(2/25/18) Page xii, last paragraph: Allen Hatcher’s name is misspelled. (Sorry, Allen.)
(2/14/15) Page 23, Exercise 2.6, first line: Change “collection of topologies” to “nonempty collection of topologies.”
(6/24/19) Page 26, just above Exercise 2.12: Replace the last sentence of the paragraph by “Symbolically, this is denoted by $x_i \to x.$”
(6/18/19) Page 27, paragraph before Proposition 2.19: Just before the last sentence of that paragraph, insert “(Continuity of the restriction of a function to an open subset is understood to be with respect to the topology described in Exercise 2.5.)”
(3/8/16) Page 27, last line: Change two occurrences of $x$ to $y$ in the displayed equation, so it reads $f_j^V \cap x_1(U) = f_1(U) \cap V_x.$
(9/26/19) Page 31, second paragraph below the section heading, second sentence: Change “two points” to “two distinct points.”
(6/24/19) Page 32, just above Exercise 2.38: Insert the following sentence: “In view of the preceding proposition, in a Hausdorff space we can write $p = \lim_{i \to \infty} p_i$ as an alternative notation for $p_i \to p.$”
(6/18/19) Page 32, last line: Change two occurrences of $x$ to $y$ in the displayed equation, so it reads $f_j^V \cap x_1(U) = f_1(U) \cap V_x.$
(3/14/24) Page 46, Exercise 2-9: After the first sentence, add “Assume all of the spaces are nonempty.”
(11/26/15) Page 53, part (c) of the proposition continued from the previous page: Insert another “if” after “if and only if.”
(7/14/18) Page 58, second display: Replace $k$ by $k/2$ (twice) and $l$ by $l/2$ (twice). [The tangent and cotangent functions have period $\pi$, not $2\pi$.]
(9/26/19) Page 60, last paragraph: In this paragraph and in the first one on page 61, change all subscript $k$’s to $n$’s (a total of four times).
(5/17/12) Page 67, Example 3.52, second sentence: Change this sentence to read “Let $\sim$ be the equivalence relation on $X$ such that $a_1 \sim a_2$ for all $a_1, a_2 \in A$ and $x \sim x$ for all other $x \in X$; the partition ....”
(5/17/12) Page 67, Example 3.53, last line: Change $\mathbb{B}^n$ to $\mathbb{S}^{n+1}.$
(7/17/19) Page 70, Example 3.66, first paragraph, next-to-last line: Change $\theta$ to $\frac{1}{2\pi} \theta.$
(10/7/11) Page 74, line 5: Change this statement to read “As a set, $X \cup_f Y$ is the disjoint union ....” [The topology on $X \cup_f Y$ is not the disjoint union topology.]
(4/1/22) Page 74, Example 3.78(a): Change “topological spaces” to “Hausdorff spaces.”
(6/4/21) Page 75, proof of Theorem 3.79, second line: Change $q(\partial M \cup \partial N)$ to $q(\partial M \cup \partial N).$
(11/30/19) Page 75, proof of Theorem 3.79, second paragraph: Replace that paragraph with the following: “Suppose $x \in S,$ and let $y_0 \in \partial N$ and $x_0 = h(y_0) \in \partial M$ be the two points in the fiber $q^{-1}(x).$ We can choose coordinate charts $(U, \varphi)$ for $M$ and $(V, \psi)$ for $N$ such that $x_0 \in U$ and $y_0 \in V,$ and let $\bar{U} = \varphi(U),$ $\bar{V} = \psi(V) \subseteq \mathbb{H}^n$ (Fig. 3.13). It is useful in this proof to identify $\mathbb{H}^n$ with $\mathbb{R}^{n-1} \times [0, \infty)$ and $\mathbb{R}^n$ with $\mathbb{R}^{n-1} \times \mathbb{R}.$ By shrinking $U$ and $V$ if necessary, we may assume that $h(V \cap \partial N) = U \cap \partial M.$ Then we can write the coordinate maps as
\[ \psi(p) = (\varphi_0(p), \varphi_1(p)) \text{ and } \psi(p) = (\psi_0(p), \psi_1(p)) \text{ for some continuous maps } \varphi_0: U \to \mathbb{R}^{n-1}, \]
\[ \varphi_1: U \to [0, \infty), \ \psi_0: V \to \mathbb{R}^{n-1}, \ \psi_1: V \to [0, \infty). \]

