Errata for *Elements of Scientific Computing*

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Note: The latest version of this document will always be available for download at `http://www.ifi.uio.no/cs/`.

- Page 59, in the caption of Fig. 2.5. Δt should be 1/10.
- Page 64, line two from bottom. It should read "Use these two observations to conclude".
- Page 70, the last equation on the page should be

$$f(u(t_{n+1/2})) = \frac{1}{2}(f(u(t_n)) + f(u(t_{n+1}))) + O(\Delta t^2)$$

- Page 71, the first equation on the page should be

$$\frac{u(t_{n+1}) - u(t_n)}{\Delta t} = \frac{1}{2}(f(u(t_n)) + f(u(t_{n+1}))) + O(\Delta t^2)$$

- Page 92, Equation (3.77) should be

$$\frac{e^F}{F}\frac{e^S}{S^2} = \frac{e^{F_0}}{F_0}\frac{e^{S_0}}{S_0^2}.$$

- Page 92, Equation (3.78) should be

$$K_0 = \frac{e^{F_0}}{F_0}\frac{e^{S_0}}{S_0^2}.$$

- Page 93, the first equation on the page should be

$$K_n = \frac{e^{F_n}}{F_n}\frac{e^{S_n}}{S_n^2}.$$

- Page 141, line 1 beneath Equation (4.205). It should read "see (1.30) on page 19".

- Page 150, in Table 5.1. The y_i value associated with year 1995 should be 0.38.

- Page 156. Equation (5.25) should be

$$\sum_{i=1}^{10} t_i \, y_i = 1 \cdot 0.29 + 2 \cdot 0.14 + 3 \cdot 0.19 + \cdots + 10 \cdot 0.29 = 19$$

- Page 157. Equation (5.26) should be

$$55\alpha + 385\beta = 19$$

- Page 157. Equation (5.27) should be

$$\begin{pmatrix} 10 & 55 \\ 55 & 385 \end{pmatrix} \begin{pmatrix} \alpha \\ \beta \end{pmatrix} = \begin{pmatrix} 3.12 \\ 19 \end{pmatrix}$$

- Page 157. Equation (5.29) should be

$$\begin{pmatrix} \alpha \\ \beta \end{pmatrix} = \frac{1}{825} \begin{pmatrix} 385 & -55 \\ -55 & 10 \end{pmatrix} \begin{pmatrix} 3.12 \\ 19 \end{pmatrix} \approx \begin{pmatrix} 0.190 \\ 0.022 \end{pmatrix}$$

- Page 157. Equation (5.30) should be

$$p(t) = 0.190 + 0.022t$$

- Page 157. Equation (5.32) should be

$$p_1(t) = 0.190 + 0.022t$$

- Page 159, between Equation (5.41) and Equation (5.42). The correct value of $\sum_{i=1}^{10} t_i^4$ should be 25333. The correct value of $\sum_{i=1}^{10} t_i \, y_i$ should be 19.

- Page 159. Equation (5.42) should be

$$\begin{pmatrix} 10 & 55 & 385 \\ 55 & 385 & 3025 \\ 385 & 3025 & 25333 \end{pmatrix} \begin{pmatrix} \alpha \\ \beta \\ \gamma \end{pmatrix} = \begin{pmatrix} 3.12 \\ 19 \\ 138.7 \end{pmatrix}$$

- Page 160. Equation (5.43) should be

$$\alpha \approx 0.1202 \quad \beta \approx 0.0569 \quad \gamma \approx -0.031$$

- Page 160. Equation (5.45) should be

$$p_1(t) = 0.190 + 0.022t$$

- Page 160. Equation (5.46) should be

$$p_2(t) = 0.1202 + 0.0569t - 0.0031t^2$$

- Page 162. Equation (5.54) should be

$$F(\alpha, \beta) = \sum_{i=1}^{n} (\alpha + \beta t_i - y_i)^2$$

- Page 217, line 2 in Section 6.3. It should be "All these languages ..."
- Page 263, in the psudo-code of `class Trapezoidal`. The first assignment for `x` should be `x = prm.a`
- Page 321, line 2. It should be $u_0^{\ell+1}$ instead of $u_1^{\ell+1}$, and $i = 0$ instead of $i = 1$.
- Page 328, line 2 beneath Equation (7.106). It should be "at $t = 0.1$".
- Page 328, line 5 beneath Equation (7.106). Δt should be $1/170$.
- Page 328, lines 7-8 beneath Equation (7.106). Δt should be $1/820$.
- Page 328, line 10 beneath Equation (7.106). Δt should be $1/7060$.
- Page 329, in the caption of Fig. 7.15. The first sentence should read "The *solid line* represents the solution (7.106) at $t = 0.1$". Also, the text "in the cases of $n = 10$ and $m = 17$" should be removed.
- Page 329, line 3 beneath Fig. 7.15. It should read "Δt is increased from $1/7060$ to $1/6810$".
- Page 330, line 3 from bottom. Δt should be $1/340$.
- Page 331, line 4 from bottom. It should read "as the time step is increased".
- Page 336, in the middle of the page. It should read "The maximum time step is $\Delta t = \Delta x^2/2$". This is because Sect. 7.4.5 has used the model problem $\frac{\partial u}{\partial t} = \frac{\partial^2 u}{\partial t^2}$.
- Page 386, the line beneath Equation (8.75). It should read "Furthermore, if f satisfies (8.75), then the solution of (8.1)-(8.3) is"