Page 34 Line 9. After summer program. add Exercise 1.6.3 and 1.6.4 are stated as “either/or”. It is possible that both alternatives occur: there is some number with more than one expansion, while there is another number with no expansion. For example, modify the Eisenstein number system (Exercise 1.6.10) by using base $b = -2$, but using only 3 of the digits, say $D = \{0, 1, \omega\}$, (Thanks to Peter Hinow for this example.)

Page 43 Line 6. Replace open set $U$ by open set $T$
Page 43 Line 7. Replace $U = \bigcup_{A \in A} A$ by $T = \bigcup_{U \in A} U$

Page 84 Line 7. After $\{\omega\}$ add Let $W$ and $F$ be as on p. 83.
Page 96 Line 5. Replace no cover of $\mathbb{R}^2$ by bounded open sets with order 1.

Page 97 Line 9. Replace $F$ by nonempty complete metric
Page 97 Line 10. Replace two paragraphs beginning by no cover with order 1 of $\mathbb{R}^2$ by open sets with bounded diameter.

Page 97 Line 13. Replace $\bigcup_{i=2}^n B_i$ by $F_1 \cup \bigcup_{i=2}^{n+2} B_i$
Page 97 Line 14. Replace $\bigcup_{i=2}^n B_i$ by $\bigcup_{i=3}^{n+2} B_i$
Page 100 Line 12. Replace Exercise by

By Theorems (3.4.4) and (3.4.5), we may conclude that Cov $\mathbb{R} = 1$ since ind $\mathbb{R} = 1$. Instead, compute Cov $\mathbb{R}$ directly from the definition of covering dimension.

Page 114 Line 10. After Mauldin–Williams graph add For technical reasons each vertex has at least one edge leaving it.

Page 115 Line 8. Replace complete metric by nonempty complete metric
Page 129 Line 18. Replace two paragraphs beginning Now we take by

Now we take the case $\mathcal{L}(A) = \infty$. All of the sets $A \cap [-n, n]$ are measurable, so there exist open sets $U_n \supseteq A \cap [-n, n]$ and compact sets $F_n \subseteq A \cap [-n, n]$ with $\mathcal{L}(U_n \setminus F_n) < \epsilon/2^{n+2}$. Define $U'_n = U_n \cap (\infty, -n + 1 + \epsilon/2^{n+2}) \cup (n-1 - \epsilon/2^{n+2}, \infty)$ and $F'_n = F_n \cap (-n, -n + 1) \cup [n-1, n)$, so that $U'_n$ is open, $F'_n$ is compact, $U'_n \supseteq A \cap [-n, n]$ and $F'_n \subseteq A \cap (\infty, -n + 1) \cup [n-1, n)$, so that $\mathcal{L}(U'_n \setminus F'_n) < \epsilon/2^{n+2}$.

Page 134 Line 10. Add (Recall that $\inf \emptyset = \infty$, so if there is no countable cover at all of $B$ by sets of $A$, then $\overline{\text{M}}(B) = \infty$.)

Page 154 Line 16. Replace $h(a)$ by $h(f(a))$ and replace $h(b)$ by $h(f(b))$

Page 208 Line 7. Replace Let by For $x \in E(\omega)$, let
Page 213 Line 20. Replace $-\log a/\log 5$ where $a \approx 0.3992$ is a solution of $a^4 - a^3 - a^2 + 3a - 1 = 0$. The dimension is approximately 0.57058;

by $\log \left((\sqrt{5} + 3)/2\right)/\log 5 \approx 0.59799$.
Changes: from second printing to third printing

February 7, 1995

Measure, Topology, and Fractal Geometry by Gerald A. Edgar

Page 68 Line 10. Replace The points of $F$ by The points of $F_1$

Page 83 Line 8. After $\{U_1, U_2, \cdots \}$, add (If $B$ is finite, repeat the basic sets over and over.)

Page 109 Line 4. Replace complex number by complex number, $|b| > 1$

Page 145, after line 3. Add An example of a set in the line not measurable for Lebesgue measure may be found in many texts. For example: [6, pp. 36–37], [9, Theorem 1.4.7], [29, (10.28)], or [48, Chapter 3, Section 4].

Page 187 Line -14. Replace Theorem 6.5.2 by Theorem 6.2.5
Changes: from first printing to second printing
March 28, 1992
Measure, Topology, and Fractal Geometry  by Gerald A. Edgar

Page ix Line 14. Delete and
Page ix Line 15. Add and Kenneth Dreyhaupt
Page 4 Line 23. Replace 1.6.7 by 1.6.2
Page 17 Line 8. Replace 24 by 2.4
Page 29 last display. Replace $(2\pi/3)$ by $\frac{2\pi}{3}$
Page 29–30. Replace $a$ and $b$ by $u$ and $v$
Page 31 Figure 1.6.8. Missing label $L_4$.
Page 32 Line -9. Replace is has come by it has come
Page 33 Line 2. Replace called by Mandelbrot “Sierpiński’s carpet”
by called Sierpiński’s carpet (dywan Sierpinskiego)
Page 49 Line -10. Replace $\{ y \in \mathbb{R}^d : \rho(x, y) = r \}$ by $\{ y \in S : \rho(x, y) = r \}$
Page 57 Line 4. Replace $\rightarrow z_1$ by $z_1$;
Page 57 Line 7. Replace $\rightarrow z_2$ by $z_2$;
Page 57 Line 9. Replace $\rightarrow z_j$ by $z_j$;
Page 65 Line 5. Replace 2.3.15 by 2.3.16
Page 66 Line 19. Replace first paragraph of proof by

**Proof.** First, clearly $D(A, B) \geq 0$ and $D(A, B) = D(B, A)$. Since $A$ and $B$ are compact, they are bounded, so $D(A, B) < \infty$.