Our assumption that \( x_0 \) and \( y_0 \) are boundary points means that \( \varphi_1(x_0) = \psi_1(y_0) = 0 \), and there are open subsets \( U_0, V_0 \subseteq \mathbb{R}^{n-1} \) such that \( \varphi_0(U \cap \partial M) = U_0, \ \psi_0(V \cap \partial N) = V_0. \) (Here we are again using the theorem on invariance of the boundary.) After replacing \( U \) and \( V \) by the preimages of \( U_0 \times [0, \infty) \) and \( V_0 \times [0, \infty), \) respectively, we can also assume that \( \hat{U} \subseteq U_0 \times [0, \infty) \) and \( \hat{V} \subseteq V_0 \times [0, \infty). \)

Page 76, display in the middle of the page: Change \( y^n \) to \( y_n \) (twice).

Page 61, proof of Proposition 3.79: In the second line of the paragraph, change “embedding of \( N \)” to “embedding of \( M \).” In the fourth line, change “embedding of \( M \)” to “embedding of \( N \).”

Page 87, Exercise 4.3: Insert “nonempty” before “connected.”

Page 87, Exercise 4.4: Insert another “if” after “if and only.”

Page 89, line above Proposition 4.9, fourth paragraph: In the first sentence of that paragraph, change “open subsets of \( \bigcup_{a \in A} B_a \)” to “open subsets of \( X \) whose union contains \( \bigcup_{a \in A} B_a \).”

Page 99, line 3 from bottom: Change “this proposition” to “this lemma.”

Page 103, just above Exercise 4.58: After the word “illustistrates,” insert “(using the theorem on invariance of the boundary).”

Page 104, proof of Proposition 4.60: Delete the last sentence in the first paragraph, and in the second paragraph, replace the phrase “\( r \) is any positive rational number strictly less than \( r(x) \)” by “\( r \) is any positive rational number such that \( B_{2r}(x) \subseteq \hat{U}_1 \).”

Page 106, proof of Theorem 4.68, last paragraph: After the first sentence of the paragraph, insert: “Begin by setting \( W_0 = U \).” Then in the third and fourth lines of the paragraph, replace “Choosing \( r_n < \min(\varepsilon_n,1/n) \)” by “Choosing \( r_n < \min(\varepsilon_n,1/n) \)” and setting \( W_n = B_{r_n}(x_n) \).”

Page 110, statement of Lemma 4.74: Insert another “if” after “if and only.”

Page 110, next-to-last line: Change \( M \) to \( X \).

Page 114, proof of Corollary 4.83: This proof is incorrect. Replace it with the following: “Given a closed subset \( A \subseteq X \) and a neighborhood \( U \) of \( A \), Lemma 4.80 shows that there is a neighborhood \( V \) of \( A \) such that \( \overline{V} \subseteq U \). By Urysohn’s lemma, there exists a continuous function \( f: X \to [0,1] \) such that \( f \equiv 1 \) on \( A \) and \( f \equiv 0 \) on \( X \setminus V \). This function satisfies \( \text{supp } f \subseteq \overline{V} \subseteq U \), so it is the bump function we seek.”

Page 116, proof of Theorem 4.88, first paragraph: In the last line of the paragraph, after “does the trick,” insert “if \( B \neq \emptyset \)” Then at the end of the paragraph, add the sentence “If \( B = \emptyset \), let \( u = 1 \).”

