

**Errata for the SECOND EDITION of “A First Look at Rigorous Probability”,
by Jeffrey S. Rosenthal, World Scientific Publishing Co., 2006.**

Errata to Fourth Printing, 2010:

[With thanks to Martin Hazelton, Gareth Roberts, Igal Sason, Mohsen Soltanifar, and Albert Zevelev.]

- p. 31, line 5: “ $f^{-1}((\infty, x])$ ” should be “ $f^{-1}((-\infty, x])$ ”.
- p. 44, line 1, and again on line 19: “ $\sum_j y_j \mathbf{1}_{B_i}$ ” should be “ $\sum_j y_j \mathbf{1}_{B_j}$ ”.
- p. 48, line –5: “non non-negative” should be “not non-negative”.
- p. 66, line –8: “Holder” should be “Jensen”.
- p. 69, first line of Proposition 6.2.1: “ μ_I ” should be “ μ_i ”.
- p. 74, line 7: “ $F(z)$ for each $z \in \mathbf{R}$ ” should be “ $F(x)$ for each $x \in \mathbf{R}$ ”.
- p. 85, displayed equation in Theorem 8.1.1: “ $X_{=i_1}$ ” should be “ $X_1 = i_1$ ”.
- p. 106, line 15: “integral” should be “integrable”.
- p. 106, line 17: “ $\mathbf{E}(X)$ ” should be “ $\mathbf{E}(X_0)$ ”.
- p. 136, Exercise 11.3.2: “ Y_n ” should be “ Y_k ” (twice).
- p. 137, conclusion of Theorem 11.4.1: “ $\mu \Rightarrow \mu$ ” should be “ $\mu_n \Rightarrow \mu$ ”.
- p. 146, line –6: “ mu_{sing} ” should be “ μ_{sing} ”.
- p. 178, line –6: “ $\{X_{t_1}, \dots, X_{t_k}\} \in H$ ” should be “ $\{(X_{t_1}, \dots, X_{t_k}) \in H\}$ ”.
- p. 192, Exercise 15.6.8: replace “ $Z_t = \exp[-(a + \frac{1}{2}b^2)t + X_t]$ ” with “ $Z_t = \exp[-2aX_t/b^2]$ ”.
(In fact, the first Z_t is also a martingale, but it is less useful than the second version.)
- p. 204, Exercise A.3.8: change “ $\sum_{i=1}^{\infty}$ ” to “ $\sum_{i=2}^{\infty}$ ” (twice), and “ \int_1^{∞} ” to “ \int_2^{∞} ”.
- p. 204, Exercise A.3.9: change “ $\sum_{i=1}^{\infty}$ ” to “ $\sum_{i=3}^{\infty}$ ” (twice).
- p. 207, second line of Exercise A.5.1: “equivalence class” should be “equivalence relation”.

Errata to Second Printing, 2007 (to be corrected in Fourth Printing, 2010):

[With thanks to Orn Arnaldsson, Bent Jørgensen, Chris Mansley, Kohei Nagamachi, Patrick Rabau, Mohsen Soltanifar, Hermann Thorisson.]

- p. 19, Exercise 2.5.6, and also p. 22, proof of Lemma 2.6.2: replace “ $A_1, A_2, \dots \in \mathcal{J}$ ” by “ A_1, A_2, \dots are finite unions of elements of \mathcal{J} ”.
- p. 23, Exercise 2.6.4: “ $\mathbf{P}(\emptyset) = 1$ ” should be “ $\mathbf{P}(\Omega) = 1$ ”.
- p. 23, Exercise 2.7.3, part (b): interchange “semialgebra” and “algebra”. (Also, for stylistic improvement, swap parts (a) and (b).)
- p. 30, last line of proof of Proposition 3.1.5: “ $\{X \leq x\}$ ” should be “ $\{Z \leq x\}$ ”.
- p. 33, line 7: second “ $\mathbf{P}(X \in T)$ ” should be “ $\mathbf{P}(Y \in S)$ ”.
- p. 39, Exercise 3.6.8: exercise is correct, but special cases like “ $d \leq b + c - a$ ” and “ $d > b + c - a$ ” should be modified.
- p. 40, Exercise 3.6.14: insert “independent” before “non-negative”.
- p. 74, the proof of Lemma 7.1.2 is sloppily written and should be replaced by:

Since F is right-continuous, we have that $\inf\{x; F(x) \geq u\} = \min\{x; F(x) \geq u\}$, i.e. the infimum is actually obtained. It follows that $\phi(u) \leq x$ if and only if $u \leq F(x)$. Hence, since $0 \leq F(x) \leq 1$, we obtain that $\mathbf{P}(\phi(U) \leq x) = \mathbf{P}(U \leq F(x)) = F(x)$.
- pp. 113–114: “Example 9.5.9” should be “Exercise 9.5.9”, and similarly for 9.5.11 and 9.5.12.
- p. 114, Exercise 9.5.12: “characteristic function” should be “moment generating function”.
- p. 118 middle, the three lines following Figure 10.1.2: replace “ g ” by “ f ” (five times).
- p. 118, line –5: “ $F(w) \geq b$ ” should be “ $F(z) \geq b$ ”.
- p. 121, Exercise 10.3.5: “four conditions” should be “five conditions”.
- p. 126, statement of Lemma 11.1.2: “ $\phi(t)$ ” should be “ e^{itx} ”.
- p. 128, line –7: “ π ” should be removed from the equation.
- p. 131, line 9: “ \lim_n ” should be “ \lim_k ” (twice); “ F_n ” should be “ F_{n_k} ” (twice); and “ μ_n ” should be “ μ_{n_k} ”.
- p. 136, lines 3–4: the sentence in brackets is somewhat misleading and should be revised or omitted.
- p. 136, eqn (11.3.1): “ $\mathbf{1}_{|Z_{nk}| \geq \epsilon s_n}$ ” should be “ $\mathbf{1}_{|Z_{nk}| \geq \epsilon s_{n_k}}$ ”.
- p. 166, lines 6–7: “bets \$1 on tails, then if they win they bet \$2 on heads” should be “bets \$1 on heads, then if they win they bet \$2 on tails”.

- p. 173, Exercise 14.4.1: should say “ $\mathbf{P}(Z_i = 1) = \mathbf{P}(Z_i = 0) = 1/2$ ”, and “ $X_1 = 2Z_1 - 1$ ”.
- p. 174, Exercise 14.4.12(a), Hint: “ $\mathbf{P}(\tau \geq 3m)$ ” should be “ $\mathbf{P}(\tau > 3m)$ ”.

Errata to First Printing, 2006 (corrected in Second Printing, 2007):

[With thanks to Joe Blitzstein, Saad Siddiqui, Emil Zeuthen.]

- p. 9, line 10 from bottom: “*all* intervals” should be “*all* subsets”.
- p. 18, eqn. (2.5.2): “ $P(B)$ ” should be “ $\mathbf{P}(B)$ ”.
- p. 19, the last sentence in the proof of corollary 2.5.4 is questionable (since we may have $D_n \notin \mathcal{J}$), and should be replaced by:

It then follows from (2.5.5) that

$$\mathbf{P}\left(\bigcup_n B_n\right) = \mathbf{P}\left(\bigcup_n D_n\right) = \mathbf{P}\left(\bigcup_n \bigcup_{i=1}^{k_n} J_{ni}\right) = \sum_n \sum_{i=1}^{k_n} \mathbf{P}(J_{ni}).$$

On the other hand,

$$B_n = \bigcup_{m \leq n} \bigcup_{i=1}^{k_m} (J_{mi} \cap B_n)$$

and the union is disjoint, with $J_{ni} \subseteq B_n$, so

$$\mathbf{P}(B_n) = \sum_{m \leq n} \sum_{i=1}^{k_m} \mathbf{P}(J_{mi} \cap B_n) \geq \sum_{i=1}^{k_n} \mathbf{P}(J_{ni} \cap B_n) = \sum_{i=1}^{k_n} \mathbf{P}(J_{ni}),$$

and hence

$$\sum_n \mathbf{P}(B_n) \geq \sum_n \sum_{i=1}^{k_n} \mathbf{P}(J_{ni}) = \mathbf{P}\left(\bigcup_n B_n\right).$$

- p. 20, eqn. (2.5.10): “ $(\infty, x]$ ” should be “ $(-\infty, x]$ ”.
- p. 22, line 10 from bottom: “ P_1 ” should be “ \mathbf{P}_1 ”, and “ P_2 ” should be “ \mathbf{P}_2 ”.
- p. 151, first line of Section 13.1: “We being” should be “We begin”.
- p. 162, last line: “ $X_n = 5$ ” should be “ $X_n = -5$ ”.
- p. 205, Exercise A.4.5: “contraction” should be “contradiction”.
- p. 206, line 4: “ $g(x)/h(x)$ ” should be “ $|g(x)/h(x)|$ ”.
- p. 206, line 7: “limsup” should be “lim”.