

SIMIODE Text Errata

September 27, 2024

All errors below pertain to the pdf version 1.12 of the text except for the first one listed. The rest are corrected in the second HTML version.

- Equation (3.20) in the pdf version 1.12 on page 82 is wrong (this is equation (3.2.5) in the second edition in HTML). It should read

$$m = \frac{f(t_k, u_k) + f(t_{k+1}, w)}{2}$$

(the second evaluation of f on the right above was at $t = t_k$, but should be at $t = t_{k+1}$.)

- In Exercise 3.4.2 of the pdf version 1.12, the phrase “plot the linear function $-k \ln(t)$ ” should be “plot the linear function $-k \cdot t$.” It is corrected in the HTML version.
- In Section 7.3 of the pdf version the partial derivatives and the Jacobian in Example 7.6 on page 366 are slightly wrong (but corrected in the HTML version). The partial derivatives should be

$$\frac{\partial f_1}{\partial u_1} = 1 - u_1 - u_2/10, \quad \frac{\partial f_1}{\partial u_2} = -u_1/10, \quad \frac{\partial f_2}{\partial u_1} = -3u_2/10, \quad \frac{\partial f_2}{\partial u_2} = 2 - 4u_2/3 - 3u_1/10.$$

The Jacobian matrix should be

$$\mathbf{J}(u_1, u_2) = \begin{bmatrix} 1 - u_1 - u_2/10 & -u_1/10 \\ -3u_2/10 & 2 - 4u_2/3 - 3u_1/10 \end{bmatrix}.$$

All following computations are correct, though.

- In Section 7.4 of the pdf version 1.12, problem 7.4.5 part (e), the Jacobian should be $\mathbf{J}(\pi, 0)$, and the conclusions on stability should be made at $(\pi, 0)$. This is corrected in the HTML version.
- In Section 7.6 of the pdf version 1.12, Example 7.24 (page 410) has wrong entries in the matrices associated to D_1, D_2 , and D_3 , though

$D_1, D_2,$ and D_3 are themselves correct; the corresponding Example 7.6.5 in the HTML version is correct, though. Thge matrices should be

$$\begin{aligned}D_1 &= \det [r] = r, \\D_2 &= \det \begin{bmatrix} r & 1 \\ 5 & 9 \end{bmatrix} = 9r - 5, \\D_3 &= \det \begin{bmatrix} r & 1 & 0 \\ 5 & 9 & r \\ 0 & 0 & 5 \end{bmatrix} = 45r - 25.\end{aligned}$$

- In Section 8.1 of the pdf version 1.12, the second-to-last line in equation (8.31) should be “ $= a \cdot 0 + b \cdot 0.$ ” This is corrected in the HTML version.
- In Section 8.3 of the pdf version 1.12, Exercise 8.3.1, the reference should be to the sine expansion of $f(x)$ (not the cosine). This is correct in the HTML version.