Page 96, line 4 of part (b) of Exercise 10: “$g_j = x_t + D$” should be “$g_j = x_\ell + D$”

Page 96, line 4 of part (b) of Exercise 10: “$S(g_i, g_j) = x_tC - x_sD$” should be “$S(g_i, g_j) = x_\ell C - x_sD$”

Page 96, line 2 of part (a) of Exercise 12: “is not divisible by” should be “has leading term not divisible by”

Page 97, line 3 of Exercise 14: “$\frac{x_j - a_j}{a_i - a_j}$” should be “$\frac{x - a_j}{a_i - a_j}$”
Page 105, lines 13–16: Replace \( xy + 1 \) with \( xy - 1 \) in three places and \( -x - y \) with \( -x + y \) in two places. Thus the lines should be as follows:

\[ \frac{\partial f}{\partial G} = -x + y \neq 0. \]

Page 107, line -4: “\( f_3 = xz + y - z + 1 \)” should be “\( f_3 = xz - x + y + 1 \)”

Page 108, Exercise 1: “\( f_3 = xz + y - z + 1 \)” should be “\( f_3 = xz - x + y + 1 \)”

Page 110, Lemma 4: The statement of the lemma should be changed to the following:

**Lemma 4.** Every element of \( S(F) \) can be written as a sum of homogeneous elements of \( S(F) \). Furthermore, this decomposition is unique.

Page 115, line 12 “by Lemma 2” should be “by Lemma 2 of §9”

Page 136, line 20: “\( (t, u, x, y, z) \in V(I) \subseteq \mathbb{R}^5 \)” should be “\( (t, u, x, y, z) \in V(I) \subseteq \mathbb{C}^5 \)”

Page 140, Exercise 3: “\( t^2 \) is always positive” should be “\( t^2 \) is always \( \geq 0 \)”

Page 142, part (a) of Exercise 11: In two places, replace \( F \) by \( G \)

Page 142, part (b) of Exercise 11: Replace \( F \) by \( G \)

Page 142, line 3 of Exercise 13: “\( x_i = f_i(t)/g_i(t) \)” should be “\( x_\ell = f_\ell(t)/g_\ell(t) \)”

Page 142, line 4 of Exercise 13: “each \( i, f_i(t) \) and \( g_i(t) \)” should be “each \( \ell, f_\ell(t) \) and \( g_\ell(t) \)”

Page 153, line 1: “straight lines” should be “straight line”

Page 153, line 4: “These lines have” should be “This line has”

Page 154, part (c) of Exercise 15: The \( x \)-coordinate of the second displayed point should be

\[ \pm \frac{1}{2} \sqrt{15 + 6\sqrt{2} - 12\sqrt{4}} \]

Page 160, part (b) of Exercise 4: “\( g_o = g_3 \)” should be “\( g_o = g_2 \)”

Page 167, line -16: Replace “It follows that” with “(Lemma 3 and Proposition 5 apply to \( f, g \) since their coefficients lie in the field \( k(x_2, \ldots, x_n). \) It follows that”

Page 169, line -7: “\( u_1(x_1) \)” should be “\( u(x_1) \)”
Page 170, line 1: “⟨fi, f∗⟩” should be “⟨fi, f∗⟩”

Page 170, part (c) of Exercise 3: “part (a) is still true but part (b) can fail” should be “parts (a) and (b) are still true”

Page 171, line 2 of Exercise 9: “l ≥ m” should be “l ≥ m > 0”

Page 180, line 13: “must have fi(a1, . . . , an) = 0” should be “must have fi(a1, . . . , an) ≠ 0”

Page 181, lines 1 and 2 of Exercise 10: “R[x, y]” should be “R[x, y, z]” in two places.

Page 181, line 4 of Exercise 10: “same for R[x]” should be “same for R[x] and R[x, y]”

Page 187, line −3: “a i ∂fi ∂xj hi” should be “a i ∂fi ∂xj hi”

Page 189, Exercise 15: Replace the hint with “Hint: Show that xy, xz, yz generate the ideal of leading terms of √I and use the definition of Gr¨obner basis given in Chapter 1, §5.”

