

DISCRETE MATHEMATICS WITH APPLICATIONS, 4th 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
11 – Example 1.2.5	In the solution to part (a), change “(2.1)” to “(2,1)”.
15 – Example 1.3.1	In line 9 of the solutions, change “which is an integer” to “which is not an integer”.

Exercises

LOCATION	CORRECTION
6 – 1.1 #3	Change “ $a < c < b$ ” to “ c is between a and b ”.
13 – 1.2 #8	Change the second occurrence of letter b to c , and part (d) has an answer in Appendix B.
13 – 1.2 #9	The exercise letter f should be boldface.
A5 – 1.2 #11	a. $A \times B$ has $4 \cdot 2 = 8$ elements. b. $B \times A$ has $2 \cdot 4 = 8$ elements. c. $A \times A$ has $4 \cdot 4 = 16$ elements. d. $B \times B$ has $2 \cdot 2 = 4$ elements.
21 – 1.3 #4a	Change “Is $(-2) \vee (-6)$?” to “Is $(-2) \vee 8$?”
A5 – 1.3 #5a	Change the last part to “ $(-1) \supset (-2)$ because $-1 \geq -2$.”

CHAPTER 2

Text

LOCATION	CORRECTION
41 – Example 2.2.3	In line 6, change “ p is true and q is false” to “ p is true and r is false”.
45 – Top definition	Change “It p and q ” to “If p and q ”.
45 – below Example 2.2.8	Change “the some time that” to “the same time that”.
46 – Example 2.2.9	In line 1 of the solution change “answes” to “answers”.
57 – line 4	Change “by (d)” to “by (b)”.
83 – bottom figure	In the diagram for the full-adder, the shape is correct but the label should say ‘OR’ rather than ‘AND’. Also, for consistency with the table, change “S” to “C” and “T” to “S”.
85 – line 13 from bottom	Change “255” to “128”.

Exercises

LOCATION	CORRECTION
38 – 2.1 #46	Part (a) has an answer in Appendix B.
A7 – 2.1 #46	In line 2 of Solution 2, replace $p \oplus q$ by $p \oplus p$.
A10 – 2.3 #7 & #8	The premises do not include $\sim q$.
94 – 2.5 #21	The ‘AND’ label is correct, but the shape is for an ‘OR’ gate. It should be changed to the shape for an AND-gate. Part (a) has an answer in Appendix B.

94 – 2.5 Directions for 23-26	Change to: “Find the 8-bit representations for the negatives of the integers in 23-26.”
A14 – 23 and 25	Add “ $ -23 =$ ” at the start of 23 and “ $ -4 =$ ” at the start of 25.

CHAPTER 3

Text

LOCATION	CORRECTION
103 – Example 3.1.10	In line 5, change “ p ” to “ P ”, and in line 6 change “ ε ” to “ ϵ ”.

Exercises

LOCATION	CORRECTION
A15 – 3.1 #23	Add: \forall equilateral triangles x , x is isosceles.
116 – 3.2 #24b	Change to: “All the integers greater than 5 that end in 1, 3, 7, or 9 are prime. All the integers greater than 5 that are prime end in 1, 3, 7, or 9.”
117 – 3.2 #34a	Change “between 1 and \sqrt{n} strictly” to “between 1 and \sqrt{n} inclusive”.
A-17 – 3.3 #34a	Change “strictly between 1 and \sqrt{n} ” to “between 1 and \sqrt{n} inclusive”.
A-19 – 3.3 #53a	Change “False” to “True. Circle b and squares h and j have the same color.”

CHAPTER 4

Text

LOCATION	CORRECTION
145 – line 18	Change “Would 1 have been...” to “Would I have been...”
146 – line 5	Change “reason’s” to “reasons”.
148 – Definition box	After “In symbols:” add “For all integers $n > 1$,”
184 – Theorem 4.4.2	Change the title to “The Parity of Consecutive Integers”
187 – line 2 from bottom	Change to: “nonnegative and $- r $ is zero or negative, then $- r \leq r$. Thus it is true that”.
188 – line 9 from bottom	Change “inequity” to “inequality”.
189 – Test Yourself #1	In line 2 change “ $d \geq 0$ ” to “ $d > 0$ ”.
199 – Example 4.6.2	In line 2 change “proof of this port” to “proof of this part”.
212 – line 8	The Catalan conjecture was proved by Preda Mihăilescu: “Primary Cyclotomic Units and a Proof of Catalan’s Conjecture.” <i>J. reine angew. Math.</i> 572 , 167-195, 2004.

