Errata for First Edition, 2003

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p.11, Theorem 1.5, line 3: $\xi = g(\xi) \in [a,b] \quad \longrightarrow \quad \xi = g(\xi) \in (a,b)$
p.55, in the first matrix on the r.h.s. of (2.25): $P^* \quad \longrightarrow \quad (P^*)^T$. Line below (2.25): $P^*P^* = I \quad \longrightarrow \quad (P^*)^T P^* = I$
p.79, lines −7 and −8: $\|\mathbf{b}_r\| \quad \longrightarrow \|\mathbf{b}_r\|_2$
p.80, line −5: *Goldstein* should read *Goldstine*, and footnote 4 should read:
[4] Herman Heine Goldstine (1913–) collaborated with John von Neumann on the development of the ENIAC (Electronic Numerical Integrator And Computer), the first electronic digital computer, which became operational in 1945.
p.100, Theorem 3.6, line 1: insert *nonsingular* before *tridiagonal*
p.103, Exercise 3.5, line 3: insert *with strict inequality for* $j = n$ before *and*
p.115, line −2: $D = [0,1] \times [0,3/5] \quad \longrightarrow \quad D = [0.5,1] \times [0,0.7]$
p.135, footnote 1: $\lambda_{1/2} \quad \longrightarrow \quad \lambda_{1,2}$
p.178, line 3, insert the missing term $-\lambda^{(0)}\delta\mathbf{x}$ on l.h.s.
p.255, line 5: *form* $\longrightarrow$ *from*
p.264, line 10: insert *except for* $m = n = 0$ *when* $\langle T_m, T_n\rangle = \pi$. after *nonnegative integers* m *and* n
p.298 (11.4): in the definition of $\varphi_0(x)$ replace h_0 by h_1
p.313 (12.9), last sum in the chain: $j+1 \quad \longrightarrow \quad j$ top and bottom
p.331, Adams–Moulton method: $-9f_n \quad \longrightarrow \quad +f_n$
p.334, line above (12.41): $r = 1,2,\ldots,n \quad \longrightarrow \quad r = 1,2,\ldots,k$
p.335, line 4:
$$\mathcal{D}_1 = \prod_{1\le r<s\le \ell} (z_s - z_r)^{m_r\cdot m_s} \prod_{r=1}^{\ell} (m_r - 1)!!\; z_r^{m_r(m_r-1)/2}$$
p.336, Example 12.5, line −6: $z_3 = -3.14 \quad \longrightarrow z_3 \approx -3.14$
p.365, Theorem 13.3, line 1: $j = 0,1,\ldots,n, \quad \longrightarrow \quad j = 1,\ldots,n-1,$
p.369, insert after line 2: where $M_3 := \max_{x\in[a-h,b]} |y'''(x)|$ and $M_4 := \max_{x\in[a-h,b]} |y^{\mathsf{iv}}(x)|$.
p.377, line 12: $u_3(x,y) \quad \longrightarrow \quad u_3(x,t)$.
p.378, lines 17–20: However, in the interval $(a,d]$, $\eta(x;t) > 0$ and $\partial f/\partial y \ge 0$, so that $\eta''(x;t) \ge 0$. Consequently, in the interval $[a,d]$, $\eta'(x;t) \ge \eta'(a;t) > 0$, and we have a contradiction. Thus $\eta(x;t) > 0$ for $a < x \le b$. It then follows that $\eta''(x;t) \ge 0$, and hence also $\eta'(x;t) > 0$ on ...
p.381, line −5:
$$-\frac{\delta^2 y_j}{h^2} + \beta_{-1} f_{j-1} y_{j-1} + \beta_0 f_j y_j + \beta_1 f_{j+1} y_{j+1} = \beta_{-1} g_{j-1} + \beta_0 g_j + \beta_1 g_{j+1}$$
p.407, (14.37): $\mathrm{L}^2(0,1) \quad \longrightarrow \quad \mathrm{L}^2(a,b)$
p.410, line 3: $\mathrm{L}^2(x_{i-1}^m, x_i^m) \quad \longrightarrow \quad \mathrm{L}^2(x_{i-1}^{(m)}, x_i^{(m)})$

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p.ix line 3: copies of LaTeX files $\longrightarrow$ the PDF file
p.15, Theorem 1.6: At the end of the second sentence insert before the full-stop: "(unless $x_k = \xi$ for some $k > 1$)"
p.44, lines 1–5 of Section 2.2, and p.80 lines 13–18: Contrary to what is stated on pages 44 and 80, Gaussian elimination was not first published by Gauss in 1809, nor was the method extended to linear systems with general matrices by Jacobi in a posthumous publication from 1857. By the time Gauss was born, the elimination method was already an established lesson in algebra textbooks such as those of Bezout and Simpson. The details of the actual history of Gaussian elimination can be found in the article by Grcar, J.F., *How ordinary elimination became Gaussian elimination.* Historia Mathematica (2010), doi:10.1016/j.hm.2010.06.003.
p.95, eq. (3.12): $PA = L^{(1)}U^{(1)}$ should read $PT = L^{(1)}U^{(1)}$
p.151, Fig. 5.2: $\boldsymbol{Hx}$ below the horizontal plane should be $H\boldsymbol{x}$
p.159: 4 lines above Example 5.7: $p_{j-1}(\theta) \longrightarrow -p_{j-1}(\theta)$. The wording in Example 5.7 in lines 1–10 on p.160 should be modified accordingly, though the results remain the same.
p.164, line below (5.35): Delete the sentence: "In fact, since A is tridiagonal ..."
p.177, Exercise 5.7, line 3: Delete the words: "and tridiagonal"
p.205, Eq. (7.7): $\frac{(b-a)^4}{196} M_3 \quad \longrightarrow \quad \frac{(b-a)^4}{192} M_3$
p.281, the last line should read: $A_0(\frac{1}{2} + \sqrt{\frac{1}{12}}) + A_1(\frac{1}{2} - \sqrt{\frac{1}{12}}) = \frac{1}{2}$
p.288, Eq. (10.27): $x_k \quad \longrightarrow \quad x_k^*$
p.299, lines −11 and −10: Theorem 3.4 $\longrightarrow$ Exercise 3.5
p.320, in Example 12.3, (12.20): $y' = y^2 + g(x) \quad \longrightarrow \quad y' = y^2 - g(x)$
p.352: the last line of the second displayed Butcher tableax on the page should be $\frac{1}{6} \quad \frac{1}{3} \quad \frac{1}{3} \quad \frac{1}{6}$
p.371: Lemma 3.1: $\frac{1}{24}h^4 \quad \longrightarrow \quad \frac{1}{24}h^2$
p.382, line 2: $T_j = (\beta_{-1} + \beta_0 + \beta_1 - 1)y''(x_j) + Z_j^0 h$; line 12: $\frac{1}{60480} M_8 \longrightarrow \frac{17}{60480} M_8$