Page 190, line 15: “We have sketched V(I) and V(J) on the next page” should be “We have sketched V(I) and V(J) below”

Page 196, line 4: “principal ideals is principal)” should be “two principal ideals is principal)”

Page 199, lines 1–2 of Definition 2: “smallest affine algebraic variety” should be “smallest affine variety”

Page 201, line 12: “varieties k” should be “varieties in k”

Page 206. Exercise 5: Replace the hint with “Hint: Examine the generators of J sM.”

Page 206, Exercise 7: “and the Exercise 4” should be “and Exercise 4”

Page 212, Exercise 10: “Theorem 10 implies” should be “Theorem 10 and Proposition 6 of §7 imply”

Page 212, line 2 of part (e) of Exercise 13: In “where (f1)red is”, there needs to be more space between “(” and “f”.

Page 219, line −18: “is projection” should be “be the projection”

Page 221, line 1: “by Exercise 9 of Chapter 2, §9” should be “by Exercise 15”

Page 221, Corollary 3: “With the same notation” should be “With k algebraically closed and the same notation”

Page 222, line 4: “for all i” should be “for all such i”

Page 222, line 6: “If follows that” should be “It follows that”
Page 222, line immediately before Proposition 5: “what works for $V$” should be “that works for $V$”

Page 222, line 4 of Proposition 5: “$\pi(l(V(I^i)))$” should be “$\pi_l(V(I^i))$”

Page 222, line 5 of Proposition 5: “a variety contained in $V$” should be “a variety contained in $V(I_l)$”

Page 223, line −17: “$W \subseteq V(I)$” should be “$W \subseteq V(I_l)$”

Page 223, line −9: “fails for $I, V(I)\backslash$” should be “fails for $I, V(I_l)\backslash$”

Page 223, line −8: “by Proposition 4” should be “by Proposition 4 (we can assume $G$ is reduced)”

Page 224, second display: The display should be as follows:

$$V(I_1) \setminus V(c_1) = \mathbb{C} \setminus V(y) = \mathbb{C} \setminus \{0\} \subseteq \pi_1(V(I)) \subseteq V(I_l) = \mathbb{C}.$$ 

Page 226, two lines below display (2): “$W_2 \setminus Z_2 \subset \pi_l(V_1)$” should be “$W_2 \setminus Z_2 \subseteq \pi_l(V_1)$”

Page 228: Add the following new exercise:

15. In the setting of Theorem 2, prove that $x^\gamma > \mathrm{lt}(f)$ implies $x^\gamma > \mathrm{lt}(\tilde{f})$ for $f \in k[x,y]$. 

Page 231, line 9: “EXERCISES FOR §9” should be “EXERCISES FOR §8”

Page 231, part (b) of Exercise 11: “Exercise 4” should be “Exercise 6”

Page 231, Exercise 12: “Use Proposition 9 of §4” should be “Use Exercise 4 of §4”

Page 232, line 2: “The table on the next page” should be “The table below”

Page 247, line 1: “$R = k[x,t]$” should be “$R = k[t]$”

Page 247, line 2 of part (b) of Exercise 10: “$a, b \in k[x]$” should be “$a, b \in k$”

Page 255, line 6: “goal to find” should be “goal is to find”

Page 255, line 12: “polynomials $G_{i-1}$” should be “polynomials in $G_{i-1}$”

Page 256, Exercise 6: “Let $V = V(x_3 - x_1^2, x_4 - x_1x_2, x_2x_4 - x_1x_5, x_1^2 - x_3x_5) \subseteq \mathbb{C}^5$” should be “Let $V = V(I) \subseteq \mathbb{C}^5$ for $I = \langle x_3 - x_1^2, x_4 - x_1x_2, x_2x_4 - x_1x_5, x_1^2 - x_3x_5 \rangle \subseteq \mathbb{C}[x_1, x_2, x_3, x_4, x_5]$”

Page 256, line −1: At the end, add “Assume that the field $k$ is infinite.”

Page 257, part (e) of Exercise 11: “we developed in Chapter 1” should be “we developed in Chapter 1, §2”
Page 260, lines 2–4: These three lines

(iii) is proved in the same way as Theorem 11 of Chapter 4, §5.