Page 66 Line -3. Add and let $A$ be a nonempty compact subset of $S$
Therefore, its limit. So there exists a sequence \((y_k)\) with \(y_k \in A_k\) and \(y_k \to y\).

Let \(\varepsilon > 0\) be given. Then there is \(N \in \mathbb{N}\) so that \(n, m \geq N\) implies \(D(A_n, A_m) < \varepsilon/2\). Let \(n \geq N\). I claim that \(D(A_n, A) \leq \varepsilon\).

If \(x \in A\), then there is a sequence \((x_k)\) with \(x_k \in A_k\) and \(x_k \to x\). So, for large enough \(k\), we have \(\rho(x_k, x) < \varepsilon/2\). Thus, if \(k \geq N\), then (since \(D(A_k, A_n) < \varepsilon/2\)) there is \(y \in A_n\) with \(\rho(x_k, y) < \varepsilon/2\), and we have \(\rho(y, x) \leq \rho(y, x_k) + \rho(x_k, x) < \varepsilon\). This shows that \(A \subseteq N_\varepsilon(A_n)\).

Now suppose \(y \in A_n\). Choose integers \(k_1 < k_2 < \cdots\) so that \(k_1 = n\) and \(D(A_{k_j}, A_m) < 2^{-j}\varepsilon\) for all \(m \geq k_j\). Then define a sequence \((y_k)\) with \(y_k \in A_k\) as follows: For \(k \geq n\), choose \(y_k \in A_k\) with \(\rho(y_k, y_k) < 2^{-j}\varepsilon\). Then \(y_k\) is a Cauchy sequence, so it converges. Let \(x\) be its limit. So \(x \in A\). We have \(\rho(y, x) = \lim y_k \rho(y_k, y_k) < \varepsilon\). So \(y \in N_\varepsilon(A)\). This shows that \(A \subseteq N_\varepsilon(A)\).

So we have \(D(A, A_n) \leq \varepsilon\). This concludes the proof that \((A_n)\) converges to \(A\).

Next I show that \(A\) is "totally bounded": that is, for every \(\varepsilon > 0\), there is a finite \(\varepsilon\)-net in \(A\). Choose \(n\) so that \(D(A_n, A) < \varepsilon/3\). By (2.2.5), there is a finite \((\varepsilon/3)\)-net for \(A_n\), say \(\{y_1, y_2, \cdots, y_m\}\). Now for each \(y_i\), there is \(x_i \in A\) with \(\rho(x, y_i) < \varepsilon/3\). The finite set \(\{x_1, x_2, \cdots, x_m\}\) is an \(\varepsilon\)-net for \(A\).

Now I will show that \(A\) is a closed subset of \(S\). Let \(x\) belong to the closure \(\overline{A}\) of \(A\). Then there exists a sequence \((y_n)\) in \(A\) with \(\rho(x, y_n) < 2^{-n}\). For each \(n\) there is a point \(z_n \in A_n\) with \(\rho(z_n, y_n) < D(A_n, A) + 2^{-n}\). Now

\[
\rho(z_n, x) \leq \rho(z_n, y_n) + \rho(y_n, x) < D(A_n, A) + 2^{-n} + 2^{-n}.
\]

This converges to 0, so \(z_n \to x\). Thus \(x \in A\). This shows that \(A\) is closed.

Finally, to show that \(A\) is compact, I will show that it is countably compact. Let \(B\) be an infinite subset of \(A\). There is a finite \((1/2)\)-net \(B\) for \(A\), so each element of \(B\) is within distance \(1/2\) of some element of \(B\). Now \(B\) is infinite and \(B\) is finite, so there is an element of \(B\) within distance \(1/2\) of infinitely many elements of \(B\). Let \(F_1 \subseteq F\) be that infinite subset. The points of \(F_1\) are all within distance \(1/2\) of each other; that is, diam \(F_1 \leq 1\). In the same way, there is an infinite set \(F_2 \subseteq F_1\) with diam \(F_2 \leq 1/2\); and so on. There are infinite sets \(F_j\) with diam \(F_j \leq 2^{-j}\) and \(F_{j+1} \subseteq F_j\) for all \(j\). Now if \(x_j\) is chosen from \(F_j\), we have \(\rho(x_j, x_k) \leq 2^{-j}\) if \(j < k\), so \((x_j)\) is a Cauchy sequence. Since \(S\) is complete, \((x_j)\) converges, say \(x_j \to x\). Since \(A\) is closed, \(x \in A\). But then \(x\) is a cluster point of the set \(F\). Therefore \(A\) is compact. \(\Box\)
Page 74 headline. Replace 25.12 by 2.5.12

Page 76 Line -6. Replace Then apply 2.2.18 by But A is closed, so any point with distance 0 from A belongs to A.