Exercises

LOCATION	CORRECTION
A-20 – 4.1 #4	In line 2 change “ $m > 0$ and $n > 0$ ” to “ $m > 1$ and $n > 1$ ”.
162 – 4.1 #26	In line 2 change “exercise” to “exercise”.
168 – 4.2 #14	Change “Consider the statement: The square” to “Consider the statement: The cube”.
178 – 4.3 #14	In the second-to-last line, change “where r ” to “where l ”.
A-23 – 4.3 #36, line 5	Change “is not divisible by 5” to “is divisible by 5”.
189 – 4.4 #24	Change “if $m \bmod 5 = 2$ and $n \bmod 3 = 6$ then $mn \bmod 5 = 1$ ” to “if $m \bmod 5 = 2$ and $n \bmod 5 = 1$ then $mn \bmod 5 = 2$ ”.

A-25 – 4.4 #44	<i>Hint:</i> There are four cases: Either x and y are both positive, or x is positive and y is negative, or x is negative and y is positive, or both x and y are negative.
A-25 – 4.5 #14	In line 3, change “ $2 = 1 = 1$ ” to “ $2 - 1 = 1$ ”.
A-25 – 4.5 #23	In line 2, change “because n is” to “because x is”.
A-26 – 4.6 #9a	In lines 7 and 9, change “sum” to “difference”.
A-27 – 4.6 #31a	In lines 5 and 6, change “ \sqrt{ns} ” to “ \sqrt{ns} ”.
213 – 4.7 #22	Change “any integer” to “any positive integer”.

CHAPTER 5

Text

LOCATION	CORRECTION
231 – Example 5.1.7	Add: “Assume that $n > 0$.”
239 – line 3	In part (b) change “ $\begin{pmatrix} 4 \\ 0 \end{pmatrix}$ ” to “ $\begin{pmatrix} 4 \\ 4 \end{pmatrix}$ ”.
241 – line 4 from bottom	Change “representation of a ” to “representation of n ”.
249 – lines 20-22	Change “ $k^2 + 3k + 1$ ” to “ $k^2 + 3k + 2$ ” (once in each line), and add an equal sign in line 20.
250 – lines 5 and 7 from bottom	Change “ $k^2 + 3k + 1$ ” to “ $k^2 + 3k + 2$ ”.
252 – general note	Following the lead of Donald Knuth, this book defines 0^0 to equal 1 for formulas used in discrete mathematics. See page 598 for an explanation.
253 – line 3 of Proof	On the right hand side of the equation, change i to n .
253 –	
263 – line 15	Change “ $n \geq 0$ ” to “ $n \geq 1$ ”.
264 – line 8	Change “ $k \geq 0$ ” to “ $k \geq 1$ ”.
264 – lines 10 & 11	Delete the sentence “By definition of divisibility...”.
265 – lines 3 and 20	This is Theorem 5.3.3. Line 20: change “ $k \geq 3$ ” to “ $k \geq 1$ ”.
292 – line 15	Change “ C_{k+1} ” to “ C_{k-1} ”.
292 – line 18	Change “ $2k - 2)$ ” to “ $2k - 2$ ” (i.e. delete redundant right parenthesis).
299 – line 4 from bottom	Change “annual percentage rate” to “annual percentage yield” and “APR” to “APY”.
300 – line 12	Change “APR” to “APY”.
301 – line 7	Change “ $n \geq 0$ ” in the beginning of the solution to “ $n \geq 1$ ”.
308 – Definition box	In line 5, change “ $a_0!$ ” to “ $a_0 r^n$ ”.
312 – line 11 from bottom	Change “ $m_k = 2m_{k+1} + 1$ ” to “ $m_k = 2m_{k-1} + 1$ ”.
313 – line 12	Change $2 \cdot 2^{k-1}$ to $2 \cdot 2^{k+1}$
314 – line 19	Change “foud” to “found”.
322 – line 4 from bottom	Change the last sentence of the paragraph to: “If the roots are complex but both a_0 and a_1 are real, then C and D will also be real and equal to each other.”
324 – equations 5.8.9	Delete “ $= f^2$ ” in the middle of the equations.
328 – quotation	In line 1, change “GENTE” to “GENIE”.