When $k$ is algebraically closed, the Weak Nullstellensatz also holds in $k[V]$. You will prove this in Exercise 16.

should be replaced with the following:

(iii) is proved by first showing that the Weak Nullstellensatz also holds in $k[V]$. You will prove this in Exercise 16. From here, one proceeds in the same way as Theorem 11 of Chapter 4, §5.

Page 271, line following second display: “$V_W(a^2 - b^2 + 4)$” should be “$V_W(y^2 - z^2 + 4)$”

Page 272, second paragraph of the proof of Proposition 6: In two places, “$V(f_i g'_i - f'_i g_i)$” should be “$V_V(f_i g'_i - f'_i g_i)$”

Page 278, line −6: “since we do not the ideal” should be “since we do not want the ideal”

Page 279, display (1): Replace the display with

(1) $s^\ell + c_1 s^{\ell-1} + \cdots + c_\ell = 0, \ c_1, \ldots, c_\ell \in R.$

Page 279, line −10: “$a_\ell s_\ell$” should be “$a_\ell s_\ell$”

Page 279, line −7: “the coefficient of $x$ is” should be “the coefficient of $x^\ell$ is”

Page 279, the last display should be:

$$\det(A - xI_\ell) = (-1)^\ell(x^\ell + c_1 x^{\ell-1} + \cdots + c_\ell).$$

Page 279, line −4: “$a_i \in R$” should be “$c_i \in R$”

Page 280, line −13: “(ii) $\Rightarrow$ (iii)” should be “(i) $\Rightarrow$ (iii)”

Page 280, line −9: “divide $f$ by $G$” should be “divide $f$ by a Gröbner basis $G$”

Page 282, seven lines below the figure: “the Zariski closure” should be “is the Zariski closure”

Page 282, line −6: “finite over $k[y]$” should be “finite over $k[y_1, \ldots, y_m]$”

Page 284, line 1: “The surprise that” should be “The surprise is that”

Page 284, line 10: “algebraically independently” should be “algebraically independent”

Page 288, line 2 of Exercise 6: “means geometrically” should be “means geometrically when $k$ is algebraically closed”

Page 289, last line of part (a) of Exercise 17: “$\phi(V(J))$” should be “$\pi(V(J))$”
Page 291, line 8: The correct hyphenation is “re-searchers”

Page 294, line below second display: “C = U × V” should be “C = U × V”

Page 298, two lines below third display: The correct hyphenation is “ex-ercises”

Page 300, first display: “f(θ_1 + θ_2 + θ_3)” should be “f(θ_1, θ_2, θ_3)”

Page 300, paragraph beginning “We will next discuss”: Insert a blank line between the beginning of this paragraph and the end of the previous paragraph.

Page 302, line 2: “J = V(x_1^2 + y_1^2 - 1, x_2^2 + y_2^2 - 1, x_3^2 + y_3^2 - 1)” should be “J = V(c_1^2 + s_1^2 - 1, c_2^2 + s_2^2 - 1, c_3^2 + s_3^2 - 1)”

Page 302, two lines below (7): “V = V(x_1^2 + y_1^2 - 1, x_2^2 + y_2^2 - 1, x_3^2 + y_3^2 - 1)” should be “V = V(c_1^2 + s_1^2 - 1, c_2^2 + s_2^2 - 1, c_3^2 + s_3^2 - 1)”

Page 303, Exercise 2: The correct hyphenation is “co-ordinates”

Page 304, part (a) of Exercise 9: “result of part (c)” should be “result of part (e)”

Page 305, line 12: “in equation (7) of §2” should be “in equation (6) of §2”

Page 305, line 1 of (2): “2bl_2l_3}{2l_2(a^2 + b^2)}s_2” should be “2bl_2l_3}{l_2(a^2 + b^2)}s_2”

Page 305, line 2 of (2): “2al_2l_3}{2l_2(a^2 + b^2)}s_2 + ” should be “2al_2l_3}{l_2(a^2 + b^2)}s_2 - ”

