

Corrections for the book *Linear Algebra (3rd ed)* by Richard C. Penney

(contributions by Bill Dunbar, Scott Allen, Sam Ferguson, Thomas Meyer, Raspberry Simpson, . . . )

Page	Line	Correction
4	-2	Swap $x$ and $y$ in Figure 1.1
8	+16	“ind ices” should be “indices”
9	-6	“on page 7” should be “on page 8”
12	+20	“discussion of continuous functions” should be “discussion of functions”
34	-1	“ $y = 1 + s + t$ ” should be “ $y = 1 + r + s$ ”
42	-2	“current flow the same” should be “current flow are the same”
49	+9	“ $R_4 \rightarrow R_4 + 3R_1$ ” should be “ $R_4 \rightarrow R_4 + 3R_2$ ”
52	+1	“ $R_2 \rightarrow R_4 - R_3$ ” should be “ $R_4 \rightarrow R_4 - R_3$ ”
53	-9	“ $R_2 \rightarrow R_2 - 3R_3$ ” should be “ $R_2 \rightarrow R_2 - 3R_1$ ”
53	-8	“ $R_3 \rightarrow R_3 + R_2$ ” and “ $R_4 \rightarrow R_4 + R_2$ ” should be “ $R_3 \rightarrow R_3 - R_2$ ” and “ $R_4 \rightarrow R_4 - R_2$ ”
53	-1	“ $X_3 = [-3, 4, 0]$ ” should be “ $X_3 = [-3, 4, 0]^t$ ”
56	+6	“Since $x_m$ is the last pivot variable” should be “Since $x_m$ is the last nonpivot variable”
57	+9	“ $x = 1,000 - 10000y = 0$ ” should be “ $x = 10000 - 10000y = 0$ ”
70	-1	In Figure 1.27, the labels for East St. and West St. should be swapped.
72	-5	“just in our example” should be “just as in our example”
79	+10	“if both of the following properties” should be “if all of the following properties”
81	+2	“ $A[2, 3, 4]^t = [2, 3]^t$ ” should be “ $A[2, 3, 4]^t = [2, 3]^t$ ”
90	+15	“See Exercise 32 for the definition” should be “See Exercise 43 for the definition”
98	-4	“ $x_1A_1 + x_2A_2$ ” should be “ $x_1A_1 + x_2A_2$ ”
111	+10	check mark on 28(a) should be on 28(b)
122	+8	“ $a, b, c, d \in \mathbf{R}$ ” in 6(a) should be $a, b, c \in \mathbf{R}$ ”
132	-1	“equation in (a)” should be “equation in (d)”
151	-10	erase “1” between exercises 15 and 16
169	+17	insert “counterclockwise” after “under rotation by 20 degrees”
177	-6	(quibble) to match above display, “ $IA = A = AI$ ” should be “ $AI = A = IA$ ”
195	+15	“and $B \in \mathbf{R}^n$ ” should be “and $Y \in \mathbf{R}^n$ ”
197	+1	“around $\frac{4}{3}(2n^2)$ flops” should be “around $\frac{4}{3}(2n^3)$ flops”
200	+1	“noninvertibleinvertible” should be “noninvertible”
201	-15	check mark in front of 20. should be in front of 19.
209	-6	“where $m$ is the row sum in $C$ ” should be “where $m$ is the largest row sum in $C$ ”
212	-2	“ $i < j$ ” should be “ $j < i$ ”
214	+1	second row $[1, 1, 3]$ should be $[1, 3, 4]$ ; third row $[2, 3, 6]$ should be $[2, 7, 8]$
214	+9	“ $L_{31} = 3$ , respectively” should be “ $L_{31} = 2$ , respectively”
215	+3	“Use the LU factorization to to” should be “Use the LU factorization to”
215	-4	“of $A_{11}$ and $A_{22}$ ” should be “of $A_{11}$ and $A_{21}$ ”
217	-12	“ $L_{ij} = c_{ij}$ for all $1 \leq i < j \leq n$ ” should be “ $L_{ij} = c_{ij}$ for all $1 \leq j < i \leq n$ ”
217	-4	“in both the $(n - 2)$ nd column and the $(n - 2)$ nd row is $L_{n-1,n-1}^1 = 1$ ” should be “in either the $(n - 2)$ nd column or the $(n - 2)$ nd row is $L_{n-2,n-2}^1 = 1$ ”
224	-3	“ $X' = [x'_1, x'_2]^t$ ” should be “ $X' = [x', y']^t$ ”
229	-7	“ $\frac{1}{3}[20, 11, 1]$ ” should be “ $\frac{1}{3}[20, 11, 1]^t$ ”
231	-14	“ $x^2(x - 1)'' - x(x - 1)' + (x - 1) = x$ ” should be “ $x^2(x - 1)'' - (x - 1)' + (x - 1) = x - 2$ ”
231	-13	“ $= 2 + (x - 2) + 0(x - 2)^2$ ” should be “ $= 0 + (x - 2) + 0(x - 2)^2$ ”
231	-12	“ $L((x - 2)^2) = x^2(x - 1)'' - x(x - 1)' + (x - 1) = 3 - x^2$ ” should be “ $L((x - 1)^2) = x^2((x - 1)')'' - ((x - 1)^2)' + (x - 1)^2 = 3x^2 - 4x + 3$ ”
231	-11	omit
231	-10	“ $= -1 - 4(x - 2) - (x - 2)^2$ ” should be “ $7 + 8(x - 2) + 3(x - 2)^2$ ”
231	-4	first row $[1, 2, -1]$ of $M$ should be $[1, 0, 7]$
231	-4	second row $[0, 1, -4]$ of $M$ should be $[0, 1, 8]$
231	-4	third row $[0, 0, -1]$ of $M$ should be $[0, 0, 3]$
232	+16	“ $\mathcal{W}$ in $n$ -dimensional” should be “ $\mathcal{W}$ is $n$ -dimensional”