Exercises

LOCATION	CORRECTION
A-31– 5.1 #33	Change “ $1/(1!)$ ” to “ $1/(1^2)$ ”.

A-31– 5.1 #37	Change the lower index of the summations from k to i .
A-31– 5.1 #40	Change the lower index of the summations from k to i .
A-34 – 5.2 #13	In the last line, change “ $n \geq 0$ ” to “ $n \geq 2$ ”.
258 – 5.2 #33	Delete the H next to the exercise number. The exercise has a complete answer in Appendix B.
A-38– 5.3 #37	Change “Theorem 4.2.2” to “Theorem 5.2.2”.
268 – 5.3 #40b	In line 2, change “integers” to “positive integers”.
277 – 5.4 #4	In line 4, change “ $n \geq 0$ ” to “ $n \geq 1$ ”.
277 – 5.4 #10	Change “any collection of n coins” to “ $n\phi$ ” and change “ $n \geq 14$ ” to “ $n \geq 8$ ”.
289 – 5.5 #9	Change “and $a \geq -1$ ” to “and, in either case, $a \geq -1$ ”.
303 – 5.6 #27	The right-hand side of the equation should be $F_k F_{k+1} - F_{k-1} F_{k+1}$.
304 – 5.6 #37c and 38c	Change “APR” to “APY”.
A-43 – 5.6 #37c	Change “APR” to “APY”.
304 – 5.6 #40	Change “Let t ” to “Let t_n ”.
315 – 5.7 #6	In line 2, change “ b_t ” to “ b_1 ”.
315 – 5.7 #16	Change “18(c)” to “17(c)”.
316 – 5.7 #30, 35, 39	These blue exercise numbers should be boldface.
A-46 – 5.7 #43b	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”.
316 – 5.7 #53	Add an H next to this exercise number.
327 – 5.8 #20	Change line 5 to “ $Cr^m + mDr^m = a_m$ ”.

CHAPTER 6

Text

LOCATION	CORRECTION
338 – bottom 3 lines	Change “ $2r = 3$ ” to “ $2r = -3$ ”, “ $r = 3/2$ ” to “ $r = -3/2$ ”, and “but $3/2$ is not” to “but $-3/2$ is not”.
342 – Notation box	In the bottom line, right side, change “ $[-\infty, b)$ ” to “ $(-\infty, b]$ ”.
345 – line 16	Change “Suppose further that boundaries are assigned to the regions representing $A_2, A_3,$ and A_4 ” to “Suppose further that boundaries are assigned to the regions representing $A_1, A_2, A_3,$ and A_4 ”.
368 – line 15	Change “not in A ” to “not in either A or C ”.
374 – table, right column	In boxes 2, 3, and 10 (of set properties) change the symbol “ \equiv ” to “ $=$ ”.

Exercises

LOCATION	CORRECTION
A-51 – 6.1 #22b	Change the union symbols to intersection symbols.
A-55 – 6.3 #14	Change to: “ <i>Hint</i> : The statement is true.”
A-55 – 6.3 #15	Change “ <i>Sketch of proof</i> ” to “ <i>Sketch of part of proof</i> ”.
A-56 – 6.3 #36	In line 1, change “ $A, B,$ and C ” to “ A and B ”.
A-57 – 6.4 #4	In line 4, change “48” to “1”.
A-58 – 6.4 #12	Change Hint (1) to: “The universal bound law $a + 1 = 1$ can be derived without using the associative law by using $(a + 1) \cdot (a + \bar{a}) = a + (1 \cdot \bar{a})$. Similarly, $a \cdot 0 = 0$ can be derived using $(a \cdot 1) + (a \cdot \bar{a}) = a \cdot (1 + \bar{a})$. To derive the absorption laws without using the associative law, note that $a + (a \cdot b) = (a \cdot 1) + (a \cdot b) = a \cdot (1 + b) = a \cdot (b + 1) = a \cdot 1 = a.$ The other absorption law can be derived using the same sequence of steps but changing each $+$ to \cdot and each \cdot to $+$.”

