ERRATA

Page 15: Line 7: $P \in \overrightarrow{CA}$ and $P \in \overrightarrow{CB}$
Page 16: Exercise 9: This result is true if and only if D and E are on the same side of $\overleftrightarrow{AB}$.
Page 16: Proposition 1.5.8: The proof works for a non-straight angle. If $\angle CAB$ is a straight angle then the bisector is the perpendicular line through A, whose existence is guaranteed by Theorem 1.5.9.
Page 45: Exercise 1(a): Let D be between B and C, and $A \ldots$.
Page 71: Second line of proof of Proposition 2.1.3 " $\Rightarrow m_2 \parallel l$ and $m_2 \parallel m_1$".
Page 72: Fifth line below Figure 2.3: "through P "
Page 82: Line -5: **Proof of Theorem 2.3.3** It follows from Axiom $\mathbf{S_2}$ of Chapter 1 that, given a positive integer number N, there exists $P_1 \in t$ such that

$$\frac{AC}{N+1} < AP_1 < \frac{AC}{N}$$

(why?) which implies
Page 83: Line 15: "where the last inequality above was implied by the fact that $K \leq N$. Since the inequality $|AB/AC - A'B'/A'C'| < 2/N$ holds for any positive integer N, we conclude that"
Page 85: Line 8: $\triangle ADE \sim \triangle ABC$.
Page 123: Line 4:

$$\frac{PA}{PP'} = \frac{P''B}{P''P'} = \frac{1}{2}.$$

Page 131: Exercise 22: such an example does not exist. I am replacing this exercise by "Show that a group of rigid motions that contains a translation is infinite."
Page 142: Exercise 5, Line -3: Consider P' the image of P under the inversion in circle C.
Page 170: Figure 4.3: We need to draw line l_1 through P and P_2 and line l_2 through P and P_1.
Page 171: Figure 4.4: We need to draw lines l_1 and l_2 through P.
Page 171: Line -2 (starting from the bottom of the page) "l is perpendicular to n."
Page 188: Last line, change $det(u, v, w)$ to $det(w, u, v)$.
Page 189: Line 4: $u \wedge v = (u_2v_3 - v_2u_3,\ -(u_1v_3 - v_1u_3),\ u_1v_2 - v_1u_2)$..
Page 205: Line 4: $(0,0,1) = g(1,1,0) + h(1,-1,0) + i(0,0,1)$.
Page 210: Line 1: $\beta' = \{(0,1,1,0),(1,0,1,-1),(1,-1,0,1),(1,1,-1,0)\}$.
Page 215: Line 19: $(0,0,1) = g(1,1,0) + h(-1,1,0) + i(0,0,1)$.
Page 217: Line 2: $\beta = \{(1,1,1),(1,1,0),(1,0,1)\}$.
Page 221: Line 11: Applying Proposition 5.3.2(b).
Page 228: Exercise 17, Line 15 (2) We claim that $F_j \neq 0$, $\forall j = 1, \ldots, n$. In fact, suppose in search of a contradiction, that there exists a T_j that is a translation.

Since the group G is finite T_j^m will have to be a reflection, for some integer m. Recall that compositions of translations are translations. Find the contradiction.
(3) Conclude that

$$T_j(y) = y, \quad \forall j = 1, \ldots, n.$$

Page 254: Exercise 7(b): Show that the area of a rhombus is half of the product of the lengths of its diagonals.
Page 254: Exercise 7(c): $v = \overset{\mapsto}{AD}$.
Page 269: Line 3: $B' = \mathcal{P}' \cap P$.
Page 290: Line 13: $(-\cos\theta\sin^2\varphi, -\sin\theta\sin^2\varphi, -\sin^2\theta\sin\varphi\cos\varphi - \cos^2\theta\sin\varphi\cos\varphi)$,
Page 292: Line -2 and remaining of the proof of Theorem 7.4.4 should be replaced by: "Notice that the map $f : \mathbf{R}^3 \to \mathbf{R}^3$ given by $f(x, y, z) = (-x, -y, -z)$ is a rigid motion, since $||(x, y, z)|| = ||(-x, -y, -z)||$. Therefore

$$\text{Area}(\triangle(-A)(-B)C) = \text{Area}(\triangle AB(-C),$$

since area is preserved by isometries (Exercise 5). Substituting above we obtain

$$\text{Area}(H_C) = \text{Area}(S_A) + \text{Area}(S_B) - \text{Area}(\triangle ABC)\text{Area}(S_C) - \text{Area}(\triangle ABC).$$

and hence

$$\begin{aligned}\text{Area}(H_C) &= \text{Area}(S_A) + \text{Area}(S_B) + \text{Area}(S_C) - \\ &\quad 2\text{Area}(\triangle ABC),\end{aligned}$$

implying

$$2\pi = 2m(\angle A) + 2m(\angle B) + 2m(\angle C) - 2\text{Area}(\triangle ABC),$$

which gives the theorem."
Page 295:

$$\pi(X) = (0, 0, 1) + \frac{1}{1-z}((x, yz) - (0, 0, 1)) = \frac{1}{1-z}(x, y, 0).$$

Page 296: Figure 7.12: We need to draw z-axis.
Page 296:

$$\sigma_2'(t_1) = \Big(\frac{x_2'(t_1)}{1 - z_2(t_1)} + \frac{x_2(t_1)\cdot z_2'(t_1)}{(1 - z_2(t_1))^2}, \frac{y_2'(t_1)}{1 - z_2(t_1)} + \frac{y_2(t_1)\cdot z'(t_1)}{(1 - z_2(t_1))^2}\Big).$$

Page 315: Second line "$\triangle A'B'B$ and $\triangle A'BD$."
Page 323: Proposition 8.4.3, second line $\ldots \overset{\leftrightarrow}{P'Q'} \perp l'$. Page 325: Lines 3,4,5, 6, and 8: changed line l to m'.
Page 350: Line -3: "In fact, let g_1 be an isometry that maps D to the center (see Exercise 6 of this section)."
Page 350: Last line $AB = DE$.
Page 373: Proposition 10.4.4, line -2: "Notice that f_1 and f_3 are linear complex functions..."