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DISCRETE MATHEMATICS WITH APPLICATIONS, 5th Edition
by Susanna S. Epp

Great effort was made to insure as error-free a product as possible. With approximately 3 million characters in the book, however, some mistakes are inevitable. I would be grateful to learn of any errors you find so that they can be listed on this page and corrected in subsequent printings. Please send them to me at susanna.s.epp@gmail.com.

With thanks, Susanna S. Epp

ERRATA

CHAPTER 1

Text

LOCATION	CORRECTION
18 – Example 1.3.3	In line 1, change "B = {1, 2, 3}" to "B = {1, 3, 5}".
20 – Example 1.3.5(b)	In line 6, change "strong" to "string".
21 – below Figure 1.3.2	Four lines below the figure, change "such as *f*, *g*, of" to "such as *f*, *g*, or".
34 – middle of page	In line 11, change "4, 5, or 6" to "4, 5, 6, or 7". In line 16, change "either 5 or 6" to "5, 6, or 7".

Exercises

LOCATION	CORRECTION
A-6 – 1.4 #5	Delete the unlabeled edge between v_1 and v_3.

CHAPTER 2

Text

LOCATION	CORRECTION
48 – middle of page	In the Definition, change "contradication" to "contradiction" and "contradication" to "contradiction".
50 – Example 2.1.14	Delete the extraneous left parenthesis at the beginning of the line 9.
98 – display near page top	Change "$1_2 + 0_2 = 01_2$" to "$1_2 + 0_2 = 1_2$".
102 – middle of page	Change "$32 = 2^8$" to "$32 = 2^5$".

Exercises

LOCATION	CORRECTION
52 – 2.1 #31	Part (a) has an answer in Appendix B.
53 – 2.1 #46	Part (c) does not have an answer in Appendix B.
A-12 – 2.3 #41	In part (1), line 2, change "~*p*" to "~*t*".
A-13 – 2.3 #43	In part (5), line 1, change "~*t*" to "*t*".
107 – 2.5 #47	Part (a) has an answer in Appendix B.

CHAPTER 3

Text

LOCATION	CORRECTION
116 – Programs at the top of the page	Change "print X" to "print (X)" and "print S" to "print (S)" (each twice).
125 – line 12 from page bottom	Change "existential ments" to "existential statements"
127 – line 9 from page bottom	Change "true (by the logical). . ." to "true, and conversely (by the logical). . .".
140 – line 4 from page bottom	Change "$\forall x$ (~(Square(x) $\wedge$ $\forall y$(Triangle (x) $\rightarrow$RightOf(x, y)))" to "$\forall x$ (~(Square(x) $\wedge$ $\forall y$(Triangle (y) $\rightarrow$RightOf(x, y)))"
155 – line 9	Change "Then the hypothesis of the argument is" to "Then the hypothesis of the argument's conclusion is".

Exercises

LOCATION	CORRECTION
119 – 3.1 #3	This exercise number should be black, although parts of it have answers in Appendix B.
A-16 – 3.1 #3(c)	In line 3, change "$n = 10 = 5 \cdot 20 = m \cdot 20$" to "$n = 10 = 5 \cdot 2 = m \cdot 2$, and $n^2 = 100 = 20 \cdot 5 = m \cdot 5$."
A-16 – 3.1 #9	In line 2, change "$1/2 \not> 2$" to "$1/2 \not\geq 2$".
A-16 – 3.1 #11	In line 2, change "$1 \not> 2$" to "$1 \not\geq 2$". In line 3, change "$m \cdot n \not> m + n$" to "$m \cdot n \not\geq m + n$".
A-16 – 3.1 #22(a)	Add the following alternative solution: "$\forall$ programs x, if x is a Java program, then x has at least 5 lines.
A-16 – 3.1 #23	In line 2, change "triangles" to "triangle".
A-20 – 3.3 #20(a)	In line 8, change "triangle f or h" to "triangle f or i".
A-22 – 3.3 #55	Delete **a**. This exercise does not have a part (a).