	Change Hint (4) to “The other associative law can be derived using hints (2) and (3) but changing each + to \cdot and each \cdot to +.”
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CHAPTER 7

Text

LOCATION	CORRECTION
385 –Figure labels	The top and bottom figures should be labeled 7.1.2 and 7.1.3, respectively.
386 – line 5	Delete the word “binary”.
393 – line 9	Change “Exercise 38” to “Exercise 40”.
390 – Figure label	The figure label should be 7.1.4.
397 – above the Definition	Change “each element of the range” to “each element of the co-domain”.
404 – line 15	Change “made sure” to “make sure”.
406 – line 7 from bottom	Add: “and for any real numbers y and a with $y > 0$ ”.
407 – line 6	Add “with $b \neq 1$ and $c \neq 1$.”
407 – line 12	Change “But by (3)” to “But by (3)’”.
410 – lines 8 & 9 from bottom	Interchange the reasons given for the steps on these lines.
411 – line 11	Change “with base $b > 0$ ” to “with base $b > 0$ and $b \neq 1$ ”.
417 –Definition box	In line 1, change “ $g: Y \rightarrow Z$ ” to “ $g: Y' \rightarrow Z$ ”
426 – line 15	Change “such that $f(y) = z$ ” to “such that $g(y) = z$ ”.

Exercises

LOCATION	CORRECTION
394 – 7.1 #17b	Change “2” to “-2”.
396 – 7.1 #35	In line 2, change the co-domain to be \mathbf{Z} , the set of all integers.
396 – 7.1 #36	In line 2, change the co-domain to be \mathbf{Z} , the set of all integers, and in line 5 change “student F ” to “student D ”.
415 – 7.2 #26	Change “ $\mathbf{Z}^+ - \mathbf{Z}^+$ ” to “ $\mathbf{Z}^+ \rightarrow \mathbf{Z}^+$ ”.
A-61 – 7.2 #27a	Change “ T is not one-to-one” to “ T is one-to-one”.
A-62 – 7.2 #38	Change “Let b be a function” to “Let f be a function”.
416 – 7.2 #56b	Change to: “In Section 9.2 we show that there are 2^n strings of 0’s and 1’s that have length n . What can you conclude about the number of subsets of $\mathcal{P}(X)$? (This provides an alternative proof for Theorem 6.3.1.)”
426 – 7.3 Directions for 1- 2	Change “ $G \circ F$ ” to “ $g \circ f$ ”.
A-63 – 7.3 #21	In the next-to-last line, change “ $h(f(x))$ ” to “ $h(f(x))$ ”.
440 – 7.4 #35	In the last line, change “from $\mathcal{P}(S)$ to S ” to “from S to $\mathcal{P}(S)$ ”.

CHAPTER 8

Text

LOCATION	CORRECTION
443 – Example 8.1.3, line 2	Change “relation \mathbf{S} from $\mathcal{P}(X)$ to \mathbf{Z} ” to “relation \mathbf{S} from $\mathcal{P}(X)$ to $\mathcal{P}(X)$ ”.
446 – 2 nd line from bottom	Change “two sets, similarly” to “two sets; similarly”.
456 – line 10	Change “For all $m, n \in \mathbf{Z}$ ” to “For all $m, n, p \in \mathbf{Z}$ ”
447 – lines 14-15	Change “Tak Kurosawa, 0114910” to “Tak Kurosawa, 011410” and “Mary Lazars, 0103910” to “Mary Lazars, 010310”.
453 – Example 8.2.2	In the bottom line of the example statement, replace a comma by a period: that is, change “ c , Is $R...$ ” to “ c . Is $R...$ ”.