Page 119, statement of Proposition 4.93(b): Add the hypothesis that \( Y \) is Hausdorff.

Page 119, proof of Proposition 4.93, second paragraph: Change the first sentence to read “To prove (b), assume \( X \) is a second countable Hausdorff space and \( Y \) is Hausdorff, and suppose ...” Then replace the sentence beginning “Suppose on the contrary” by the following: “Suppose on the contrary that \( (x_i) \) is a sequence in \( L \) with no convergent subsequence in \( L \). Because \( Y \) is Hausdorff, \( K \) is closed and therefore so is \( L \), which means that \( (x_i) \) has no convergent subsequence in \( X \).”
(8/23/11) Page 121, proof of Lemma 4.94: Replace the last two sentences of the proof with the following: “Thus $x$ lies in the closure of $A \cap K$ in $K$. Because $A \cap K$ is closed in $K$, it follows that $x \in A \cap K \subseteq A$.”

(8/23/11) Page 123, Problem 4-15(d): Change “every connected neighborhood” to “every neighborhood.”

(9/16/11) Page 126, Problem 4-30: Change $\{A_\alpha\}$ to $\{X_\alpha\}_{\alpha \in A}$.

(4/12/20) Page 126, Problem 4-31(c): In the last sentence, change “every element of $U$” to “every nonempty element of $U$.”

(4/12/20) Page 126, Problem 4-31(c): In the last sentence, change “every element of $U$” to “every nonempty element of $U$."

(7/4/22) Page 130, third paragraph, lines 5 and 6: “Homeomorphism” is misspelled.

(3/20/21) Page 133, line above Theorem 5.6: Change “an $n$-dimensional subcomplex” to “a subcomplex of dimension at most $n$."

(1/20/11) Page 133, proof of Proposition 5.7: This should refer to Problem 5-8, not 5-7.

(5/17/12) Page 136, four lines below the displayed equations: Change “both $X_0^n$ and $X_0^n$ are open” to “both $X_0^n$ and $X_0^n$ are open."

(7/17/19) Page 140, displayed formulas: In both displayed formulas, change $R$ to $\{0, 1\}$. "

(4/12/20) Page 141, just above the displayed equation: In the line above the display and in the display itself, change $A$ to $B$ (four times), to avoid conflict with the use of $A$ as the index set for the open cover.

(4/12/20) Page 141, displayed equation: Change $D_\gamma^{n+1}$ to $D_\gamma^{n+1} \sim \{0\}$.

(9/16/11) Page 141, line 5 from the bottom: Change $U^{n+1}_\alpha$ to $\overline{U}^{n+1}_\alpha$ (twice).

(2/5/13) Page 141, line 4 from the bottom: Change “the minimum” to “one-half the minimum.”

(2/5/13) Page 141, line 3 from the bottom: Change “supported in $\partial D_\gamma^{n+1}(\varepsilon/2)$” to “supported in $\partial D_\gamma^{n+1}(\varepsilon/2)$”

(7/17/19) Page 143, proof of Proposition 5.24, last paragraph: Change $U \cap e_0$ to $U \cap \overline{e}_0$.

(10/16/20) Page 144, three lines above Lemma 5.26: Change “the finite subcomplex $E_n$” to “the finite subcomplex $M_n$.”

(7/24/19) Page 145, second paragraph: Change $e_n$ to $e_k$ twice (once in the first line, and once in (5.1)).

(7/22/19) Page 146, Case 1, second paragraph: Change $Y_n$ to $Y_{e_n}$ (twice).

(4/12/20) Page 152, sentence after the proof of Prop. 5.38: Change $i = 1, \ldots, k$ to $i = 0, \ldots, k$.

(3/24/11) Page 156, Problem 5-4: add the hypothesis that $\dim M > 1$.