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233	+16	" $L : \mathcal{V} \rightarrow \mathcal{V}$ " should be " $L : \mathcal{V} \rightarrow \mathcal{W}$ "
233	+19	"for all $Y \in \mathcal{V}$ " should be "for all $Y \in \mathcal{W}$ "
235	-8	In 5(a), the three given polynomials are linearly independent "12x + 14x <sup>2</sup> " should be "10x + 14x <sup>2</sup> "?
236	+10	"M it is the matrix from formula (3.39)" should be "M is the matrix from formula (3.39)"
253	-9	"to express $\alpha$ , $\delta$ , and $\gamma$ " should be "to express $\beta$ , $\delta$ , and $\gamma$ "
273	-2	"coefficient" should be "coefficients"
276	+1	"multiplying by T" should be "multiplying by P"
280	+9	"In Example 2" should be "In Example 3"
280	-13	"echelon form of the coefficient matrix" should be "echelon form of the augmented matrix"
281	+11	"multiplicity 2 and $\lambda = 2$ " should be "multiplicity 2 and $\lambda = 3$ "
285	+14	"Use this answer to find $F_8$ " should be "Use this answer to find $F_9$ "
289	-7	"where X is as in part (c)" should be "where X is as in part (b)"
293	-2	"from Theorem 1 and equation (5.2)" should be "from Theorem 1 and the argument above equation (5.10)"
300	-5	diagonal entries 2, 2, 3 of D should be 1, 1, 3
300	-1	$e^{2t}$ (3 times) should be $e^t$
303	-2	"formula (5.21)" should be "the above formula"
303	-1	In figure 5.2, the labels x and y need to be swapped
308	-5	"the set $\{[1 + i, 2], [2, 2 - 2i]^t\}$ " should be "the set $\{[1 + i, 2]^t, [2, 2 - 2i]^t\}$ "
313	-4	"= $[2, 1]^t$ " should be "= $ [2, 1]^t $ "
314	+1	In Figure 6.1, the labels x and y need to be swapped
317	+13	" $X' = [x'_1, x'_2, \dots, x'_n]$ " should be " $X' = [x'_1, x'_2, \dots, x'_n]^t$ "
328	+2	"for all $X \in S$ " should be "for all $W \in S$ "
332	-9	"Then, from equation (6.26)" should be "Then, from equation (6.27)"
337	-8	after "basis found in Exercise 13", insert "IF that basis was orthogonal"
339	+15	" $+z[4, -2, -2]^t$ " should be " $+z[4, -6, -2]^t$ "
343	-9	"(a) $(f, f) > 0$ " should be "(d) $(f, f) > 0$ "
344	+3	" $(f, q_k) =$ " should be " $(f, q_k) =$ "
344	-1	missing Figure 6.12
346	-1	"The projection of $\mathcal{V}$ " should be "The projection of $V$ "
350	+5	"Legendre polynomials" should be "normalized Legendre polynomials"
358	+2	"Let $A = [A_1, A_2, \dots, A_n]^t$ " should be "Let $A = [A_1, A_2, \dots, A_n]$ "
363	-2	"Prove that, $AB$ is orthogonal" should be "Prove that $AB$ is orthogonal"
368	+15	" $B_0 = \text{Proj}(B)$ " should be " $B_0 = \text{Proj}_{\mathcal{W}}(B)$ "
369	+5	"for all $1 \leq i \leq m$ " should be "for all $1 \leq i \leq n$ "
369	-6	"fourth" should be "fifth"
380	+12	"It's proof is left as an exercise" should be "Its proof is left as an exercise"
381	-10	"Sinc one-by-one matrices" should be "Since one-by-one matrices"
382	+4	"let $X' = QX$ " should be let $X' = Q^{-1}X$ "
384	+3	" $X_1, X_2$ , and $X_2$ " should be " $X_1, X_2$ , and $X_3$ "
385	+2	"that is needed to prove" should be "which is needed to prove"
385	+9	"Let $\mathcal{B} = \{X_1, X_2, \dots, X_k\}$ " should be "Let $\mathcal{B} = \{X_1, X_2, \dots, X_m\}$ "
388	-15	" $-5x^2 + 2y^2 - 11z^2 - 12xy + 12yz$ " needs to be set equal to some number
392	-13	(quibble) $V$ on page 392 is not the same as $V$ on the following two pages; change former to $W$
461	-7	"28(a)." should be "28(b)."
465	-2	"20." should be "19."
465	-10	Section 3.3, exercise 3g, fraction 1/4 should be 1/12
467	-13	"Section 4.1.1" should be "Section 4.1"
470	+10	" $7, 6.5 \pm (3\sqrt{3}/2)I$ " should be " $7, 6.5 \pm (3\sqrt{3}/2)i$ "
471	-2	"One answer is 12" should be "One answer is the solution to 12(a) above"