CHAPTER 4

Text

LOCATION	CORRECTION
179 – Example 4.1.1	Change the numerator of the fraction from "$ab + bc$" to "$ad + bc$".
186 – near the page top	In line 1 of the proof, change "$(-1)^n$ is even" to "$(-1)^n = 1$".
200 – illustration	In the representation for 2 groups of 4, change "[xxx] [xxx]" to "[xxxx] [xxxx]".
206 – line 14 from page bottom	Change "$4q + 3$" to "$4q + 3$".
207 – Lemma∃ 4.5.4	In line 1 of case 1, change "$\|r\|$ = r = 0 since,,," to "$\|r\|$ = r = 0. Since,,,". In case 2, change " [&|pipe|r|pipe||=r&]" to "|r| = r".
209 – Test Yourself #1	In line 2, change "$d \geq 0$" to "$d > 0$".
213 – Example 4.6.4	In line 8, change "≠" to "=". In line 12, change "integer parts of $\lfloor x \rfloor$ and $\lfloor y \rfloor$" to "integer parts of x and y".
221 – line 5 of proof	The comma appears incorrectly as a superscript for d.
223 (Metric Version only)	In the top diagram, change "$Q(x)$" to "$\sim Q(x)$" and "$P(x)$" to "$\sim P(x)$". In the bottom diagram, change "Suppose" to "Suppose ∃", change "$P(x)$ and $Q(x)$" to "$P(x)$ and $\sim Q(x)$", and change "$P(x)$ and $P(x)$" to "$P(x)$ and $\sim P(x)$".
236 (Metric Version only)	Under the left-hand diagram, change "i j" to "$i \neq j$".
236 – Theorem 4.9.1	In line 3, change "nonnegative" to "positive".
239 – bottom line	Change "number of edges" to "number of vertices".
242 – Test Yourself #6	In Line 4, change "W with m vertices" to "W with n vertices".
243 – Answers for Test Yourself #2	Change "equal to the" to "equal to twice the".

243 – Answers for Test Yourself #5	Change “pain” to “pair”.
254 – Test Yourself #1	Change “is executed” to “is executed, the expression *e* is ____”.
257– Answer for Test Yourself #1	Delete “the expression *e* is”.
257 – Answer for Test Yourself #5	Change “$n = dq + r$” to “$a = dq + r$”.

Exercises

LOCATION	CORRECTION
172 – 4.1 #21	In line 21, change “of” to “or”.
A-24 – 4.1 #28	In part (a), change "$m + n$ is odd" to "$m + n$ is even" (3 times).
187 – 4.3 directions for #1-7	Change to “Show that the numbers in 1–7 are all rational by writing each number as a ratio of integers.”
A-26 – 4.3 #21	In line 2, change “m is even” to “m^2 is even”.
189 – 4.3 #34	In the bottom line, change “rs” to “rt”.
189 – 4.3 #38	In the second line from the bottom, change “$r – s$“ to “$r + s$“.
A-25 – 4.3 #1	Delete the minus sign in the numerator of the fraction, and add a minus sign in front of the fraction.
197 – 4.4 #16	The first occurrence of “then” should be “and”.
A-27 – 4.4 #22	Change “integers” to “integer.”
199 – 4.4 #43	In the 6th line of the definition, change “dk” to “d_k”.
A-28 – 4.5 #18	The answer is for part (b).
A-29 – 4.5 #31	In line 6, change “m and n” to “$m + n$ and $m – n$”.
A-30 – 4.7 #3	In lines 6 and 7, change “2” to “–2,” and in lines 8 and 9, change “2/3” to “–2/3.”
A-32 – 4.7 #31a	Change the first three sentences of the proof as follows: “Suppose n, r, and s are positive integers and $r \geq \sqrt{n}$ and $s \geq \sqrt{n}$. *[We must show that $r \cdot s \geq n$.]* Let $a = b = \sqrt{n}$, $c = r$, and $d = s$ and apply an extended version of Theorem T27, Appendix A to conclude that $r \cdot s \geq \sqrt{n} \cdot \sqrt{n} = n$.”
227 – 4.7 #33	In line 3, change “less han” to “less than”.
A-32 – 4.7 #36	At the end of the hint, add: “and (3) the assumption that both m and n are odd leads to a contradiction.”
A-33 – 4.8 #19l	At the end of line 9 change “$\sqrt{3}$ = “ to “3 =”.
234 – 4.8 #30a	Change “$N_1 = p_1$, $N_2 = p_1 \cdot p_2$, $N_3 = p_1 \cdot p_2 \cdot p_3$, … , $N_6 = p_1 \cdot p_2 \cdot p_3 \cdot p_4 \cdot p_5 \cdot p_6$” to “$N_1 = p_1 + 1$, $N_2 = p_1 \cdot p_2 + 1$, $N_3 = p_1 \cdot p_2 \cdot p_3 + 1$, … , $N_6 = p_1 \cdot p_2 \cdot p_3 \cdot p_4 \cdot p_5 \cdot p_6 + 1$”.
A-34 – 4.8 #32	Change “Theorem 4.2.4” to “Theorem 4.4.4”.
A-34 – 4.8 #35	In line 12, change “n^{2}” to “m^2”.
235 – 4.8 #38	Change the problem number from blue to black.
243 – 4.9 #21l	In line 1, change “$n \geq 5$” to “$n \geq 2$”.
257– 4.10 #32	This exercise has a hint rather than a full answer in the Appendix.