Page 306, line 1 of (3): “2b}{2(a^2 + b^2)}s_2” should be “2b}{a^2 + b^2}s_2”

Page 306, line 2 of (3): “2a}{2(a^2 + b^2)}s_2 + ” should be “2a}{a^2 + b^2}s_2 - ”

Page 307, line -3: “when a^2 + b^2 < 4,” should be “when 0 < a^2 + b^2 < 4,”

Page 308, line 6: “if l_4 lies in” should be “if l_2 = l_3 = 1 and l_4 lies in”

Page 308, line 8 of the subsection Specialization of Gröbner Bases: “k[x_1, . . . , x_m, t_1, . . . , t_m]” should be “k[x_1, . . . , x_n, t_1, . . . , t_m]”

Page 309, display in the middle of the page: Replace the display with

\[ 1, l_2, l_3, l_2, l_3, 1, l_2l_3, l_2l_3, l_2l_3, a, b, a^2 + b^2, l_2l_3. \]

Page 309, two lines below display: “a, b, l_2, l_3, a^2 + b^2 and a^2 + b^2 - l_2^2 - l_3^2 are nonzero” should be “a, b, l_2, l_3 and a^2 + b^2 are nonzero”
Page 309, nine lines below display: “concept of a” should be “the concept of a”

Page 309, line −4: “to be Gröbner cover” should be “to be a Gröbner cover”

Page 312, line 3: “We have” should be “When $l_2 = l_3 = 1$, we have”

Page 315, part (c) of Exercise 5: “the choice of $t \in \mathbb{R}$.” should be “the choice of $t \in \mathbb{R}$?”

Page 316, line 5: “$B_{ij} \in k(t)[x]$” should be “$B_{ji} \in k(t)[x]$”

Page 316, part (c) of Exercise 7: Replace the hint with “Hint: The monomial orders for $k(t)[x]$ and $k[x]$ are the same—the parameters $t_j$ are “constants” as far as the ordering is concerned. Theorem 6 of Chapter 2, §9 will be useful.”

Page 316, lines 7 and 8 of Exercise 8: Delete these lines and replace them with the following:

nonzero polynomials $F_i$ and $G_j$ in $k[t]$, we get

$$\tilde{f}_i = F_if_i, \quad \tilde{g}_j = G_jg_j \in k[x,t].$$

Page 316, line 9 of Exercise 8: “$\tilde{I} \subseteq k(t)[x]$” should be “$\tilde{I} \subseteq k[x,t]$”

Page 316, part (a) of Exercise 8: Replace part (a) with the following:

a. Fix $j$ and suppose $g_j = \sum_{i=1}^s B_{ji} f_i$ in $k(t)[x]$ and let $d_j \in k[t]$ be a polynomial that clears the denominators of $B_{j1}, \ldots, B_{js}$. Also let $F = \text{lcm}(F_1, \ldots, F_s)$. Then prove that

$$d_j \in (\tilde{I} : F\tilde{g}_j) \cap k[t],$$

where $\tilde{I} : F\tilde{g}_j$ the ideal quotient as defined in §4 of Chapter 4.

Page 316, part (b) of Exercise 8: “$(I : \tilde{g}_j) \cap k[t]$” should be “$(I : F\tilde{g}_j) \cap k[t]$”

Page 316, part (b) of Exercise 8: “to describe an algorithm for finding the subset $W \subseteq k^n$ described in” should be “to give an algorithm for finding a subset $W \subseteq k^n$ with the property described in”

Page 317, line 1: “a monomial on order” should be “a monomial order on”

Page 317, part (b) of Exercise 11: “$c_i \in \mathbb{R}[a, b, l_2, l_3]$” should be “$h_i \in \mathbb{R}[a, b, l_2, l_3]$”

Page 326, line 4 of the first display should be:

$$f_4 = x_3u_3 + x_4u_1 - x_4u_2 - u_1u_3,$$

Page 327, line 2 of Definition 7: “$\mathbb{R}[u_1, \ldots, u_m, x_1, \ldots, x_n]$” should be “$\mathbb{R}[u_1, \ldots, u_m, x_1, \ldots, x_n]$”