(5/27/17) Page 158, second sentence: Replace this sentence by “More generally, suppose $K$ is a finite Euclidean simplicial complex and $w$ is a point in $\mathbb{R}^n$ such that each ray starting at $w$ intersects $|K|$ in at most one point.”

(4/12/20) Page 158, Problem 5-18(b): In the hint, change “simplex” to “cell.”

(11/7/19) Page 165, Example 6.7: After the second sentence, add “(The disks should be chosen so that their closures are disjoint.)”

(4/12/20) Page 167, line 5 from the bottom: Insert “the” before “sum.”

(9/16/11) Page 172, first paragraph, next-to-last line: Change $P_1 \cup Q$ to $P_1 \cup Q$.

(9/19/23) Page 173, proof of Prop. 6.14, next-to-last line: Change “$W = U \cup V$ is a disconnection of $W$” to “$W \sim \{v\} = U \cup V$ is a disconnection of $W \sim \{v\}$.”
(9/16/11) Page 176, Fig. 6.21: The label b near the lower right should be c, and the label w near the middle of the right-hand side should be x.

(5/20/18) Page 180, Proposition 6.20: In the statement of the proposition, change “compact surface” to “connected compact surface.” Then in the second sentence of the proof, change both occurrences of “surface” to “connected compact surface.”

(11/5/17) Page 181, first full paragraph: Replace the sentence starting with “However” by “However, we will prove in Chapter 10 that a compact surface cannot have both an oriented presentation and a nonoriented one.”

(2/26/18) Page 181, Problem 6-4: Replace the first sentence by “Suppose M is a compact 2-manifold that contains a subset B ⊆ M that is homeomorphic to the Möbius band, and whose interior is homeomorphic to the Möbius band minus its boundary.”

(9/16/11) Page 190, line 3 from the bottom: Change \( g/ \) to \( g \circ f \).

(5/31/16) Page 221, Theorem 8.4: Remark: This theorem is true without the assumption that \( B \) is locally connected, and the proof is not really any more difficult; see, for example, the proof of Theorem 1.7 in [Hat02].

(7/13/15) Page 230, Problem 8-5: Replace the last sentence of the hint by the following: “Prove that \( p \) has no zeros, use degree theory to derive a contradiction.”

(7/28/16) Page 244, fourth line below the section heading: Change \( n \in \mathbb{Z} \) to \( n \in \mathbb{N} \).

(7/28/16) Page 247, Example 9.22, last line: The formula for \( G_{tor} \) should be \( G_{tor} = \{0\} \times \mathbb{Z}/k_1 \times \cdots \times \mathbb{Z}/k_m \).

(12/3/19) Page 249, Problem 9-4(b): Change “a subset of the free group \( F(S_i) \)” to “a set of words in the elements of \( S_i \).”

(12/3/19) Page 249, Problem 9-5: Change “subsets of the free group \( F(S) \)” to “sets of words in the elements of \( S \).”

(11/28/17) Page 252, just above diagram (10.2): Change “the following diagram commutes” to “the right half of the following diagram commutes.”
It remains only to show that for any such set $\hat{U}_i$, the restricted map $\hat{q}:\hat{U}_i \to U$ is a homeomorphism. The following diagram commutes:

$$
\begin{array}{c}
U_i \\
\downarrow Q \\
\hat{U}_i \\
\downarrow \hat{q} \\
U.
\end{array}
$$

(12.3)

Since $q = \hat{q} \circ Q$ is injective on $U_i$, so is $Q$; and $Q:U_i \to \hat{U}_i$ is surjective by definition. Because $Q$ is an open map, it follows that $Q:U_i \to \hat{U}_i$ is a homeomorphism. Since $q$ and $Q$ are homeomorphisms in (12.3), so is $\hat{q}$.

(9/27/11) Page 318, statement of Proposition 12.21, second line: Insert “on” after “acting.”

(12/9/19) Page 320, paragraph after the proof of Prop. 12.24, first line: Before “locally,” insert “nonempty.”