CHAPTER 5

Text

LOCATION	CORRECTION
262 – Example 5.1.7	Add: “Assume that $n > 0$.”
263 – Example 5.1.9	In the left-hand side of the solution for part (a), change “$+ 2^{k+1}$” to “$+ 2^{n+1}$”.
266 – line 7	Change “quantified state” to “quantified statement”.

272 – Algorithm 5.1.1	In line 3, change "n" to "a".
275 – bottom line	Change "as if were" to "as if it were".
282 – line 11	There is a missing zero. Change the lower index of the summation from "I =" to "I = 0".
292 – line 17	Change "Section 4.3" to "Section 4.4".
293 – Example 5.3.2	Change "$2^n + 1 < 2^n$" to "$2n + 1 < 2^n$".
293 – middle of page	Change "exercise 11" to "exercise 8".
293 – line 4 from bottom	Change "$2k + 1 < 2^{k+1}$" to "$2(k + 1) + 1 < 2^{k+1}$".
295 – line 8	Change "each integer $n \geq 0$" to "each integer $n \geq 1$".
297 – lines 2 and 6	Line 2: Change "$2^1 \times \times\ 2^1$" to "$2^1 \times 2^1$". Line 6: Change "$k \geq 3$" to "$k \geq 1$".
297 – bottom figure	Each of the three blue-shaded rectangles should be squares.
301 – line 5 from bottom	Change "can be written" to "can sometimes be written".
302 – top two lines	In line 1, change "which proves the basis step" to "which establishes a base." Change the first full sentence to "However, in many cases, the proof of the implication does not work for $k > a$."
303 – Example 5.4.2	In line 2 and line -10, change "$s_k = 6a_{k-1} – 5a_{k-2}$" to "$s_k = 6s_{k-1} – 5s_{k-2}$"
305 – Example 5.4.3	lines 1 and 2: Change "$k \geq 1$" to "$k \geq 2$". line 4: Change "show that a_k is even" to "show that a_{k+1} is even". line 5: Change to "$a_{k+1} = 3a_{\lfloor (k+1)/2 \rfloor} + 2$". lines 6-8: Change to "Now $a_{\lfloor (k+1)/2 \rfloor}$ is even by the inductive hypothesis *[because $k \geq 2$ and so $1 \leq \lfloor (k+1)/2 \rfloor \leq k$.]* Thus, $3a_{\lfloor (k+1)/2 \rfloor}$ is even *[because it is a product of an odd and an even integer]*, and $3a_{\lfloor (k+1)/2 \rfloor} + 2$ is even *[because it is a sum of two even integers]*, and so a_{k+1} is even *[because it equals $3a_{\lfloor (k+1)/2 \rfloor} + 2$].*
307 – Proof	In line 2 of Case 2, change "$1 \leq k/2 = k$" to "$1 \leq k/2 \leq k$".
342 – line 7	Change "for every integer n" to "for every nonegative integer n".
342 and 342	Change each "m/sec" to "m/s". (7 times)
344 – Example 5.7.4(b)	In line 6, change "$\ln(10) = \ln(1.04)^t$" to "$\ln(10) = \ln(1.04^t)$". In line 8, change "$\ln(10) \cong t \ln(1.04)$" to "$\ln(10) = t \ln(1.04)$".
366 – Theorem 5.9.1	In line 4 of the proof, change "by part I" to "by part II(b)".
369 - Definition	Change "Definition Length of a String" to "Definition: Length of a String".
372 – Example 5.9.7	In the third line from the bottom, change "takes the value" to "equals".
376 – Test Yourself #5	In Answers to Test Yourself #5, change "the rule is applied to objects in the base" to "the rule is applied to objects that satisfy the property".

Exercises

LOCATION	CORRECTION
275 – 5.1 #79	Change the exercise number to black.
A-39 – 5.2 #1(a)	The statement in (a) is true because if, $\left(1-\frac{1}{2}\right)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)=\frac{1}{5}$ then $\left(1-\frac{1}{2}\right)\left(1-\frac{1}{3}\right)\left(1-\frac{1}{4}\right)\left(1-\frac{1}{5}\right)\left(1-\frac{1}{6}\right)=\frac{1}{5}\left(1-\frac{1}{6}\right)=\frac{1}{5}\left(\frac{6}{6}-\frac{1}{6}\right)=\frac{1}{5}\cdot\frac{5}{6}=\frac{1}{6}.$
A-39 – 5.2 #2	In line 2 of part (d), change "for which" to "for which $k \geq 1$ and".
A-41 – 5.2 #10	In line 7, delete one k. Change "$k(k + 1)[k(2k + 1) + 6(k + 1)]$" to "$(k + 1)[k(2k + 1) + 6(k + 1)]$".

