ERRATA: “POST-MODERN ALGEBRA,”
SMITH & ROMANOWSKA

Line 3–12: iff there is a basis $D$ of $W$ extending $f(B)$ such that
Line 10+7: $\Sigma \langle A_i \mid i \in I \rangle$
Line 10+8: $\bigcup \{ \{i\} \times A_i \mid i \in I \}$
Line 10+10: $\Pi \langle A_i \mid i \in I \rangle$
Line 10+11: $\prod \langle A_i \mid i \in I \rangle$
Line 14+14: $|f_n(x) - f_m(x)|$
Line 20+5: Define $\langle X \rangle = \bigcup_{n \in \mathbb{N}} X^n$.
Line 21+3: subset $C$ of $A^+$ is a code
Line 26+4: $A^2 = \alpha_1 \circ \alpha_2$
Line 26–16ff: Let $\alpha_1, \alpha_2, \alpha_3$ be equivalence relations on a set $A$.
Define $\beta_i = \alpha_j \cap \alpha_k$ for $\{i, j, k\} = \{1, 2, 3\}$. Suppose that the
set $\{\alpha_i, \beta_i \mid 1 \leq i \leq 3\}$ is permutable, with $\alpha_i \circ \beta_i = A^2$ for
$1 \leq i \leq 3$. If $\alpha_1 \cap \alpha_2 \cap \alpha_3 = \hat{A}$, show that $A$ is the direct product
$A^{\alpha_1} \times A^{\alpha_2} \times A^{\alpha_3}$.
Line 30–14: Exercise 1A
Line 31+10: operations $m_{A \cup B} =$
Line 31–15: $\prod_{1 \leq i \leq 2}(A_i, M)$
Line 33+12: $\chi : A \rightarrow 2^M; x \mapsto L_x^{-1}(B)$
Page 35, diagram: Reverse the direction of the arrow between
$h_1$ and $h_0$
Line 39+2: $\langle T \rangle; m \mapsto (m, m)$.
Line 40+15: $t_b p = p_b$
Line 44–13: $(G, H^{op}) \cong \sum_{H \leq G} (H, H^{op})$
Line 46–3: A set map $f : X \rightarrow M$
Line 49+17: homomorphism
Line 57+11: $\text{Mlt}(Q, \cdot)$
Line 58+4: writing e.g. $(A, B, C, V)$
Line 58+20:
$$T = \prod_i (x_i, x_i T, \ldots, x_i T^{m_i - 1})$$
Line 58–4:
$$(C \mapsto C, L(C) \mapsto V, L(C) \mapsto B, L(V) \mapsto C)$$
Line 62–14: 2.2E.
Line 64–8: and $(X, H) \uparrow^G_H \cup (Y, H) \uparrow^G_H$ are
Line 68+18:
\[(X \cup X^J)^* \xrightarrow{R} XG \xrightarrow{p} \mathbb{Z}_2\]

Line 71+6: \[p^m = 1 + \sum_{i=2}^s |t_i G_e|,\]

Line 73+10:
\[x^\alpha - y\]

Line 85-6: \[= \frac{1}{2} n \cdot (n - 1)! = \frac{1}{2} n! = \]

Line 87-6: \[x \setminus y = e \cdot ((x/(e \setminus e)) \setminus y)\]

Line 88+8: Let \((N, \{\alpha_i \mid 1 \leq i \leq k\})\) be a \(k\)-net.

Page 89: Figure 1.2(b) should have the same diagonal lines as Figure 1.2(a).

\[
\begin{align*}
\text{(a)} & \quad \text{(b)} \\
A & ÷ B & C
\end{align*}
\]

Line 91-12: \((Q, \cdot, /, \setminus) \rightarrow (Q, \cdot, /, \setminus)\) from \(Q\)

Line 93+14:
\[
I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}.
\]
Page 97: Add diagonal lines connecting the following pairs of ellipses in each of (a), (b) of Figure 1.3: $yx, y, zx, z$.

Page 98: Should be $x(zy \cdot z)$ in the ellipse at row $x$, column $zy \cdot z$.

