# Corrections to <br> Introduction to Topological Manifolds 

(Second Edition)

by John M. Lee
Updated November 13, 2023
(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 $x_{i} \rightarrow x$."
(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

$$
\left(f \mid V_{x}\right)^{-1}(U)=\left\{y \in V_{x}: f(y) \in U\right\}=f^{-1}(U) \cap V_{x},
$$

(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 $p=\lim _{i \rightarrow \infty} p_{i}$ as an alternative notation for $p_{i} \rightarrow p$."
(5/17/12) Page 37, three lines from the bottom: Change "Exercise 2.49" to "Example 2.49."
(11/26/15) Page 53, part (c) of the proposition continued from the previous page: Insert another "if" after "if and only."
(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).
(9/26/19) Page 61, Proposition 3.31, part (c): Change $X_{k}$ to $X_{n}$.
(11/20/19) Page 66, after the second line: Add the following sentence: "We sometimes also say informally that $Y$ is a quotient space of $X$ when $Y$ is a topological space that has the quotient topology with respect to some continuous map from $X$ to $Y$."
(3/23/12) 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 $\overline{\mathbb{B}}^{n+1}$.
(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."
(11/30/19) Page 75, proof of Theorem 3.79, second line: Change $q(\partial M \cup \partial N)$ to $q(\partial M \amalg \partial N)$.
(6/4/21) Page 75, proof of Theorem 3.79, second paragraph: Replace that paragraph with the following: "Suppose $s \in S$, and let $y_{0} \in \partial N$ and $x_{0}=h\left(y_{0}\right) \in \partial M$ be the two points in the fiber $q^{-1}(s)$. 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 $\hat{U}=$ $\varphi(U), \widehat{V}=\psi(V) \subseteq \mathbb{H}^{n}$ (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 $\varphi(p)=\left(\varphi_{0}(p), \varphi_{1}(p)\right)$ and $\psi(p)=\left(\psi_{0}(p), \psi_{1}(p)\right)$ for some continuous maps $\varphi_{0}: U \rightarrow \mathbb{R}^{n-1}, \varphi_{1}: U \rightarrow[0, \infty), \psi_{0}: V \rightarrow \mathbb{R}^{n-1}, \psi_{1}: V \rightarrow[0, \infty)$. Our assumption that $x_{0}$ and $y_{0}$ are boundary points means that $\varphi_{1}\left(x_{0}\right)=\psi_{1}\left(y_{0}\right)=0$, 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 $\widehat{V} \subseteq$ $V_{0} \times[0, \infty)$."
(6/18/19) Page 76, display in the middle of the page: Change $y^{n}$ to $y_{n}$ (twice).
(7/16/11) Page 76, last paragraph of the proof of Theorem 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 $N$."
(8/8/17) Page 87, Exercise 4.3: Insert "nonempty" before "connected."
(8/23/11) Page 87, Exercise 4.4: Insert another "if" after "if and only."
(8/23/11) Page 88, proof of Proposition 4.9, fourth paragraph: In the first sentence of that paragraph, change "open subsets of $\bigcup_{\alpha \in A} B_{\alpha}$ " to "open subsets of $X$ whose union contains $\bigcup_{\alpha \in A} B_{\alpha}$."
(10/18/22) Page 89, line above Proposition 4.11: Change "Appendix B" to "Appendix A."
(10/18/22) Page 93, proof of Proposition 4.26, last sentence: Change " $X$ is connected ..." to "if $X$ is nonempty, it is connected ..."
(8/23/11) Page 97, line 10: Change $B_{n_{\text {max }}}(a)$ to $B_{n_{\text {max }}}(x)$.
(3/9/11) Page 98, line 3 from bottom: Change "this proposition" to "this lemma."
(6/21/20) Page 99, second paragraph: Delete the second sentence of the paragraph. [It's not wrong; it's just not needed.]
(6/21/20) Page 103, just above Exercise 4.58: After the word "illustrates," insert "(using the theorem on invariance of the boundary)."
(6/19/21) 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 $B_{2 r}(x) \subseteq \hat{U}_{i}$."
(6/19/21) 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 $r_{n}<\min \left(\varepsilon_{n}, 1 / n\right)$ " by "Choosing $r_{n}<\min \left(\varepsilon_{n}, 1 / n\right)$ and setting $W_{n}=B_{r_{n}}\left(x_{n}\right)$."
(8/23/11) Page 106, line 3 from the bottom: Change "countable union" to "countable intersection."