288 – 5.2 #35	In line 2 of part (c), change “10 billion” to “100 billion”. (Wikipedia estimate)
289 – 5.2 #38	In line 7, change the upper index of the summation from “*i* ” to “1”.
298 – 5.3 #4	In line 1, “positive integer” to “nonnegative integer”.
298 – 5.3 #7	In line 4, change “for every $i = 1, 2, \dots, n$” to “for every $i = 1, 2, \dots, n - 1$”.
A-44 – 5.3 #16	In line 6 in the right-hand column, change “$((k + 1) + 1)$” to “$((k + 1) + 1)!$”.
A-44 – 5.3 #19	Change “Proposition (5.3.2)” to “Proposition (5.2.2)”, and change “Prop. (5.3.2)” to “Prop. (5.2.2)”.
298 – 5.3 #26	In line 3, change 3^{2n} to 3^{2^n} .
298 – 5.3 #28	Change “$2n + 1)(2n + 3)$” to “$(2n + 1) + (2n + 3)$”.
299 – 5.3 #39	In line 5, change “angle” to “interior angle”.
A-46 – 5.3 #45	In line 4 of the right-hand column, insert the following after the word “backward” : “then it tips the one behind it backward”.
300 – 5.3 #46	In line 2, change “Suppose the theorem” to “Since the property is true for $n = 1$, the basis step is true. Suppose the property”.
311 – 5.4 #4	Change “$d_2 \frac{10}{11}$” to “$d_2 = \frac{10}{11}$”.
311 – 5.4 #8(b)	In line 3, delete “2 >”.
A-47 – 5.4 #10	In lines 1 and 2, change “$P(14)$, $P(15)$, and $P(16)$” to “$P(8)$, $P(9)$, and $P(10)$”, in line 3, change “$k \geq 16$” to “$k \geq 10$”, and in line 4, change “14” to “8”.
A-47 – 5.4 #14	Change lines 4-6 to “***Show that P*(1) *and P*(2) *are true:*** $P(1)$ is true because any “product” of one odd integer is odd. $P(2)$ is true because any product of two odd integers is odd (exercise 20, Section 4.2).” Also in lines 7-10, change “2” to “1” (four times).
A-48 – 5.4 #22	In line 13, change “from 1 through *k*” to “from 0 through *k*”.
314 – 5.3 #35	In line 4, change “any integer” to “any nonnegative integer”.
324 – 5.5 #7 and #8	After “*Precondition:*”, insert “*m* is a positive integer,”
324 – 5.5 #9	Change the problem number from blue to black.
A-51 – 5.5 #8	In line 6 of the left-hand column), after “$i \neq m$”, insert “where *m* is a positive integer”.
337 – 5.6 #2	Change “$b_k = b_{k-1} + 3_k$” to “$b_k = b_{k-1} + 3k$”.
A-52 – 5.6 #20	At the beginning of the bottom line of the right-hand column, insert “$c_3 =$”.
A-52 – 5.6 #26	In the bottom line, delete the plus sign between 2 and F_{k-4}.
339 – 5.6 #33	In line 3, change “F_n” to “n”.
A-56 – 5.7 #39	In line 8 from the bottom, the denominator of the fraction should be 4. In line 6 from the bottom, change ” $3x_k + k$ ” to “ $3x_k + k + 1$ ”.
A-57 – 5.7 #43(b)	In line 3, change “x_0“ to “a_0“.In line 19, change “if *k* is even” to “if $k + 1$ is even” and “if *k* is odd” to “if $k + 1$ is odd”. In line 8, change “$n \geq 1$” to “$n \geq 0$”.
352 – 5.7 #52	Add *H* next to the exercise statement.
A-58 – 5.7 #50	In line 6, change “$k – 5k – 6$” to “$k^2 – 5k – 6$”.
A-58 – 5.8 #8	In line 1, change “>” to “≥”.

A-61 – 5.9 exercise numbers	Make changes for the exercise numbers: 10 → 11, 11 → 12, and 13 → 14.

CHAPTER 6

Text

LOCATION	CORRECTION
409 – line 2	Change "that is not in *A*" to "that is not in either *A* or *C*".
416 – Theorem 6.4.1	In line 3, change "*Laws*" to "*Law*".

Exercises

LOCATION	CORRECTION
389 and 390 – 6.1 #23, 25, and 26	In each exercise, change all occurrences of "$i =\cdot\cdot 0$" to "$i = 1$".
A-64 – 6.1 #19	In line 2 of part (c), change "$= \varnothing$" to "$\neq \varnothing$".
A-65 – 6.2 #8	In the second ***Case 2*** (line 10 from the bottom), change "$x \in A \cap B^c$ " to "$x \notin B^c$".
A-69 – 6.3 #12	Change "and so, in particular, $x \notin C$" to "but also *x* is in both *A* and *B*".
A-70 – 6.4 #1(c)	Change "by the distributive law for + over ·" to "by the distributive law for · over +".
422 –6.4 #8	In line 3, change "$(a \cdot b) + (\bar{a} + \bar{b}) = 0$" to "$(a \cdot b) \cdot (\bar{a} + \bar{b}) = 0$".
423 –6.4 #14	In line 6, delete "plus the result of exercise 12."