Page 331, part (b) of Exercise 2: Replace with “b. With this choice, explain why we can specify the coordinates of $B$ as $B = (u_3, 0)$, i.e., the $x$-coordinate of $B$ is arbitrary, but the $y$-coordinate is zero.”
Page 332, Exercise 10: “made in Example 1” should be “made in the continuation of Example 1”

Page 332, line −1: “reducible components” should be “irreducible components”

Page 333, line 2 of part (e) of Exercise 14: “follows from part (a)” should be “follows from part (b)”

Page 333, line 2 of part (e) of Exercise 14: “(c · g)’s” should be “(c · g)s”

Page 333, line 3 of part (c) of Exercise 15: “show that c has” should be “show that c has”

Page 336, lines 6-7: Interchange the order of these two lines. Thus the line “q := · · ·” should be above the lines “r := · · ·”

Page 338, line −7: “degree in xn are reduced” should be “degree in xn is reduced”

Page 348, line −6: “LT(σ1σ)" should be “LT(σ1σ2)"

Page 354, first display of Exercise 11: “h−i(xk, . . . , xn)” should be “h−i(xj, . . . , xn)”

Page 355, line 1 of the display in Exercise 15: “+(−1)j−1σk−1xi + (−1)jσk =” should be “+(−1)j−1σj−1xi + (−1)jσj =”

Page 355, line 3 of Exercise 16: “coefficients F2" should be “coefficients in F2”

Page 355, display of Exercise 18: “= sj = σ1sj−1+” should be “= sj − σ1sj−1+”

Page 356, line 7: “every linear map” should be “every invertible linear map”

Page 361, second display of Example 13: Replace with the following:

\[ x^i y^j = \begin{cases} 
  x^{2m} y^{2l} = (x^2)^m (y^2)^l & \text{if } i, j \text{ are even} \\
  x^{2m+1} y^{2l+1} = (x^2)^m (y^2)^l xy & \text{if } i, j \text{ are odd.} 
\end{cases} \]

Page 362, Exercise 6: “k[x, y, z]G" should be “\( \mathbb{R}[x, y, z] G" \) in part (d) and again in part (e)

Page 362, part (a) of Exercise 7: “k[x, y, z]G" should be “\( \mathbb{R}[x, y, z] G" \)

Page 363, second line of the first display: The third factor of g should be “(x − y + z)"

Page 363, part (b) of Exercise 7: “k[x, y, z]G" should be “\( \mathbb{R}[x, y, z] G" \) twice one line below the display, once two lines below the display, and once three lines below the display

Page 364, part (b) of Exercise 14: “Use the method of Exercise 13" should be “Use the method of Exercise 12"
Page 369, line -8: “$g(y_1, \ldots, y_m)$ for some $g \in k[y_1, \ldots, y_m]$” should be “$h(y_1, \ldots, y_m)$ for some $h \in k[y_1, \ldots, y_m]$”

Page 369, line -6: “$+ g(y_1, \ldots, y_m)$” should be “$+ h(y_1, \ldots, y_m)$”

Page 369, line -5: “$g$ need not be” should be “$h$ need not be”

Page 369, line -1: “divide $g$ by $G’$” should be “divide $h$ by $G’$”

Page 370, line 1: “$g = B_1g_1+$” should be “$h = B_1g_1+$”

Page 370, line 8: “Since $G$ a Gröbner” should be “Since $G$ is a Gröbner”

Page 372, part (b) of Exercise 8: “use Exercise 6 and §2” should be “use Exercise 6 and Example 13 of §2”

Page 375, line 3: “let $G$ be a” should be “let $\mathcal{G}$ be a”

Page 375, line 4: “$G \cap k[y_1, \ldots, y_m]$” should be “$\mathcal{G} \cap k[y_1, \ldots, y_m]$”

Page 376, line -11: “Gröbner basis $G$” should be “Gröbner basis $\mathcal{G}$”

Page 376, line -11: “let $\overline{g}^G$ be the” should be “let $\overline{\mathcal{g}}^\mathcal{G}$ be the”

Page 376, line -10: “on division by $G$” should be “on division by $\mathcal{G}$”

