

Corrections and emendations for
Elementary Numerical Analysis, 3rd ed.
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Each item in this list of corrections and emendations is in the form

$a/b/c$: A --> B [C]

to indicate that, at the location specified, A should be replaced by B, with C an optional comment.

The location specification $a/b/c$ means **page** a , **paragraph** or **item** b , and **line** c , with a positive(negative) b or c meaning a count from the top(bottom) of the page or the specified paragraph.

For example, both 5/5/1 and 5/-1/-3 refer to the same line, the one on page 5 that begins “This example was rigged...”

Either A or B can be empty, and [C] rarely occurs. An A of the form A1...A2 indicates the entire text starting with A1 and ending with A2, with ... , if used in B, standing for the entire text between A1 and A2.

v/Chapter 2/1: Polynomial --> Polynomials

33//-1: auxilliary --> auxiliary

36/4/4: of --> of

38/2/-2: at most --> **at most**

38/3/1: at least --> **at least**

41/2/2: $(x - x_1)$ --> $(x - x_0)$

41/2/3: + --> $+(x - x_0)$

43/Figure 2.1/heading: x_1 --> x_i

45//-1: 20 --> 19

50/2.4-2/4: $p_{i+1,j-1}$ --> $p_{i+1,j}$

54/Figure 2.3 legend/2: dotted --> dashed

66//5,6: find then --> then find

66/1/-2,-1: some ... which --> any limit point ξ of the sequence $\xi^{(1)}, \xi^{(2)}, \dots$, by the continuity of $f^{(n)}(x)$ and any such ξ must lie in $[\lim_r x_0^{(r)}, \lim_r x_n^{(r)}] = [y_0, y_n]$. This

70/flowchart/second-last box:),] -->)]

82//line after label 6:) RETURN -->) THEN | IFLAG = 0 | RETURN | END IF

87/Example 3.2b/2: solution ... form --> smallest positive zero of

87/table/: [replace the content of the table by

.45000000	1.3279984E+01	.60000000	-1.1262310E+01
.43989500	2.3542378E+00	.66877546	1.2870500E+01
.43721231	1.2177630E-01	.64882229	2.2544956E+00
.43705785	3.7494997E-04	.64361698	1.1312314E-01
.43705737	3.5831818E-09	.64332721	3.2632512E-04
		.64332637	2.7358738E-09

]

105/3/-5: . --> and x by $a + b - x$ (i.e., a rotation of the x, y -plane of 180 degrees around the point $((a + b)/2, 0)$ which leaves the sign of f' unchanged but changes the sign of f'').

110//6,-5: number of **variations** v --> number v of **variations**

156/4.2-8/-1: --> (Answers depend crucially on just how rounding is carried out and how substitution is handled, as in SUBST or as in Algorithm 4.2. One can get anything, from the correct solution to a singular system.)

159//4: with \rightarrow with symmetric

162/4/2: $\mathbf{p} \rightarrow p$

164/-1/4: \mathbf{A} , storing the factorization $\rightarrow A$, stored on entry

164/-1/4,5: , and storing \rightarrow . The program stores the factorization of A in the same workarray \mathbf{W} , and stores

164//5: $\mathbf{A} \rightarrow A$

164//4 to -1: [delete]

169/4.4-9/5: $\ell_{i1} \rightarrow \ell_{i1}d_{11}$

169/4.4-9/5: $\ell_{i,j-1} \rightarrow \ell_{i,j-1}d_{j-1,j-1}$

169/4.4-9/7: $\ell_{j1}^2 \rightarrow \ell_{j1}^2d_{11}$

169/4.4-9/7: $\ell_{j,j-1}^2 \rightarrow \ell_{j,j-1}^2d_{j-1,j-1}$

172/2/4: $p, w \rightarrow p, w$

179/Theorem/4: $u \rightarrow nu$

180//2: $u \rightarrow ru$

181/-2/-4: 50 \rightarrow 50a

192/Table/: [the last entry of $B^m z$ and of $z^{(m)}$ for all odd m should be multiplied by -1]

192/2/7: [move the first λ_1 from the numerator to the front of the fraction]

194/Program/second line after 10: 0 \rightarrow 0

205/1/-5: 11 \rightarrow 8

205/2/2,3: $p_{i-1} \rightarrow p_i$ [three times]

206/4.8-15/1 matrix \rightarrow matrix, i.e., a matrix A satisfying $A = A^H$,

212/-1/2: 2 \rightarrow 3

214//2: $s_2 := t_{\max} \rightarrow (s_1, s_2, s_3) := (s_2, s_3, t_{\max})$

214/2/6: alright \rightarrow alright

215/5.1-1/2: +3 $\rightarrow -3(2x_1 + x_2)$

216//14: $\mathbf{f}' \rightarrow \mathbf{f}'(\mathbf{x})$

218//3: choice \rightarrow choices

219/Algorithm/7: $*i \rightarrow *i$

221/3/-6: from $\mathbf{f} \rightarrow$ from \mathbf{f}'

231/3/3: positive ... and \rightarrow real symmetric and positive definite, i.e.,

231/4/5,7: $> \rightarrow \geq$

231/4/11: $= (\widehat{D} \rightarrow = ((1 - \omega)\widehat{D})$

236/2/-3,-2: will not ... constructing \rightarrow would be wasting time and effort if we were to construct

237/Example 6.2/1 $\pi/4 \rightarrow (\pi/4)$

237/Example 6.2/-2: 403 \rightarrow 4065

242/2/4:] \rightarrow , x]

242//3: $\prod_{j=0}^{n+1} \rightarrow \prod_{j=0}^n$

244/(6.19)/: $\geq e^{n/2} \rightarrow = \frac{2^{n+1}}{en \ln n}(1 + o(1))$

244/3/-1: . \rightarrow ; also, see Problem 6.1-15.