CHAPTER 7

Text

LOCATION	CORRECTION
430 – Example 7.1.7	In line 2, change "integers" to "real numbers".
440 – line 2 under the definition	Change "take the negation of" to "use negations to rephrase".
446 – lines 1 and 2 under the definition	Change "take the negation of" to "use negations to rephrase".
449 – end for Answer to (b)	In the last two lines, change "$f(n) = 0$, and thus *f* is not onto" to "$h(n) = 0$, and thus *h* is not onto".
451 – line 5	Change "Now by (3)" to "Now by (3')".
461 – Test Yourself Answers	In #3 and #4, change "$f(x)$" to "$F(x)$".
465 – Note in left margin	Change "$f(a) = x$" to "$f(a) = b$".
470 – Example 7.3.5	In line 5 (number 4), change "such that "$f(y) = z$" to "such that $g(y) = z$".
471 – Test Yourself #2	Change "$f \circ I_x$" to "$f \circ I_X$" and change "$I_y \circ f$" to "$I_Y \circ f$".
481 – lines 7 and 8	Change "$a_i + 1$" to "a_{i+1}", "$a_i + 2$" to "a_{i+2}", and "$a_i + 3$" to "a_{i+3}".

Exercises

LOCATION	CORRECTION
457 – 7.2 #2	The **a.** should be blue and the **b.** should be black.
A-75 – 7.2 #19(a)	Change the answer to the following: When 417302072 is divided by 11, the remainder is 0. So, 417302072 *mod* 11 = $H(417302072) = 0$. Since position 0 is unoccupied, the record is placed there.
A-77 – 7.3 #10(b)	Change "$(G \circ F)(3) =$" to "$(G \circ F)(3) = 3$ and"
471 – 7.3 #11	In line 2, change "$F(n)$" to "$F(x)$", and change "$G(n)$" to "$G(x)$".

CHAPTER 8

Text

LOCATION	CORRECTION
501 – line 11	Change "For every $m, n \in \mathbf{Z}$" to "For every $m, n, p \in \mathbf{Z}$".
509 – line 5	At the end of the line, change "*B R C"* to "*B* **R** *C"*.
524 – line 21	Change "In other words, say each letter of the alphabet is coded by its position relative to the others—so that A = 01, B = 02, . . . , Z = 26" to "To be specific, let each letter of the alphabet be coded as follows: A = 01, B = 02, C = 03, . . . , Y = 25, Z = 00."
524 – table with the alphabet	Change the number under Z from 26 to 00.
525 – line 2	Change "26" to "00".
529 – lines 1 and 2	Change " suppose $a \equiv b \pmod n$ and $b \equiv c \pmod n$" to "suppose $a \equiv c \pmod n$ and $b \equiv d \pmod n$".
530 – Example 8.4.3	In lines 9-11 of the solution, change "≡" to "=" and "mod" to "*mod*"
532 – line 14 from the bottom	Change "$d(xs + y)$" to "$d(xs + yt)$".
537 – line 13	Change "in a similar way as was done for the Caesar cipher:" to "as follows:".
538 – line 10 from the bottom	Change "17^6" to "17^{16}".
540 – line 4 under the boxed proof	Change "$(ac)d \equiv (bd)d \pmod n$" to "$(ac)d \equiv (bc)d \pmod n$".
540 – line 2 from the bottom	Change "one finite set to another" to "one finite set to another of the same size".
541 – line 8 under the box	Change "Theorem 8.4.3(4)" to "Corollary 8.4.4".
542 – line 14	Change "$M - M^{ed} = pt = p(qu) = (pq)u$" to "$M - M^{ed} = -pt = -p(qu) = -(pq)u$".
544 – Test Yourself #9	Change "such that $p \mid a$" to "such that $p \nmid a$".
547 – line 1	Change "taking the negation of the definition" to "by rephrasing the definition in terms of negations".
550 – Theorem 8.5.1	In #2 (line 7), change each *m* to a *k*. (5 changes)
552 – top diagram	Delete the large, curved arrows from {*a*} to {*a*, *b*, *c*} and from {*c*} to {*a*, *b*, *c*}.
553 – line 1 under the definition	Change "of a partial order relation are comparable" to "are comparable in a set on which a partial order relation is defined".
556 – line 11 in the box	Change "total ordering $\preccurlyeq$" to "total ordering $\preccurlyeq'$".

