CORRECTIONS TO
Introduction to Topological Manifolds, Draft Second Edition
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(10/2/06) **Page 7, second-to-last paragraph, first line:** "intractability" is misspelled.

(10/22/06) **Page 35, lines 12 and 13 from the bottom:** Change *Euclidean ball* to *coordinate ball*, and *Euclidean disk* to *coordinate disk*.

(10/22/06) **Page 37, lines 5 and 6:** Change "Euclidean ball" to "coordinate ball."

(10/2/06) **Page 37, line 9:** insert "in" before "Chap. 13."

(10/26/06) **Page 37, lines 6 and 5 from the bottom:** Replace "an equivalent definition" by "a nearly equivalent definition."

(10/17/06) **Page 48, Example 3.8:** Change "not an embedding" to "not a topological embedding."

(10/12/06) **Page 50, last paragraph, line 3:** Change "a point $x \in \mathbb{S}^n$" to "a point $x \in \mathbb{S}^n \smallsetminus \{N\}$."

(10/22/06) **Page 59, proof of Prop. 3.24, first and fourth lines:** Change "Euclidean balls" to "coordinate balls."

(11/7/06) **Page 59, Example 3.25:** Change $\overline{\mathbb{B}^2}$ to $\overline{\mathbb{B}}^2$ throughout. (I've decided to use the notation $\overline{\mathbb{B}}^n$ for the closed unit ball in $\mathbb{R}^n$ instead of $\overline{\mathbb{B}^n}$, to avoid confusion about where the closure is meant to be taken. The notation $\overline{\mathbb{B}}^n$ just means the closed ball itself, a compact topological space that is a manifold with boundary. The notation is analogous to $\overline{B}_r(x)$ for a closed ball in a metric space, which might or might not be the closure of an open ball.)

(10/18/06) **Page 62, seventh line after the subheading:** Delete the word "surjective" from the definition of *saturated*.

(10/17/06) **Page 68, Problem 3-7(c):** Replace "no left inverse" by "no continuous left inverse," and "no right inverse" by "no continuous right inverse."

(10/17/06) **Page 68, Problem 3-11:** Replace "countably many" by "countably infinitely many."

(10/24/06) **Page 75, Prop. 4.8(d):** Change "*is connected*" to "*is path connected.*"

(11/7/06) **Page 85, Proposition 4.28:** Change $\overline{\mathbb{B}^n}$ to $\overline{\mathbb{B}}^n$ in the statement and throughout the proof. (See the note with the correction to Page 59, Example 3.25 above.)

(10/24/06) **Page 87, last paragraph:** Replace "the only compact subsets are singletons" by "no nonempty open subset has compact closure."

(10/24/06) **Page 95, proof of Lemma 4.44, fifth line:** Add missing right parenthesis to $\varphi^{-1}(\overline{B}_r(x))$.

(11/03/06) **Page 96, proof of Lemma 4.46, last sentence:** It is (i) that guarantees that (U_j) is a cover, not (ii).

(10/24/06) **Page 96, statement of Theorem 4.47, third line:** Change "*locally finite open refinement*" to "*countable, locally finite open refinement.*"

(10/24/06) **Page 96, statement of Theorem 4.47, last line:** Change B to $\mathscr{B}$.

(10/24/06) **Page 97, line 4:** Change "an open cover" to "a countable open cover."

(10/24/06) **Page 97, line 10 from the bottom:** Change "locally finite open refinement" to "countable, locally finite open refinement."

(10/24/06) **Page 97, line 9 from the bottom:** Change $\{B_i\}$ to (B_i).

(10/24/06) **Page 98, line 4:** Change $\{B_i\}$ to (B_i).

(11/7/06) **Page 98, line 9:** Change $B_i' \subseteq X_{a(i)}$ to $\overline{B_i'} \subseteq X_{a(i)}$.

(10/25/06) **Page 99, line above the middle displayed equation:** Change $A \cap U_\alpha$ to $B \cap U_\alpha$.

(11/7/06) **Page 101, Problem 4-11:** Change $\overline{\mathbb{B}^n}$ to $\overline{\mathbb{B}}^n$. (See the note with the correction to Page 59, Example 3.25 above.)

(11/7/06) **Page 102, Problem 4-15:** Change $\overline{\mathbb{B}^n}$ to $\overline{\mathbb{B}}^n$. (See the note with the correction to Page 59, Example 3.25 above.)