(8/23/11) Page 109, statement of Lemma 4.74: Insert another "if" after "if and only."
(7/19/15) Page 110, next-to-last line: Change $M$ to $X$.
(8/23/11) 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 $\bar{V} \subseteq U$. By Urysohn's lemma, there exists a continuous function $f: X \rightarrow[0,1]$ such that $f \equiv 1$ on $A$ and $f \equiv 0$ on $X \backslash V$. This function satisfies supp $f \subseteq \bar{V} \subseteq U$, so it is the bump function we seek."
(11/13/23) Page 116, proof of Theorem 4.88, first paragraph: In the last line of the paragraph, after "does the trick," insert "if $B \neq \varnothing$." Then at the end of the paragraph, add the sentence "If $B=\varnothing$, let $u \equiv 1$."
(6/17/19) Page 119, statement of Proposition 4.93(b): Add the hypothesis that $Y$ is Hausdorff.
(10/24/19) 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 $\left(x_{i}\right)$ 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 $\left\{A_{\alpha}\right\}$ to $\left\{X_{\alpha}\right\}_{\alpha \in A}$.
(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 128, proof of Prop. 5.1: Insert before the first sentence of the proof: "The proposition is true by definition when $n=0$, so assume that $n>0$."
(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 $X_{n-1}^{\prime}$ and $X_{n-1}^{\prime \prime}$ are open" to "both $X_{n}^{\prime}$ and $X_{n}^{\prime \prime}$ are open."
(1/20/11) Page 137, statement of Lemma 5.13: Change "discrete" to "closed and discrete."
(1/20/11) Page 137, proof of Lemma 5.13, first paragraph: In line 1, change "discrete" to "closed and discrete"; and in line 2, change "discrete subset" to "closed discrete subset."
(1/20/11) Page 137, proof of Theorem 5.14, second paragraph: Change "infinite discrete subset" to "infinite closed discrete subset."
(7/17/19) Page 140, displayed formulas: In both displayed formulas, change $\mathbb{R}$ 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 $D_{\gamma}^{n+1} \backslash\{0\}$.
(9/16/11) Page 141, line 5 from the bottom: Change $\widetilde{U}_{\alpha}^{n+1}$ to $\widetilde{U}_{\alpha_{i}}^{n+1}$ (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 $D_{\gamma}^{n+1}$ $\partial D_{\gamma}^{n+1}(\varepsilon / 2) "$
(7/17/19) Page 143, proof of Proposition 5.24, last paragraph: Change $U \cap e_{0}$ to $U \cap \bar{e}_{0}$.
(10/16/20) Page 144, three lines above Lemma 5.26: Change "the finite subcomplex $\mathcal{E}_{n}$ " 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 $Y_{v_{n}}$ (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 $\operatorname{dim} M>1$.
(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 $P_{1}^{\prime} \amalg Q$ to $P_{1} \amalg Q$.
(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 " $W \backslash\{v\}=U \cup V$ is a disconnection of $W \backslash\{v\}$."
(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 $B \subseteq M$ 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 $\Phi_{g}(f)$ to $\Phi_{g}[f]$.
(1/20/11) Page 193, proof of Proposition 7.16, second paragraph, line 2: Change " $H_{1}=f$ " to " $H_{1}=\tilde{f}$."
(12/8/21) Page 195, displayed equation: Replace the last " $<$ " sign by " $\leq$."
(8/3/18) Page 201, Corollary 7.38: This corollary should be moved after the statement of Theorem 7.40.
(11/25/12) Page 211, line 6: Delete redundant "each."
(7/9/15) Page 215, Problem 7-9: Change "connected" to "path-connected."
(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].
(7/22/19) Page 222, first paragraph: Change $\left\{J_{1}, \ldots, J_{k}\right\}$ to $\left\{J_{1}, \ldots, J_{m}\right\}$.
(1/20/11) Page 224, two lines above the subheading: Change $\widetilde{f}_{0}(1)$ to $\widetilde{f}_{1}(0)$.
(1/20/11) Page 228, displayed equations (8.4): Replace these equations by

$$
\begin{align*}
\operatorname{deg} \varphi & =\operatorname{deg}\left(\rho_{\varphi} \circ \varphi\right)_{*}, \\
\operatorname{deg} \psi & =\operatorname{deg}\left(\rho_{\psi} \circ \psi\right)_{*} . \tag{8.4}
\end{align*}
$$