Exercises

LOCATION	CORRECTION
A-84 – 8.2 #37	Delete the boldface letter a. This exercise does not have a part (a).
A-84 – 8.2 #48	In line 4, Change the answer about intransitivity to the following: R_6 is intransitive by default because otherwise there would exist x, y, and z in A such that $(x, y) \in R_6$, $(y, z) \in R_6$, and $(x, z) \in R_6$. It is clear by inspection that no such elements exist.
504 – 8.2 #51	In line 1, add curly braces around the elements of *R*.
521 – 8.3 #10	In line 2, change "$m, n \in \mathbb{Z}$" to "$m, n \in A$".
A-85 – 8.3 #17(a)	In line 7, change "that*m*" to "that *m*".
522 – 8.3 #28	In line 2, change "*m I n*" to "*x I y*".
522 – 8.3 #33	In line 5, change "and (x_2, y_2) in *A*," to "and (x_2, y_2) in *A*, (0, 0) *R* (1, 1), and (0, 1) *R* (1, 0), and". In line 6, change "⇔" to "if".

A-87 – 8.3 #44(c)	In line 2, change “integers *a*, *b*, *c*, and *d*”. to “integers *a*, *b*, *c*, *d*, *e*, and *f*”.
545 – 8.4. #25	In line 2, change “positive integers” to “integers that are greater than 1”.
A-89 – 8.4 #31(c)	At the end of line 9, change “$\equiv 9 \pmod{13}$” to “$\equiv 8 \pmod{13}$”.
A-89 – 8.4 #36	In line 2 from the bottom: Change “8^{43}” to “5^{43}”.
561 – 8.5 #11	In line 4, change “let be” to “let $\preccurlyeq$ be”.
561 – 8.5 #29	Change the reference from “21” to “21(b)”.

CHAPTER 9

Text

LOCATION	CORRECTION
591 – line 1	Replace “265,896” by “1,413,720”.
593 – line 5	Change “no repeated letter” to “at least one repeated letter”.
610 – line 2	Change “$r_7 = 2 = r_i$” to “$r_7 = 2 = r_1$.”
614 – Test Yourself #3	After “finite sets”, insert “with the same number of elements”.
619 – line 5 under the diagram	Change “product rule” to “multiplication rule”.
630 – Test Yourself #4	Change “$p(n, r)$” to “$P(n, r)$” .
626 – Poker Hand Problems	A royal flush is usually defined as a kind of straight flush. To facilitate the computations in this chapter, royal flush is defined separately.
642 – Formula 9.7.3	Change “$\binom{n}{n-1}$” to “$\binom{n}{n-2}$”.

Exercises

LOCATION	CORRECTION
A-92 – 9.1 #7	Change “3/8 = 37.5%” to “5/36 ≅ 13.9%”.
A-94 – 9.2 #14(d)	In lines 2 and 3, replace “step 5, and 8 ways to perform step 6” by “step 3, 23 ways to perform step 4, 10 ways to perform step 5, 9 ways to perform step 6, and 8 ways to perform step 7”.
586 – 9.2 #20	Change “9.2.4” to “9.2.2”.
A-96 – 9.2 #47(c)	The answer is incorrectly labeled as “b”.
A-96 – 9.3 #3(a)	In line three, change “from 1 through 99” to “from 10 through 99”.
A-98 – 9.3 #25(c)	Bottom line: change “$d_k = d_{k-1} + d_{k-3}$” to “$d_k = d_{k-1} + d_{k-2} + d_{k-3}$”.
604 – 9.3 #44	In line 6, change “$x_1x_2 \ldots x_4$” to “$x_1x_2 \ldots x_n$”.
A-101 – 9.4 #9(a)	In Solution 3, line 7, change “*F* from 5 to *P*” to “*F* from *S* to *P*”.
A-101 – 9.4 #20(b)	If *n* is a multiple of 20,483 then division by 20,483 is an integer. Because 20,483 is prime, every other division by 20,483 results in a non-terminating, repeating decimal.
A-102 – 9.4 #36	At the end of line 2, change the > sign into a ≥ sign.
A-102 – 9.4 #38	In the last sentence, change “Suppose that *F* is” to “Note that *F* is not”.
631 – 9.5 #11(f)	Delete “(including a straight flush and a royal flush)”
A-105 – 9.5 #27(c)	In line 1, delete “both reflexive and”.
A-105 – 9.6 #1(b)	Add the 5-combination [1, 1, 2, 3, 3] between [1, 1, 2, 2, 3] and [1, 1, 3, 3, 3].
A-105 – 9.6 #3(c)	In line 4, change “$E_{\geq 2}$” to “$E_{\leq 2}$”.