Page 376, line -10: “the remainders $\overline{g}^G$” should be “the remainders $\overline{\mathcal{g}}^{\mathcal{G}}$”

Page 382, part (c) of Exercise 2: “Use Exercise 13” should be “Use Exercise 16”

Page 382, line 2 of Exercise 9: “$b = A \cdot a$” should be “$\mathbf{b} = A \cdot \mathbf{a}$”

Page 383, line 2 of Exercise 12: “$G \cdot \mathbf{b} \cup G \cdot \mathbf{a} - \{\mathbf{a}\}$” should be “$(G \cdot \mathbf{b} \cup G \cdot \mathbf{a}) \setminus \{\mathbf{a}\}$”

Page 383, line 6 of Exercise 15: “chapter—then” should be “chapter—then”

Page 383, line 2 of Exercise 16: “as in Definition 1 of” should be “as in Definition 2 of”

Page 385, line -12: “homogeneous coordinates. to” should be “homogeneous coordinates to”

Page 385, line -12: “treatment of $\mathbb{P}^2(\mathbb{R})$ Our” should be “treatment of $\mathbb{P}^2(\mathbb{R})$. Our”

Page 394, Exercise 7: “the map (2)” should be “the map (1)”

Page 394, part (b) of Exercise 8: “in the from” should be “in the form”

Page 399, line -2: “$(1 : a_1 : \cdots : a_n)$” with “$\phi(a_1, \ldots, a_n) = (1 : a_1 : \cdots : a_n)$”

Page 400, line 16: “in some projective variety” should be “for some projective variety”
Page 404, line 5: “1 ≤ i_1 <” should be “0 ≤ i_1 <”

Page 404, line 2 of Exercise 9: “f_i ∈ k[x_0, . . . , x_n]” should be “f_j ∈ k[x_0, . . . , x_n]”

Page 409, line 5: “decomposed to” should be “decomposed into”

Page 410, line 14: “k[x_1, . . . , x_n]” should be “k[x_0, . . . , x_n]”

Page 413, part (a) of Exercise 3, lines 2 and 3: “f = a_1 f_1 + · · · + a_s f_s + r. Prove that the quotients a_1, . . . , a_s” should be “f = q_1 f_1 + · · · + q_s f_s + r. Prove that the quotients q_1, . . . , q_s”

Page 413, part (a) of Exercise 3, line 3: “remainder r” should be “remainder r”

Page 414, part (b) of Exercise 13: “V \ V ∩ V(g)” should be “V \ (V ∩ V(g))”

Page 416, line 2 of Lemma 5: “LM_{>h}(f^h)” should be “LM_{>h}(f^h)”

Page 416, line 4: “LM_{>h}(f^h)” should be “LM_{>h}(f^h)”

Page 417, equation (2): “LM_{>h}(f^h)” should be “LM_{>h}(f^h)”

Page 417, two lines below equation (2): “LM_{>h}(f^h)” should be “LM_{>h}(f^h)”

Page 419, second sentence of the proof of Theorem 8: The sentence should be “Applying the proof of part (i) of Proposition 7 with I in place of I_n(W) shows that Z is a projective variety containing W.”

Page 423, line 16: “P^1(C) × C and you” should be “P^1(C) × C, and you”

Page 425, first line following fourth display: “trivial solutions (0:0; y)” should be “trivial solutions (0, 0, y)”

Page 428, line 11: “Cramer’s Rule” should be “Cramer’s rule”

Page 429, line 11: “This proves f ∈ I^{(0)} ∩ · · · ∩ I^{(n)}” should be “This proves f ∈ I_n^{(0)} ∩ · · · ∩ I_n^{(n)}”

Page 430, line 17: “Now suppose f ∈ I^{(i)}” should be “Now suppose f ∈ I_n^{(i)}”

Page 430, line 20: “f ∈ I^{(0)} ∩ · · · ∩ I^{(n)}” should be “f ∈ I_n^{(0)} ∩ · · · ∩ I_n^{(n)}”

Page 431, line 2 of the proof of Proposition 8: “Then the proof of Proposition 7” should be “Then Proposition 7”