(7/13/15) Page 230, Problem 8-5: Replace the last sentence of the hint by the following: "Prove that $\left.p_{\varepsilon}\right|_{\mathbb{S}^{1}}$ and $p_{n}(z)=z^{n}$ are homotopic as maps from $\mathbb{S}^{1}$ to $\mathbb{C} \backslash\{0\}$. If $p$ has no zeros, use degree theory to derive a contradiction."
(7/13/15) Page 231, Problem 8-10(c): Change "index of $V$ around the loop $\omega$ " to "winding number of $V$ around the loop $\omega$."
(9/16/11) Page 239, fourth line below the section heading: Change "generated by $G$ " to "generated by $S$."
(11/29/19) Page 241, middle of the page: Change the definition of group presentation as follows: "We define a group presentation to be an ordered pair, denoted by $\langle S \mid R\rangle$, where $S$ is an arbitrary set and $R$ is a set of words formed from the elements of $S$."
(11/29/19) Page 241, just below the last displayed equation: Replace "where $\bar{R}$ is the normal closure of $\boldsymbol{R}$ in $\boldsymbol{F}(\boldsymbol{S})$ " by "where now we interpret $R$ as a set of elements of the free group $F(S)$, and $\bar{R}$ is the normal closure of $R$ in $F(S)$."
(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 $G_{\text {tor }}$ should be $G_{\text {tor }}=\{0\} \times \mathbb{Z} / k_{1} \times \cdots \times \mathbb{Z} / k_{m}$.
(12/3/19) Page 249, Problem 9-4(b): Change "a subset of the free group $F\left(S_{i}\right)$ " 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."
(7/29/19) Page 256, statement of Theorem 10.7: Change "spaces" to "path-connected spaces."
(12/1/20) Page 257, Example 10.8: In the first line of the example, and in the three lines immediately above it, change "proposition" to "theorem" (three times).
(7/29/19) Page 257, last paragraph, second sentence: Change that sentence to read "If two or more edges are incident with the same two vertices, or if two or more self-loops are incident with the same vertex, they are called multiple edges.
(12/7/20) Page 260, proof of Theorem 10.12, second paragraph, first line: Change $\Gamma$ to $\pi_{1}(\Gamma, v)$.
(12/7/20) Page 261, last paragraph of the proof, fourth line from the bottom: Change two equalities to isomorphisms: " $\pi_{1}(V, v) \cong F\left(\left[f_{1}\right], \ldots,\left[f_{n}\right]\right)$ and $\pi_{1}(U, v) \cong F\left(\left[f_{n+1}\right]\right)$."
(9/16/11) Page 263, line 2: Change $\tilde{U} \cap \tilde{V}$ to $q(D \backslash\{z\})$.
(8/2/13) Page 268, lines 2 \& 3: Change "preceding corollary" to "preceding theorem."
(11/5/17) Page 268, statement of Corollary 10.24: Change the statement to " $A$ compact surface cannot have both an oriented presentation and a nonoriented one."
(5/23/11) Page 269, line below equation (10.7): Insert missing comma after "surjective."
(10/3/20) Page 271, line 3: Replace the phrase "the endpoints of the paths $a_{i}$ in this product are of the form $i / n$ " by "the paths $a_{i}$ in this product are defined on subintervals whose endpoints are integral multiples of $1 / n$."
(7/8/14) Page 275, Problem 10-21(c): Delete "with nonempty intersection."
(8/27/18) Page 278, second line below the heading: Before "disjoint union," insert "nonempty."
(7/29/19) Page 279, second line: Change "Theorem 4.15" to "Proposition 4.13."
(5/31/16) Page 282, Theorem 11.13: Remark: This theorem, like Theorem 8.4, is true without the assumption that $B$ is locally connected.
(5/17/12) Page 302, Problem 11-5, first line: Change "dimension $n$ " to "dimension $n \geq 2$."
(11/6/19) Page 303, Problem 11-9: Add the hypothesis that the spaces are nonempty.
(12/10/15) Page 303, Problem 11-12(c): Change " $(1,0)$ or $(-1,0)$ " to " 1 or -1 " [to be consistent with the complex notation used elsewhere for $\mathbb{S}^{1}$ ].
(5/17/12) Page 305, Problem 11-20: At the end of the problem, add: "For the counterexample, you may use without proof the fact that $\mathbb{S}^{2}$ is not contractible. (This follows, for example, from Corollary 13.11 and Theorem 13.23.)"
(2/25/18) Page 312, last sentence of the paragraph after Exercise 12.13: Allen Hatcher's name is misspelled.
(7/8/14) Page 315, paragraph above the displayed diagram: After " $Q$ is a normal covering map," insert "and $\hat{H}=\operatorname{Aut}_{Q}(E)$."
(7/8/14) Page 315, just below the displayed diagram: Replace the last two paragraphs on page 315 and the first (partial) paragraph on page 316 with the following:

We have to show that $\hat{q}$ is a covering map. Let $x \in X$ be arbitrary, and let $U$ be a neighborhood of $x$ that is evenly covered by $q$. We will show that $U$ is also evenly covered by $\hat{q}$. Given a component $U_{i}$ of $q^{-1}(U)$, let $\widehat{U}_{i}=Q\left(U_{i}\right) \subseteq \widehat{E}$; then $\widehat{U}_{i}$ is connected, and it is open in $\widehat{E}$ because $Q$ is an open map (Proposition 11.1). Suppose $\hat{U}_{i}=Q\left(U_{i}\right)$ and $\hat{U}_{j}=Q\left(U_{j}\right)$ are any two such sets. If they have a point $\widehat{e}$ in common, then $\widehat{e}=Q\left(e_{i}\right)=Q\left(e_{j}\right)$ for some $e_{i} \in U_{i}$ and $e_{j} \in U_{j}$. Since $Q$ identifies points of $E$ if and only if they are in the same $\hat{H}$-orbit, there is some $\varphi \in \hat{H}$ such that $e_{j}=\varphi\left(e_{i}\right)$. Then $\varphi\left(U_{i}\right)=U_{j}$ by Proposition 12.1(c), so $Q\left(U_{i}\right)=Q \circ \varphi\left(U_{i}\right)=Q\left(U_{j}\right)$. This shows that any such sets $\hat{U}_{i}, \hat{U}_{j}$ are either disjoint or equal. Since $Q$ is surjective, $\hat{q}^{-1}(U)$ is equal to the disjoint union of the connected open sets $\hat{U}_{i}$ as $U_{i}$ ranges over the components of $q^{-1}(U)$.

It remains only to show that for any such set $\hat{U}_{i}$, the restricted map $\hat{q}: \hat{U}_{i} \rightarrow U$ is a homeomorphism. The following diagram commutes:


Since $q=\widehat{q} \circ Q$ is injective on $U_{i}$, so is $Q$; and $Q: U_{i} \rightarrow \hat{U}_{i}$ is surjective by definition. Because $Q$ is an open map, it follows that $Q: U_{i} \rightarrow \hat{U}_{i}$ is a homeomorphism. Since $q$ and $Q$ are homeomorphisms in (12.3), so is $\widehat{q}$.
(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 $E \times E$ 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 $G \times P \rightarrow \mathbb{B}^{2}$ " to "The map $\tilde{\delta}: G \times P \rightarrow \mathbb{B}^{2}$."
(9/27/11) Page 330, just below the bulleted list: Change $\widetilde{p}$ to $\widetilde{q}$.
(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 $\widetilde{q}$ (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, next-to-last line: Change $c_{p}$ to $c_{q}$ (twice), and change $p$ to $q$ (once).
(12/15/17) Page 354, paragraph above the last display: Insert "of some reparametrization" 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."
(4/1/21) Pages 371-372, proof of Theorem 13.34: Change "Theorem 13.33" to "Proposition 3.33" (five times).
(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 $\gamma\left(\alpha_{1}^{2} \ldots \alpha_{n}^{2}\right)$, so $\varphi_{*}$ is injective and $H_{2}(M)=0$."
(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 $\bar{R}$ should read "(normal closure of a subset)."
(2/25/18) Page 422: The index entry for "Hatcher, Allen" is misspelled.