640 – 9.6 #7	In line 7, change "$y_n \le m$" to "$y_n = m$".
A-106 – 9.6 #16b	Replace the paragraph starting in line 20 as follows: To find $N(R_{\ge 6} \cap L_{\ge 7})$, observe that if 6 cans of root beer and 7 cans of lemonade are initially selected, then 2 additional cans of soft drink can be chosen from the five types to make up the total of 15 cans. A selection of two such cans can be represented by a string of 2 X's and 4195 |'s. Hence $$N(R_{\ge 6} \cap L_{\ge 7}) = \binom{2+5-1}{2} = \binom{6}{2} = 15.$$ In the next paragraph, change "715 + 495 – 9 = 1,201" to "715 + 495 – 15 = 1,195". Then, four lines from the bottom change "= 3,876 – 1,201 = 2,675. Thus there are 2,675 selections" to "= 3,876 – 1,195 = 2,681. Thus there are 2,681 selections."
A-107 – 9.7 #13	Top of the second column: Change the second summation sign from "$\sum_{i=1}^{k+1}\binom{i}{2}$" to "$\sum_{i=2}^{k+1}\binom{i}{2}$".
653 – 9.7 #15	Change the lower index of the summation from "$i = 2$" to "$i = r$".
654 – 9.7 #46	Change the upper index of the summation from "m" to "n".
655 – 9.7 #53	Change the upper index of the summation from "n" to "m".
A-109 – 9.8 #16	In line 3, change "$\binom{6}{2} = 4$" to "$\binom{4}{2} = 6$".

CHAPTER 10

Text

LOCATION	CORRECTION
685 – Theorem 10.1.3	In line 1 of the proof, change "suppose that every" to "suppose that the degree of every".
691 – line 5 below the top diagram	Change "vertex v_j" to "vertex v_l".
692 – line 5	Change "{*e*, *b*}, {*b*, *a*}" to "{*e*, *b*}, {*b*, *c*}".
701 – top diagram	Add an arrow from v_4 to v_1.
703 – Definition	In lines 1 and 2, change "element" to "elements".
706 – line 3 above Definition	Change "identity on the left side" to "identity on the right side".
708 – line 4	Change "From v_1, the first" to "From v_2, the first".
710 – Test Yourself #4	In line 3, change "row" to "column".
714 – Example 10.3.1	In line 1 of the solution, change "you must find functions" to "you must find one-to-one, onto functions".
717 – Example 10.3.4	In line 7 below the diagrams, change "*because g is onto*" to "*because h is onto*".
729 – line 9 under the diagram	Change "*C* is finite" to "W is finite".
730 – line 9 from the bottom	Change "is n_{i-1}. Now" to "is $n_i - 1$. Now"
737 – line 18 from the top	Change "$t = t_L + 1$" to "$t \le t_L + 1$".

738 – line 7 from the top	Change "$t = t_L + t_R$" to "$t \leq t_L + t_R$".
738 – line 3 from the bottom	After "height h", insert "in which all the leaves have the same level".
738 – bottom line	Change, "full binary tree," to "full binary tree in which all the leaves have the same level,".

Exercises

LOCATION	CORRECTION
695 – 10.1 #19-21 Directions	Change "trial" to "trail".
A-113 – 10.1 #29	Change "$v_0\ v_7\ v_2\ v_3\ v_5\ v_6\ v_0$" to "$v_0\ v_7\ v_1\ v_2\ v_3\ v_4\ v_5\ v_6\ v_0$".
697 – 10.1 #50	At the end of line 2, change "C" to "G".
697 – 10.1 #57	In line 8, change "v_n" to "v_{n+1}", and in lines 4 and 7, change "path" to "trail".
A-117 – 10.4 #7	In line 2, change "terminal vertices:" to "terminal vertices):"
A-118 – 10.4 #22	Change "Lemma 10.5.1" to "Lemma 10.4.1".
A-119 – 10.5 #22	Europe should be a right child of Australia, followed on the right by North American and then South America.