Page 86 Line -15. After empty set. add Note that a space $S$ has ind $S \leq k$ if and only if a point $\{x\}$ and a closed set $B$ not containing $x$ can be separated by a set $L$ with ind $L \leq k - 1$. Indeed, there is a basic open set $U$ with $x \in U \subseteq S \setminus B$ and $L = \partial U$ separates $\{x\}$ and $B$.

Page 92 Line -1. Replace $(ay + bx)$ by $(ay - bx)$

Page 93 Line -10. Delete comma

Page 94 Line -12. Replace $g_1(x) \geq x_2 \geq -1$ by $g_1(x) \geq x_1 \geq -1$

Page 102 Line -4. Replace $(i = 1, 2, \cdots, m)$ by $(i = 1, 2, \cdots, n)$

Page 103 Line -16. Replace Exercise 3.1.7 by Exercise 3.1.8

Page 108 Line -7. Replace a cluster of by a cluster point of

Page 113 Line -1. After made. add The transformations map the large square and rectangle shown at the top into the same square and rectangle shown at the bottom.

Page 114 Line 9. Replace $r: V \to (0, \infty)$ by $r: E \to (0, \infty)$

Page 117 Line 5. Replace paragraph by Under the new metrics, what happens to the maps $f_e$? If $e \in E_{uv}$, then

$$\rho'_u(f_e(x), f_e(y)) = a_u \rho_u(f_e(x), f_e(y)) = a_u r(e) \rho_v(x, y) = a_u \frac{r(e)}{a_v} \rho'_v(x, y).$$

Thus, with the new metrics, the maps $f_e$ realize a Mauldin-Williams graph $(V, E, i, t, r')$, where

$$r'(e) = \frac{a_u}{a_v} r(e) \quad \text{for } e \in E_{uv}.$$ 

The Mauldin-Williams graph $(V, E, i, t, r')$ is called a rescaling of the graph $(V, E, i, t, r)$. A Mauldin-Williams graph $(V, E, i, t, r)$ will be called contracting iff it is a rescaling of a strictly contracting graph.

Page 126 Line 5. Replace 1.5.2 by 5.1.2

Page 127 Line 11. Replace and let $A \subseteq \bigcup_{j \in \mathbb{N}} [a_j, b_j]$ by and let $A \cup B \subseteq \bigcup_{j \in \mathbb{N}} [a_j, b_j]$
Page 129. Replace statement of Theorem (5.1.12) by
Compact subsets, closed subsets, and open subsets of $\mathbb{R}$ are Lebesgue measurable.

Page 129 Line 4. Replace the first paragraph of the proof by

Proof. Let $K \subseteq \mathbb{R}$ be compact. It is bounded, so $K \subseteq [-n, n]$ for some $n$, and therefore $\ell(K) < \infty$. The compact set $K$ is a subset of $K$, so $L(K) \geq \ell(K)$. Let $F \subseteq \mathbb{R}$ be a closed set. Then for each $n \in \mathbb{N}$, the intersection $F \cap [-n, n]$ is compact, and therefore measurable. Thus $F$ is measurable.

Page 135 Line 12. Replace $M$-measurable by $\mathcal{M}$-measurable

Page 135 Line -3. Replace period by comma

Page 154 Line 10. Replace $0 \leq y_1 < z_1 \leq y_2 < z_2 \leq \cdots \leq y_n < z_n \leq 1$
by $0 \leq y_1 \leq z_1 \leq y_2 \leq z_2 \leq \cdots \leq y_n \leq z_n \leq 1$

Page 154 Line 19. Replace $\rho(u,v)$, so we have by $\rho(u,v)$, so $h$ has bounded increase, and we have
Page 154 Line -6. Replace then the sets $f[[x_{i-1},x_i]]$ are measurable and disjoint by then the set $f[[x_{i-1},x_i]] = f[[x_{i-1},x_i]] \setminus \{f(x_i)\}$ is the difference of two compact sets, hence measurable. The sets $f[[x_{i-1},x_i]]$ are disjoint

Page 155 Line 3. On Hausdorff dimension vs. topological dimension add a footnote:
*Optional material. (It depends on Section 3.4.)

Page 156 Line 20. After system. add Of course, $K$ is a measurable set, since it is compact.

Page 163 Line 9. Replace condition by condition

Page 180. Refer to Tricot as well as Taylor.

Page 186 Line 4. Replace A. N. Besicovitch by A. S. Besicovitch

Page 191 Line -2. Replace inside of the fudgeflake by filled-in fudgeflake

Page 224 Line -18. Replace Kurt by Curt

Page 228. Replace Maltese cross xii by Maltese cross xiii

Page 228. Replace number systems 28, 34, 59, 83, 109, 131, 165, 178, 204 by number systems 28, 34, 59, 83, 109, 131, 165, 177, 204

Page 228. Space between overlap and packing dimension