482 – Theorem 8.4.3	In parts 1 and 2, delete “[–2pt]”. In part 4, change “integers” to “positive integers”.
483 – line 2	Change “ $a \equiv b \pmod{n}$ and $c \equiv d \pmod{n}$ ” to “ $a \equiv c \pmod{n}$ and $b \equiv d \pmod{n}$ ”.
491 –2 nd line from bottom	Change “present” to “prevent”.
493 – line 11	Change “Section 3.4” to “Section 5.4”.
495 – line 18	Change lines 16-18 to the following: If M is not relatively prime to pq , then $p \mid M$ or $q \mid M$. If $p \mid M$, then $M^{ed} \equiv 0 \equiv M \pmod{p}$, and if $q \mid M$, then $M^{ed} \equiv 0 \equiv M \pmod{q}$. If $q \nmid M$, then, as above, $M^{ed} \equiv M \pmod{q}$, and if $p \nmid M$, then, as above, $M^{ed} \equiv M \pmod{p}$.
504 – middle diagram	Add an arrow going up from \emptyset to $\{b\}$.
506 – second definition	In line 3, change “for all a and b in A ” to “for all a and b in B ”.

Exercises

LOCATION	CORRECTION
459 – 8.2 #51	Change “ R ” to “ R ”.
475 – 8.3 #10	In line 2 change “ Z ” to “ A ”.
476 – 8.3 #20 & #32	Delete the H next to these exercise numbers. These exercises have complete solutions in Appendix B.
A-69 – 8.3 #20	Delete the word “ <i>Hint</i> ” and change “exercise 15 in Section 10.2” to “exercise 12 in Section 8.2”.
A-69 – 8.3 #26	Change “exercise 17” to “Example 8.2.4”.
A-70 – 8.3 #32	Change “ <i>Solution for (2)</i> ” to “ <i>Solution</i> ”.
476 – 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 “ \Leftrightarrow ” to “if”.
A-70 – 8.3 #34	In line 3, change “than” to “then” and “then” to “than”.
477 – 8.3 #43d	Change “find (i, f) in A ” to “find (i, j) in A ”.
477 – 8.3 #43f	In line 3, change the dash to a multiplication dot.
497 – 8.4 #4	Change “ $a = 67$ and $b = 32$ ” to “ $a = 68$ and $b = 33$ ”.
A-71 – 8.4 #1a	Change “ZKUHUH” to “ZKHUH”.
A-72 – 8.4 #31a	In Step 3, change “ $6 = 1 \cdot 6 + 0$ ” to “ $2 = 1 \cdot 2 + 0$ ”.
513 – 8.5 #3	Change “For all t ” to “For all s, t ”.

CHAPTER 9

Text

LOCATION	CORRECTION
548 – line 7 from bottom	Interchange the numbers 26 and 18.
549 – lines 5 & 6	Change to: “16 students took precalculus and Java” and “10 students took precalculus and Java but not calculus.”
560 – line 8 from bottom	Change “Then a tmost” to “Then at most”.
563 – Test Yourself #3	After “finite sets”, insert “with the same number of elements”.
578 – line 2 from bottom	Replace a period by a comma: change “ $S_{3,2}$ ” to “ $S_{3,2}$ ”.
574 – line 5 from bottom	Add “not a royal flush” to the list of those excluded for the <i>No pairs</i> category.
613 – line 22	Change “ $P(B_2 B_1) = 1/11$ ” to “ $P(B_2 B_1) = 4/11$ ”.
616 – Theorem 9.9.1	In line 2, change “ B_1 ” to “ B_k ”.

Exercises

LOCATION	CORRECTION
A-75 – 9.1 #11b(i)	Change the approximately equal sign to an equal sign.
550 – 9.3 #8d, line 2	Change “has n repeated” to “has at least one repeated”.
A-77 – 9.2 #14b	The answer should be 1,757,600.
A-79 – 9.3 #7	Change to “ <i>Hint</i> . The answer is 789,865,128.”