Line 101+6: Define $x \cdot y = x = x/y$ for

Line 103–10: Show that $(Q, /, \cdot)$

Line 118–14: if $y = x$ then $a$ else $0$

Line 121–6:

$$
\rho_T = \sum_{i=1}^{n} \pi_i l_i T \in \text{End} \bigoplus_{i=1}^{n} A .
$$

Line 127+16: non-trivial unital ring

Line 128–6: $l_i \in L \rangle < S$.

Line 128–4: (c) For distinct $K, L \in \text{Spec}(Z)$,

Line 129+2: If $S$ is unital, nontrivial and

Line 140+3: $\subseteq S^l_1 \Rightarrow xA = b \Rightarrow xA_0 = xAE = bE = b_0$

Line 143+5: for some $0 \leq r \leq \min\{l, m\}$ and
Line 143+12ff: Otherwise, one may pick $x_{r+1}, \dotsc, x_l$ to be arbitrary members of the field $S$ (so the system is under-determined if $r < l$), and then use the first $r$ equations of the reduced system to obtain $x_1, \dotsc, x_r$ in terms of $b'_1, \dotsc, b'_r$ and possibly $x_{r+1}, \dotsc, x_l$.

Page 147, (2.3.6):

\[
\begin{array}{ccc}
I & \xrightarrow{f} & V \\
\theta & \downarrow & \tilde{\theta} \\
W & \xrightarrow{} & W
\end{array}
\]

Line 150–1: $T : h \mapsto (Th : (v_1, \dotsc, v_n) \mapsto h(v_1T, \dotsc, v_nT))$

Line 151+13:

\[ h \mapsto (\sum_{i=1}^n \theta)h. \]

Line 151–5:

\[ = k \det \left( \sum_{j_1=1}^n f_{1j_1} E_{1n}^{j_1}, \ldots \right) \]

Line 162+17ff: 3B. Let $A$ be a nontrivial $K$-module. Let $M$ be the subset of $K(A, A; A)$ consisting of those bilinear maps $m : A \times A \to A$ for which $(A_K, m, 1)$ is a $K$-algebra. Show that $M$ is not a submodule of $K(A, A; A)$.

Line 163+7: $T\bar{\theta} = T\theta$.

Line 163–3: is a submonoid of the monoid $(\mathbb{R}[T_1, \dotsc, T_n], \cdot, 1)$.

Line 164–13: under the action $M \times A \times K \to M \times A; (m, a, k) \mapsto (m, ak)$.

Line 169–15: Since $a$ is

Line 170+7: coset $f(T) + d(T) \cdot K[T]$

Line 170–18: morphism $K[T] \to K$

Lines 170–3, 170–2, 171+2: $(\text{Max } A)^*$

Line 171+14, 15: If $a_1A$ is proper,

Line 172+2: subsemigroup of $(K[T], \cdot)$.

Line 173–5: show that each non-zero prime ideal is maximal.

Line 174+5: $\mapsto \text{det } f$ is

Line 177–18: $A^m \cong \bigoplus_{i=1}^m$

Line 183–13: Now $d_m K[T]$

Line 183–11: mial $d_m$ is called

Line 184+8: polynomial of an endomorphism is its last invariant factor.

Line 188–13: Moreover, $L = K(a)$. 
Line 189–11: polynomial $T^{d_m} - 1$ in $K[T]$
Line 189–10: $n = d_m$
Line 196–13: $(K^\alpha, \star, \delta)$
Line 197–16: disjoint union $\bigcup_{X,Y \in \text{Set}}$
Line 198+4: Example 1.6(b).
Line 209–1: $YS$ in bottom, left-hand corner of (1.4.2).
Line 209–1: $YS$ in bottom, left-hand corner of (1.4.2).
Line 223–12: $\text{Fix}(2^X, (T))$
Line 243+6: $\lim F$
Line 263+14: with $B < D < C$,
Line 264+18: In the image Example 3.3.2(b), consider the case where $f$ surjects.
Line 265+6: Monarchy?
Line 284+14: $(A, \cdot, /, 1)$
Line 288–8: nat $\alpha :$
Line 308–3: $\bar{h} : X\Omega R_K \to A$
Line 314–1: $PO$ in bottom, left-hand corner of diagram
Line 363–16l: Frobenius homomorphism, 188
Line 363–16r: Heyting algebra, 267
Line 365–19r: monoid ring functor
Line 370–3l: $\tilde{V}$, 327