245//: \rightarrow **6.1-15** (R.-Q. Jia) Prove that $\|\Lambda_n^u\| \geq 2^n/[4n(n-1)]$ by estimating $\Lambda_n^u(1-1/n)$ from below.

253/Property 3/-1: . \rightarrow and some $\alpha_k \neq 0$.

271/-1/4: continuous --> monotone [also at 274/4/-1, 276/3/-1]
 272//5: $+2\} = i$ --> $-2\} = -i$
 272/(6.51)/: $-ix_n$ --> $-ix_{nj}$
 274/2/3: 20 --> 24
 275/Example 6.14/2: the relevant quantities are: --> $c_r = \widehat{f}_N(r) = \langle \mathbf{f}, \mathbf{w}^{(r)} \rangle$ with $\mathbf{f} := (f(x_j))$, $\mathbf{w}^{(r)} := (e^{imx_j}) = (\omega^{mj})$ and
 275/Example 6.14/4: These are ... Further --> Thus $\omega^2 = \omega^{-1} = \bar{\omega}$. Further
 275/Example 6.14/-4: Now ... have --> Therefore,
 275/Example 6.14/-2: $-\sqrt{3.4\omega^{-2}}$ $= \frac{1}{3}3/4$ --> $-\sqrt{3/4\omega^{-2}}$ $= \frac{1}{3}\sqrt{3/4}$
 289//5: 79 --> 81
 291/Program/: --> $C(2,1) = 0$
 291/Program/: --> $C(2,N+1) = 0$
 299//2: gets --> gets from Exercise 2.7-8 that
 307//4: $x + b$ --> $x - b$
 311/1/-2: $-$ --> $+$
 311/-2/-5: nonnegative --> *nonnegative*
 312//6: $=$ --> $= -$
 313//8,-4: 6.6 --> 6.3
 313//5: 3 --> 2
 313//4: 2 --> 3
 318//1: 8 --> 5
 321/(7.50)/: $f_i =$ --> $f_i +$
 325/program/statement 4: [delete it]
 326/(7.54b)/: 1 --> $b - a$
 341/-2/-4: h_k^{2k} --> h^{2k}
 345/7.7-4/3: h^2 --> h^3 [twice]
 345//1: -->)
 352//5: a_{n-1} --> a_{N-1}
 352//6: β^n --> β^N
 356//3: 8.23 --> * [also on 356/2/3]
 364/3/2: $=$ --> $= -$
 365/3/-2: NSTEP --> NSTEPS
 367/(8.38)/: $\mathcal{O}(h^{p+1})$ --> $C_n h^{p+1} + \mathcal{O}(h^{p+2})$ [also at 367/(8.39a)/]
 367/(8.38)/+3: $C(x_n + mh)$ --> C_n
 367/(8.38)/+4: point --> number
 367/(8.38)/+5: $x = x_n + mh$ --> m
 367/(8.39b)/: $\mathcal{O}(h^{p+1})$ --> $2C_n h^{p+1} + \mathcal{O}(h^{p+2})$
 367/(8.39b)/+3: $C_n (\frac{h}{2})^p$ --> $2C_n (\frac{h}{2})^{p+1}$
 371/2/2: outputted --> output
 374/1/6: 8.43 --> 8.44
 381//5,6: and since ... assumption, -->
 381//9: [delete]
 382/8.8-1/-1: $|Ah/2| < 1$ --> $Ah/2 \neq 1$

382//7: 10 --> 19

389/1/9: 6 --> 3

393//2: $\beta^2 \dots 1$ --> $(\beta^2 \dots 1)/(-3)$

394/display: $-\frac{1}{2}f_n + \frac{1}{2}f_{n-1}$ --> $+f_n$

418/(9.21)/: c_2x^3 --> c_3x^3

419/9.4-1/: 4 --> 3

419/9.3-1/-1: = --> = 2

419/9.4-2/: [delete it; it's silly]

423/14./: McCracken ... 1964 --> Dorn, W. S., and D. McCracken, *Numerical Methods with Fortran IV Case Studies*, John Wiley, New York, 1972.

430//: Lebesgue --> Lebesgue

430//: --> Matrix: Hermitian, 206

430//: --> Matrix: Hermitian of a, 142

431//: --> Polynomial forms: Chebyshev, 258

431//: --> Polynomial forms: orthogonal, 253ff