

CALCULUS AND ANALYSIS IN EUCLIDEAN SPACE: CORRECTIONS

October 2, 2018

Chapter 1

- Page 16: On line 7, “polynomial growth” should be “exponential growth”.

Chapter 3

- Page 114: The discussion can be improved, e.g., “As for boxes, scaling any spanning vector of a parallelepiped by a real number a magnifies the volume by $|a|$, and so we have

$$\text{vol } T\mathcal{B}' = \text{vol } T\mathcal{B} \cdot a_1 \cdots a_n.$$

But also,

$$a_1 \cdots a_n = \text{vol } \mathcal{B}'.$$

That is, the volume of the T -image of any box is a constant multiple of the volume of the box, regardless of the box’s location or side lengths, the constant being the volume of $T\mathcal{B}$, the T -image of the unit box \mathcal{B} . Call this constant magnification factor t . Thus,

$$\text{vol } T\mathcal{B}' = t \cdot \text{vol } \mathcal{B}' \quad \text{for all boxes } \mathcal{B}'.$$

Chapter 4

- Page 135: The second display should say “ $\psi(h) = h_i$ ”, not “ $\varphi(h) = h_i$ ”.
- The insistence on the formula $f'' = (f')^T$ in section 4.7 is silly. Simply view f' as a mapping to \mathbb{R}^n , each of whose outputs is an ordered list rather than specifically a row vector.
- Page 152: A better version of exercise 4.4.8(a) is: “Show that if f is multilinear and $a_1, \dots, a_k, h_1, \dots, h_k \in \mathbb{R}^n$ then for any $j \in \{2, \dots, k\}$, $f(h_1, \dots, h_j, a_{j+1}, \dots, a_k)$ is $o(h_1, \dots, h_k)$. The same result holds if any j inputs to f are h ’s, rather than the first j inputs, because permuting the inputs of a multilinear function creates another multilinear function. Flesh this argument out as much as feels necessary for your understanding.”
- Page 182: Change “ G ” to “ T ” in the first line after the second display.
- Page 188: The left side of Figure 4.12 has different horizontal and vertical scales; scaled correctly, it would show the two vectors at right angles.

Chapter 6

- Page 268: Exercise 6.2.7 should say that upper sums for f can be bigger than *lower* sums for g .

Chapter 9

- Page 448: In the “...(now dropping the wedges from the notation)...” sentence, drop the wedge from the notation $dx \wedge dy$.
- Page 454: In the six-line display, change “recognizing the definition of d ” to “by the product rule for d , nilpotence” at the fifth line.
- Page 474: $\Delta_{1,b}^3$ should be $\Delta_{3,b}^3$ in two places toward the bottom of the page.