Errata for *Real Analysis for Graduate Students,*

Version 4.2

Page 20, Exercise 3.1, lines 3–4: $\mu(\emptyset) = 0$. Suppose that whenever A_i

Page 27, line 7: $\mu^*(E \cap B_n) =$

Page 45, line 5: $\{x : f(x)^2 > a\}$

Page 80, Exercise 9.5(1): $\mu_n([a, x]) \to m([a, x])$ for every $x \in [a, b]$. Conclude by Exercise 7.29 that $\int f\, d\mu_n \to \int_a^b f\, dx$

Page 93, line 10: have

Page 94, place the following after line 19:

We also need to mention a technical point. Under (b) we know the function $\int |f(x, y)|\, \nu(dy)$ is finite for almost every x (with respect to μ). However for x in the null set it is possible that $\int f^+(x, y)\, \nu(dy)$ and $\int f^-(x, y)\, \nu(dy)$ are both infinite, in which case $h(x)$ is undefined. Let us set $h(x) = 0$ for such x. When we are assuming (b), the conclusion (3) should be interpreted to mean that h is equal almost everywhere (with respect to μ) to a function that is measurable with respect to $\mathcal{A}$. Of course similar considerations hold for (4).

Page 119, line 1: $f = g$ a.e. if f is measurable

Page 122, line -6: Change 3 to 5 here; and also on page 123, line 4; page 123, line 6; page 124, line 10; page 124, line 17; page 124, line 18 (2 times); page 124, line 19 (2 times); page 125, line -2; page 125, line -1; page 129, line -5; and page 129, line -3 (4 times).

Page 126, line 11: *Suppose f is locally integrable. Then for almost*

Page 128, line -3: By adding a constant to H we may assume wiithout loss of generality that $H(0) = 0$. Let us first address

Page 135, line 10: $f = f_1 + f_2$

Page 150, line -7: $g * \varphi_\varepsilon$

Page 211, line 9: $\frac{1}{\sqrt{2\pi}} \int_0^{2\pi} f(y) e^{-iny}\, dy$

Page 289, line 1: $g(x) = |x|$

Page 307, line -15: $\mathbb{R}^{\mathbb{N}}$

Page 420, line 4: $B_q = A \cap (q + N)$.

Page 420, line 6: $A \subset \cup_{q \in \mathbb{Q} \cap [0,1]} B_q$, contradicting that $m(A) > 0$

Page 421, lines -10,-9: Change g to g_x twice.

Page 432, lines 1–2: Replace the sentence beginning "On the left ..." by

Set $f(2^{-n-1}) = f(2^{-n}) = 0$, set $f(\frac{5}{8} \cdot 2^{-n}) = 2^n/n$, set $f(\frac{7}{8} \cdot 2^{-n}) = -2^n/n$, and define f by linear interpolation for the other points in $(2^{-n-1}, 2^{-n})$, so that f is continuous.

Page 432, line 6: Add:

Now take K to be a generalized Cantor set of positive measure and note that χ_{K^c} is discontinuous at every point of K.

Page 435, line -8: $|f_1| \, d\rho_1 =$

Page 439, line -6: $M_{g_{P_n}}(y)$ increases

Page 441, line 11: $a = m(A) > 0$

Page 449, Exercise 17.8, lines 6–9: Replace lines 6–9 by the following:

ν, $\mathcal{A}$ contains the open sets. Now apply Proposition 17.6 to conclude that $\mathcal{A}$ is the Borel σ-algebra.