A-81 – 9.3 #33a	Change lines 3 and 4 to: “ $-N(H \cap D) - N(C \cap D) + N(H \cap C \cap D) = 28 + 26 + 14 - 8 - 4 - 3 + 2 = 55$.”
A-81 – 9.3 #33b	Change “ $100 - 45 = 55$ ” to “ $100 - 55 = 45$ ”.
A-81 – 9.3 #33d	Change line 2 to: “#3 is $N(H \cap D) - N(H \cap C \cap D) = 8 - 2 = 6$.”
A-83 – 9.4 #20	Add answer for part b. The length of the repeating section of the decimal representation of $5/20483$ is less than or equal to 20,482. The reason is that 20,482 is the number of nonzero remainders that can be obtained when a number is divided by 20,483. Thus, in the long-division process of dividing 5 by 20,483, either some remainder is 0 and the decimal expansion terminates, or only nonzero remainders are obtained and at some point within the first 20,482 successive divisions, a nonzero remainder is repeated. At that point the digits in the developing decimal expansion begin to repeat because the sequence of successive remainders repeats those previously obtained.
584 – 9.5 #37	In line 3, change the upper index of the summation to n , change the exponent of 3 from “ $4 - k$ ” to “ $n - k$ ”, and change “ $-S_{n+1,3}$ ” to “ $= S_{n+1,3}$ ”.
590 – 9.6 #4	In line 2 of the introduction to the exercise and in line 3 of part (c), change “A7b” to “A76”.
591 – 9.6 #16	In parts (a) and (b), change “five cans” to “fifteen cans”.
A-87 – 9.6 #16b	In line 8 from the bottom, delete “at most”. Then delete the references to selecting one additional can. Thus the answer is just 6.
A-88 – 9.6 #16b	The computations in lines 4 and 5 should be $715 + 495 - 15 = 1,195$, and the computation in line 9 should be $3,876 - 1,195 = 2,681$.
603 – 9.7 #9	Change “ $\binom{2n}{n}$ ” to “ $\binom{2(n+1)}{2n} = (n+1)(2n+1)$ ”.
604 – 9.7 #35	The expression with a and b should be “ $a^{m-k}b^{k+1}$ ”.
A-89 – 9.7 #41	Change “ $a = -(1/2)$ and $b = 1$ ” to “ $a = 1$ and $b = -(1/2)$ ”.
623 – 9.9 #14	In line 6, change “987%” to “97%”.
A-90 – 9.8 #16	In line 3, change “ $\binom{6}{2} = 4$ ” to “ $\binom{4}{2} = 6$ ”.
A-92 – 9.9 #14	Change to: $P(A B_1) = 0.98$ and $P(A^c B_2) = 0.97$. The approximate answer to part (a) becomes 57.6%, and the approximate answer to part (b) is unchanged.

CHAPTER 10

Text

LOCATION	CORRECTION
626 – line 1	Change “Gia and Ira” to “Gia or Ira”.
643 – Figure 10.2.1	The blue marking on one of the seven bridges is missing.
643 – lines 10 & 11 from bottom	Change to: “Is it possible to trace this entire graph, starting and ending at the same point, without either lifting your pencil from the paper or crossing an edge more than once?”
648 – Figure 10.2.3	In the explanation for Figure 10.2.3, change “ $v_0v_1v_2v_3v_4v_5v_0$ ” to “ $v_0v_1v_2v_3v_4v_2v_5v_0$ ”.
653 – line 3	Change “Euler path” to “Euler trail”.
653 – line 9 from bottom	Change “Euler path” to “Euler trail”.
653 – portrait in margin	This portrait is not of the Sir Wm. Hamilton after whom Hamiltonian circuits are named. You can see a correct portrait at http://en.wikipedia.org/wiki/William_Rowan_Hamilton .
664 – top diagram	There should be two arrows rather than one from v_4 to v_1 .

668 – line 5	Change “ $(-1) \cdot 3 + 0 \cdot 2 + 3 \cdot (-1)$ ” to “ $(-1) \cdot 3 + 1 \cdot 2 + 0 \cdot (-1)$ ”.
671 – line 4 from bottom	Change “on the previous page” to “shown above”.
680 – line 18	Change “the ones that are images under g ” to “the ones that are images under h ”.
712 – top graph	The edge from c to e should be labeled 1.
712	In steps 1-5 of the solution for Example 10.7.5, insert the following after “added to $V(T)$ ”: step 1: $D(b)=a$, step 2: $D(c)=a$, step 3: $D(e)=c$, step 4: $D(d)=e$, step 5: $D(z)=d$. To find the shortest path, trace back through the D values from z to a : $D(z)=d$, $D(d)=e$, $D(e)=c$, $D(c)=a$. So the shortest path is a, c, e, d, z .
712 – last line	Change “ $\{e, z\}$ ” to “ $\{d, z\}$ ”.