(9/23/14) Page 321, line 4: Change $E$ to $E$.

(9/27/11) Page 329, paragraph just below the diagram: Change every occurrence of $\tilde{p}$ to $\tilde{q}$ (five times).

(6/26/22) Page 329, last paragraph, third sentence: Change “The map $G \times P \to B^2$” to “The map $\tilde{g}:G \times P \to B^2$.”

(9/27/11) Page 330, just below the bulleted list: Change $\tilde{p}$ to $\tilde{q}$.

(9/27/11) Page 332, first full paragraph, second line: Change $\tilde{p}$ to $\tilde{q}$.

(9/27/11) Page 332, second full paragraph, lines 6 and 7: Change $\tilde{p}$ to $\tilde{q}$ (twice).

(9/16/14) Page 335, Problem 12-10: Interchange the definitions of $G$ and $H$ in the sixth and seventh lines. (Otherwise, part (c) is false as stated.)

(10/12/14) Page 337, Problem 12-19: Replace the first sentence of the problem with the following: “Suppose we are given a continuous action of a metrizable topological group (e.g., a discrete group) $G$ on a first countable Hausdorff space $E$.”

(7/22/19) Page 349, line 3: Change $\Delta_p$ to $\Delta_{p+1}$.

(9/27/11) Page 352, lines 3 and 4: Change $c_p$ to $c_q$ (twice), and change $p$ to $q$ (twice).

(7/22/19) Page 352, second-to-last paragraph, lines 6 and 7: Change $\tilde{p}$ to $\tilde{q}$ (twice).

(12/15/17) Page 354, paragraph above the last display: Insert “of some reparametrisation” after “extension of the circle representative.”

(3/16/21) Page 355, commutative diagram near the bottom of the page: Change the period after $X$ to a comma.

(7/22/19) Page 360, proof of Lemma 13.20: In the second line of the displayed equation, change $F_{i,p}$ to $F_{i,p+1}$.

(7/22/19) Page 361, first line of text: Change “$\in \mathbb{R}^n$” to “$\subseteq \mathbb{R}^n$.”

(4/1/21) Page 369, line above Proposition 13.33: Delete spurious “and.”

(10/8/15) Page 370, line 5 from the bottom: Change “It follows …” to “Assuming $X$ is path-connected, it follows …”

(10/8/15) Page 371, at the end of the first (partial) paragraph: Insert “If $X$ is not path-connected, just apply this argument to the path component containing the image of $\varphi$, and use Proposition 13.5.”

(9/26/17) Page 371, statement of Theorem 13.34(e): Change “dimension $n$” to “dimension $n \geq 2$,” and change “the zero map” to “not injective.”


(9/26/17) Page 372, proof of Theorem 13.34, last paragraph: Change “if $\varphi_* = 0$” to “if $\varphi_*$ is injective.”

(9/26/17) Page 372, Example 13.35(b), last line: Change “the zero map” to “noninjective.”

(9/29/17) Page 372, Example 13.35(c): Replace the last sentence by “The image of $\varphi_*$ is the infinite cyclic group generated by $\gamma(a_1^2 \ldots a_n^2)$, so $\varphi_*$ is injective and $H_2(M) = 0$.”
(4/7/24) Page 394, line 4: Delete “nonempty.”
(3/14/24) Page 398, Exercise B.11: Change “metric space” to “nonempty metric space.”
(9/26/19) Page 399, next-to-last line: Change $x \in X$ to $x \in M_1$.
(12/26/18) Page 401, line 4 from the bottom: Change “subset” to “nonempty subset.”
(10/7/19) Page 402, Exercise C.1: Change “any subset” to “any nonempty subset.”
(6/6/18) Page 411, near the middle of the page: The index entry for $R$ should read “(normal closure of a subset).”
(2/25/18) Page 422: The index entry for “Hatcher, Allen” is misspelled.