(10/20/06) **Page 102, Problem 4-17:** Insert "is" before "Hausdorff."

(11/16/06) **Page 106, statement of Proposition 5.1(c):** Change c_n to c_k.

(11/3/06) **Page 106, proof of Proposition 5.1, sixth line:** Change "closed in B" to "closed in X."

(11/3/06) **Page 107, Example 5.2(b), first line:** should read $f\colon A \hookrightarrow \overline{\mathbb{B}}^2$ (not $\mathbb{B}^2$).

(11/7/06) **Page 108, line 5 from bottom:** "coordinates" is misspelled.

(11/7/06) **Page 108, Equation (5.5):** The last term should be $(B \cap \sigma_k)$, not $(B \cup \sigma_k)$.

(11/16/06) **Page 109, second full paragraph, first line:** Replace "collection of simplices" by "collection K of simplices."

(11/7/06) **Page 112, line 6 from bottom:** Change $\{f(v_0), \ldots f(v_k)\}$ to $\{f_0(v_0), \ldots f_0(v_k)\}$.

(11/7/06) **Page 117, last line:** Change "Problem 4-1(a(a)" to "Problem 4-1(a)."

(11/7/06) **Page 114:** Restate Corollaries 5.13–5.15 as follows:

> **Corollary 5.13.** *If K is a simplicial complex, then $|K|$ is compact if and only if K is finite.*
>
> **Corollary 5.14.** *If K is a simplicial complex, a subset of $|K|$ is compact if and only if it is closed and contained in a finite subcomplex.*
>
> **Corollary 5.15.** *If K is a simplicial complex, then $|K|$ is locally compact.*

(12/7/06) **Page 150, statement of Theorem 6.15:** Add the hypothesis that M is compact.

(12/7/06) **Page 150, two lines below the statement of Theorem 6.15:** Before "surface," insert "compact, connected."

(12/7/06) **Page 151, proof of the classification theorem, first line:** Before "surface," insert "compact, connected."

(11/16/06) **Page 151, last line:** After "separation of M," insert the following sentence: "(If some face had only one or more vertices identified with other faces but no edges, then removing finitely many points from the quotient space would disconnect it, which is impossible for a 2-manifold.)"

(11/16/06) **Page 152, Step 3, line 9:** After "decreased the total number of nonadjacent pairs," insert "(including both twisted and complementary ones)."

(11/16/06) **Page 157, second line from bottom:** Change "projecting" to "projective."

(11/29/06) **Page 191, first paragraph:** Delete the second sentence. [The unique lifting property is actually used at the very end of the proof of Theorem 8.1]

(11/29/06) **Page 191, second-to-last line:** Before both occurrences of "lift," insert the word "unique."

(11/22/06) **Page 195, proof of Theorem 8.11, second line:** Change $f(z)$ to $\varphi(z)$.

(11/22/06) **Page 201, two lines above Lemma 8.14:** Change "curve" to "loop."

(12/2/06) **Page 211, three lines below the section heading:** Change "imposted" to "imposed."

(12/7/06) **Page 225, statement of Theorem 10.3:** Change $(f_1)_*\gamma_a$ and $(f_2)_*\gamma_a$ to $f_1(\gamma_a)$ and $f_2(\gamma_a)$, respectively.

(12/7/06) **Page 232, statement of Cor. 10.9, last sentence:** Change β_m to β_n.

(12/7/06) **Page 233, proof of Prop. 10.10, 7th line:** Before "images," insert "continuous."

(12/7/06) **Page 242, Corollary 10.14:** This should be titled "**Classification of Compact Surfaces, Part II.**"

(12/2/06) **Page 243, Problem 10-4:** Add the hypothesis that M and N are connected.

(12/2/06) **Page 245, Problem 10-16:** In the fourth line, change the first occurrence of $\pi_1(X, q)$ (but not the second) to $\pi_1(\widetilde{X}, q)$. Also, insert "the" before "smallest."

(12/2/06) **Page 245, Problem 10-18:** Change both occurrences of $\mathscr{K}$ to K.

(10/2/06) **Page A-8, Exercise A.8:** Reword as follows: "Show that equality (a) in Exercise A.4 holds for all T if and only if f is surjective, and each of the equalities (b)–(d) holds for all S and S' if and only if f is injective."