Exercises

LOCATION	CORRECTION
A-93 – 10.1 #5	Delete the edge between v_2 and v_3 .
A-95 – 10.1 #46	In the diagram, change the number annotating vertex b from 2 to 3, and, starting with line 5, change the text to the following: “Observe that vertices c and f do not share an edge with d but do share an edge with each other, which means that color #2 may be used for one but not the other. Choose to color f with color #2 because the degree of f is greater than the degree of c . The remaining uncolored vertices, b, c , and g , are unconnected, and so color #3 may be used for all three.”
658 – 10.2 #19-21	In the directions for these exercises, change “path” to “trail”.
659 – 10.2 #30	Place a black dot at vertex v_0 .
693 – 10.5 #7	The number 7 should be black; only part a has a solution.
693 – 10.5 #13 & #19	Change “nontrivial circuit” to “circuit”.
694 – 10.5 #23	Change “nontrivial circuit” to “circuit”.
715 – 10.7 #14	Add black dots at c and f .

CHAPTER 11

Text

LOCATION	CORRECTION
729 – line –9	Change “developed in exercises 15 and 50” to “developed for rational numbers in exercises 15 and 50”.
729 – Boxes 11.2.1 & 11.2.2	In both boxes, change “For any rational” to “For any real”.
740 – Example 11.3.4	Example 11.3.4 should be labeled Example 11.3.1.
742 – Example 11.3.1	Example 11.3.1 should be labeled Example 11.3.2.
742 – Table 11.3.1	In the rightmost column, change “27.8 min” to “27.8 hr”.
743 – Example 11.3.2	Example 11.3.2 should be labeled Example 11.3.3.
744 – Example 11.3.3	Example 11.3.3 should be labeled Example 11.3.4.
745 – Algorithm Body	Under the line “ $a[j + 1] := a[j]$ ” insert “ $a[j] := x$ ”. Under the line “ $j := j - 1$ ” insert “ else $j := 0$ ” Delete the line “ $a[j + 1] := x$ ” (under the line end while).
746 – Table	Add 0’s in columns 7 and 9 of the bottom row; add 2’s in columns 11-13 in the rows above the numbers 7, 6, and 5, respectively. Delete the 7 in row 5, column 9.
746 – Example 11.3.6	In the first line of the solution for Example 11.3.6, delete the word “attempted”. In line 6, before the word “Thus”, add the sentence, “Also, each incremented value of k is compared to n .”
761 – Figure 11.4.6	On the y -axis, the tick mark for 1 should be lowered.
766 – line 3	Change “intialize” to “initialize”.
773 – line 12	Change “except” to “except”.

Exercises

LOCATION	CORRECTION
736 – 11.2 #9	In line 2 change “25” to “33”.
738 – 11.2 #49d	Change “ a_1, a_2, \dots, a_n are real numbers” to “ a_0, a_1, \dots, a_n are real numbers with $a_n \neq 0$ ”.
A-112 – 11.3 #22	Add 0’s in columns 9 and 13 of the bottom row; add a 1 in row 3, column 6; add a 4 in row 5, column 11; and delete the 8 in row 5, column 9.
A-112 – 11.3 #24	Change to “There are 7 comparisons between values of x and values of $a[j]$: one when $k = 2$, two when $k = 3$, one when $k = 4$, and three when $k = 5$.”
749 – 11.3 #26	Change “ $5^2 - 5 + 2 = 22$ ” to “ $5^2 + 5 - 2 = 28$ ”.
749 – 11.3 #28-35	In line 10 of Algorithm 11.3.2, after “the value of $a[k]$ ”, insert “if it is less than $a[k]$ ”. Also delete the comma after “ Output ” and before “ $a[1]$ ”.
750 – 11.3 #28-35	In line 6, column 1 of Algorithm 11.3.2, change to “If the value of this array element is less than the value of $a[k]$, then its value and the value of $a[k]$ are interchanged.”
750 – 11.3 #35d	In line 3, change “an order” to “a worst case order”.
764 – 11.4 #41	Change line 2 to “ $k_1n + k_2n \log n$ for positive integers k_1, k_2 , and n ”
764 – 11.4 #49c	Change “ $n \geq 2$ ” to “ $n \geq 1$ ”.

CHAPTER 12

Exercises

LOCATION	CORRECTION
A-119 – 12.1 #37	Change to “[0 – 9]{3} - [0 – 9]{2} - 3[0 – 9]{2}6”.