CHAPTER 11

Text

LOCATION	CORRECTION
773 – line 9 from the bottom	Change "the proof" to "the proof for rational exponents". And in Theorem 11.2.2, change "positive rational" to "positive real".
774 – line 3 from the bottom	Change "$15n^3 + 11n + 7$" to "$15n^3 + 11n^2 + 9$".
775 – blue annotation	In line 5, change "by $2n^3$, which is" to "by 2 or by n^3, which are".
777 – Example 11.2.5	In the first line of the solution, change "Example 11.2.3" to "Example 11.2.3(b)" and "Example 11.2.4" to "Example 11.2.3(a)".
788 – Bottom of page	In the two bottom lines, change "*Max B*" to "*Min B*".
804 – Example 11.4.3	In line 1 of the solution, change "part (a)" to "part (d)".
806 – Example 11.4.4	In line 12, delete the extraneous right parenthesis.
811 – Test Yourself #4	Change "log x" to "$\log_b x$".
819 – Example 11.5.5	In line 4 from the bottom, change "$1 + w_{\lfloor k/2 \rfloor}$" to "$1 + w_{k/2}$". In the blue annotation for line 3 from the bottom, change "$1 \leq \lfloor k/2 \rfloor \leq k/2 < k$" to "$1 \leq k/2 < k$".
820 – Example 11.5.5	In line 3, change "$w_k = \lfloor \log_2 k \rfloor + 1$" to "$w_{k+1} = \lfloor \log_2 (k+1) \rfloor + 1$".
827 – Test Yourself #2	Interchange the words "lower" and "upper".

Exercises

LOCATION	CORRECTION
A-124 – 11.1 #19	In line 3, change "then $f(x_1) = f(x_2)$" to "then $f(x_1) \neq f(x_2)$".
A-124 – 11.1 #27	In line 2, change "Subtracting x^2" to "Subtracting $x^2 + 10x + 11$".
A-126 – 11.2 #22	In line 21, delete "for $n \geq 60$,".It is repetitive.
A-127 – 11.2 #25	In column 1, lines 9 and 11, change "$a_{m-2} n^{m-1}$" to "$a_{m-2} n^{m-2}$".

	In column 2, line 2, change the subscripts "$m = 1$" and "$m = 2$" to "$m - 1$" and "$m - 2$".
786 – 11.2 #46	In part (a), change "$n \geq 1$" to "$n > 1$" and "$n^m \geq 1$" to "$n^m > 1$". In part (b), change "$n \geq 1$" to "$n > 1$", "$n^r \leq n^s$" to "$n^r < n^s$" and "$r \leq s$" to "$r < s$".
786 – 11.2 #50(a)	In line 4, change "$g(n) > 0$" to "$g(n) \geq 0$".
797 – 11.3 #16	Change line 1 to "for $i := 2$ to j".
A-130 – 11.3 #17(a)	In line 5 of the right-hand column, change the second "$\frac{n-1}{2}$" to "$\frac{n+1}{2}$".
798 – 11.3 #26	Change "$5^2 + 5 - 2 = 28$" to "$\frac{1}{2}(5^2 + 5 - 2) = 14$".
811 – 11.4 #6	Change "$G(x) = \lfloor \log_2 x \rfloor$" to "$G(x) = \lceil \log_2 x \rceil$".
A-133 – 11.4 #15	Change "$\lceil 11 \rceil = 1$" to "$\lceil 1 \rceil = 1$".
812 – 11.4 #23	Change "$c_k = c_{\lfloor k/2 \rfloor} + k$" to "$c_k = 2c_{\lfloor k/2 \rfloor} + k$".
A-134 – 11.4 #31	In line 3, change "$O \leq 4^n$" to "$0 \leq 4^n$".
A-134 – 11.4 #40	Change "Theorem 11.2.9©" to "Theorem 11.2.9(b)", and change each "$\log_2 n$" to "ln n".
A-135 – 11.4 #43	In lines 9-10, change "adding to both sides" to "adding 1 to both sides".
826 – 11.5 #14(b)	Change "$3^k \leq x < 3^k$" to "$3^k \leq x < 3^{k+1}$".
A-137 – 11.5 #24(b)	Change the answer as follows: "*Hint:* Refer to Figure 11.5.3 and observe that when k is odd, the length of the subarray $a[bot], a[bot + 1], \ldots, a[mid]$ is $\frac{k+1}{2} - 1 + 1 = \frac{k+1}{2} = \left\lceil \frac{k}{2} \right\rceil$."

CHAPTER 12

Text

LOCATION	CORRECTION
852 – After line 11	Insert: "We will show that $P(m)$ is true for each integer m with $0 \leq m \leq n$."
852 – lines 16 and 17 from the bottom	Change "$1 \leq k \leq n$" to "$1 \leq k \leq n - 1$".
853 – lines 10 and 12	In line 10, change "state" to "states", and in line 12, insert the missing right parenthesis.
865 – line 14	Change "for each state s" to "for each state [s]".

Exercises

LOCATION	CORRECTION
839 – 12.1 #2(c)	Change "$\Sigma^1 \cup \Sigma^1$" to "$\Sigma^1 \cup \Sigma^2$".
A-139 – 12.2 #31	Add two arrow loops from s_4 to s_4, one labeled x and the other labeled y.
A-141 – 12.3 #13	In line 3, change "Theorem 10.3.4" to "Theorem 8.3.4".
A-141 – 12.3 #19	In lines 1 and 3, change "equivalent" to "$*$-equivalent".