Page 432, line 2 after the proof of Proposition 10: “xy^2 − x + 1 is a Gröbner basis” should be “{xy^2 − x + 1} is a Gröbner basis”

Page 432, line 11: “point in P^n” should be “point in P^m”

Page 433, line 1 of the proof of Theorem 11: “The first has three parts” should be “The proof has three parts”
Page 433, line −12: “all have weight d” should be “are all weighted homogeneous of weight d”

Page 434, line −7: “there is a some” should be “there is some”

Page 443, line below display (9): “σ suppose that” should be “suppose that”

Page 445, first display: “(a_0 a_1 a_2 a_3 b_0 b_1 b_2 b_3)” should be “(a_0 a_1 a_2 a_3 b_0 b_1 b_2 b_3)”

Page 446, line 9: “An straightforward” should be “A straightforward”

Page 446, line −3: “w_{ij} = \lambda w_{ij}’” should be “w_{ij}’ = \lambda w_{ij}”

Page 447, line 5: “through two points” should be “through two distinct points”

Page 447, line 10: “are nonzero, and, hence, determine a line L” should be “are nonzero and distinct, and, hence, determine a unique line L”

Page 448, part (a) of Exercise 5: “\sum_{i,j=0}^{n} a_{ij} x_i x_j” should be “\sum_{i,j=0}^{n} a_{ij} x_i x_j”

Page 448, line 1 of Exercise 9: “be nonzero” should be “be nonzero with Q = (a_{ij}) symmetric”

Page 449, line 3 of Exercise 10: “set of all lines” should be “union of all projective lines”

Page 449, part (a) of Exercise 13: At the end of line 2, add “The image of F is called a projective line in \mathbb{P}^n.”

Page 450, line 5: “V \subseteq \mathbb{P}^4” should be “V \subseteq \mathbb{P}^9”

Page 451, line 1: “lies is V(f)” should be “lies in V(f)”

Page 451, line 2: “all i” should be “for all i”

Page 451, line 4: “p =” should be “u =”

Page 451, line 5: “f(p) = 1” should be “f(u) = c_i”

Page 451, line 6: In two places, “g(p)” should be “g(u)”

Page 453, line −2: “nonzero polynomial” should be “nonconstant polynomial”

Page 454, line 15: “irreducible factors f” should be “irreducible factors of f”

Page 456, line 7: “f = b_0 z^m + \cdots” should be “f = a_0 z^m + \cdots”

Page 456, line 8: “b_0 \in \mathbb{C} \setminus \{0\}” should be “a_0 \in \mathbb{C} \setminus \{0\}”

Page 464, part (a) of Exercise 5: “nonzero polynomial” should be “nonconstant polynomial”

Page 472, line 4 of part (b) of Exercise 4: Add “(This is a challenging exercise.)”
Page 481, lines −7 and −6: “It is easy to generalize this argument and show” should be “By using the discussion following Lemma 4, one can show”

Page 495, part (c) of Exercise 10: “with Theorem 15 of Chapter 4, §3” should be “with Proposition 1 of §1”

Page 495, part (c) of Exercise 13: “Lemma 5 of §2” should be “Lemma 4 of §2”

Page 496, Exercise 7: “aHF_I(s) = aHP_I(s)” should be “aHF_R/I(s) = aHP_R/I(s)”

Page 499, line 1: “an algebraically closed” should be “an algebraically closed field”

Page 505, part (a) of Exercise 11: “φ([f])” should be “φ([f])” (more space between [ and f)

Page 505, part (a) of Exercise 11: “(f(p_1),)” should be “(f(p_1),)” (more space between ( and f)

Page 506, part (a) of Exercise 14: “part (a) of the proposition” should be “part (i) of the proposition”

Page 506, part (b) of Exercise 14: “part (b) of the proposition” should be “part (ii) of the proposition”

Page 514, part (a) of Exercise 10: “If f_1, . . . , f_s ∈ k[x_1, . . . , x_n]” should be “If f, f_1, . . . , f_s ∈ k[x_1, . . . , x_n]”

Page 535, line −1: “k ≥ N” should be “i ≥ N”

Page 536, line 5: “W ⊂” should be “W ⊆”

Page 536, line 1 of Exercise 13: “W ⊂” should be “W ⊆”

Page 537, line 4 of part (d) of Exercise 14: “a curve L ⊆ Γ” should be “a curve L ⊆ Γ”

Page 537, hint to part (a) of Exercise 15: “BL_0V” should be “Bl_0V”

Page 537, part (b) of Exercise 16: “q(q, tq) = 0” should be “q(tq, q) = 0”

Page 537, part (c) of Exercise 16: “q(q, tq) = 0” should be “q(tq, q) = 0”

Page 549, part (a) of Exercise 7: “matrix M_3 in (3)” should be “matrix M_3 in (5)”

Page 549, line 2 of part (e) of Exercise 7: The line should be “x > y > z” and explain its relation to the matrix N_2 in Example 8.”

Page 559, line 21: “HF_{S/(L_T(G))}(m') < HF_{S/I}(m')” should be “HF_{S/(L_T(G))}(m') > HF_{S/I}(m')”

Page 564, line 3: “−v^2 + ξ^2 − ζ^2” should be “v^2 − ξ^2 + ζ^2”

Page 564, line 10: “−uη^2 + vζ^2” should be “uη^2 − vζ^2”
Page 564, line 12: \[ -u\xi^2 + u\zeta^2 + v\eta^2 \] should be \[ u\xi^2 - u\zeta^2 - v\eta^2 \]

Page 564, fourth display: \[ -\zeta^2 \eta^4 + \zeta^4 \] should be \[ \zeta^2 \eta^4 - \zeta^4 \]

Page 564, sixth display: \[ -xz + y^2 + z^2 \] should be \[ xz - y^2 - z^2 \]

Page 570, first display: On the left, \[ \frac{\text{lcm} (\text{LM}(f_i), \text{LM}(f_j))}{\text{LT}(f_j)} \] should be \[ \frac{\text{lcm} (\text{LM}(f_i), \text{LM}(f_j))}{\text{LT}(f_i)} \]

(two errors)

Page 578, line 3 of first display: \[ xy \] should be \[ -xy \]

Page 578, line -1: in two places, \( (xy) \) should be \( (-xy) \)

Page 579, line before last display: \[ -xy + y^2 \] should be \[ xy + y^2 \]

Page 582, line 2 of Example 6: \[ f_2 = xy^2 - xy \] should be \[ f_2 = xy^2 + xy \]

Page 582, first display of Example 6: \[ -x(xy^2 - xy) \] should be \[ -x(xy^2 + xy) \]

Page 582, line after first display of Example 6: \[ \text{equal to } \text{LT}(f_1) \] should be \[ \text{equal to } -\text{LT}(f_1) \]

Page 582, third display: \[ s(g) = x e_2 \] should be \[ s(g) = -x e_2 \]

Page 585, line above the second display: \[ ye_1 - xe_1 \] should be \[ ye_1 - xe_2 \]

Page 585, line below the second display: \[ s(h) = x^2 e_2 \] divides \[ s(k) \] should be \[ s(k) = x^2 e_2 \] divides \[ s(h) \]

Page 585, line below the second display: \[ a a \] should be \[ a \]

Page 586, first line of pseudocode: \[ f_i \in R \] should be \[ f_i \in R, \ f_i \text{ monic} \]

Page 590, part (c) of Exercise 1: On the first line, \[ \text{order on } S \] should be \[ \text{order on } R \]

Page 590, part (c) of Exercise 1: On the second line, \[ > \] should be \[ >_{POT} \]

Page 590, part (b) of Exercise 2: Replace with \[ \text{If we allow } s\text{-reductions and reduction by the syzygy } h = (-f_2, f_1), \text{ then show that we can reduce } g \text{ to } (0, 0). \]

Page 590, part (c) of Exercise 2: Replace with \[ \text{Use Propositions 12 and 14 to explain why the computations in parts (a) and (b) are unnecessary.} \]

Page 591, line 10 of the pseudocode in Exercise 5: \[ > \] should be \[ >_{POT} \]

Page 597, line -10: "Cramer’s Rule" should be "Cramer’s rule"