

**Numerical Methods for Chemical Engineers  
with MATLAB Applications  
by Alkis Constantinides & Navid Mostoufi  
Prentice Hall PTR, 1999**

These are the errata for the 1<sup>st</sup> printing of this book. Please make these corrections to your copy of the book.

<u>Page</u>	<u>Location</u>	<u>Correction</u>
xxii	Line 7	Change "calculation of j" to "calculation of phi"
29	Line 7	Change "temperatures" to "pressures"
50	Line 13	Change "TOL or TRACE" to "RHO or TOL"
52	Last paragraph	Change "In the third run.." to "In the second run.."
61	Line 3	Change "... water at 50°C ..." to "... water at 20°C..."
62	Line 4	Change "Davidson, B. D." to "Davidson, B. Z."
64	Eq. (2.6)	Change " $V_i$ " to " $V_j$ "
68	Eq. (2.21)	Change the term " $(k_{13} + k_{23})$ " to " $-(k_{13} + k_{23})$ ".
84	First paragraph	Change "The cross product.." to " "The element-by-element product..
91	Eq. (2.108)	Replace " $c_{ij}$ " with " $c_i$ "
91	Eq. (2.109)	Delete $\sum$ at the beginning of the equation
103	Eq. (2.134)	Change $L$ to $\bar{L}$
122	Line below Eq. (2.148)	Change " $(\mathbf{A} - \lambda \mathbf{x})$ " to " $(\mathbf{A} - \lambda \mathbf{I})$ "
122	Eq. (2.152)	Change " $-a_n$ " to " $-a_n \mathbf{I}$ "
129	Line 7	Change " $Q^{-1}$ " to " $Q_1^{-1}$ "
136	Figure P2.3	Change "F = 13 lb toluener/hr" to "F = 13 lb toluene/hr"
147	Eq. (3.14)	Change " $(h^3/3!)Dy(x)$ " to " $(h^3/3!)D^3y(x)$ "
156	Eq. (3.68)	Change " $\delta_{i+1}$ " to " $\delta y_{i+1}$ "
157	Eq. (3.70)	Change " $-y_{i-1/2}$ " to " $-10y_{i-1/2}$ "
162	Item 3	Change " $\lambda_2 = 4$ " to " $\lambda_2 = -4$ "
172	Last paragraph	Change "performs" to "perform"
173	Table E3.1	Delete duplicate point "12 70"
179	Eq. (3.133)	Change " $p_k(x)$ " to " $p_k(x_i)$ "
182	Eq. (3.145)	Change " $y'_{i-1}$ " to " $y'_{i+1}$ "
215	After line 20	Add: "options = optimset;"
215	Line 21	Replace "phi = fzero(phifile,1,[ ], [ ], x0)" with "phi = fzero(phifile, 1, options, x0);"
217	Line 9	Remove the command "break"
222	Line 16	Change " $(-dp-0*rhog*g)$ " to " $(-dp-rhog*g)$ "
222	Lines 4-5 in deriv.m	Replace with: % DERIV(Y) calculates the first-order derivative % of each column of matrix Y by central finite % differences,using unity as the independent % variable interval. If Y is a row vector, then Y

		% is converted to a column vector.
223	Line 26	Change "(err ~= 2   err ~= 4)" to "(err == 2   err == 4)"
227	Line 12	Change "... = 3.26%" to "... = 3.21%"
231	Figure 4.2	Change the labels on the horizontal axis from " x <sub>1</sub> x <sub>0</sub> " to " x <sub>0</sub> x <sub>1</sub> "
235	Eq. (4.83)	Change upper limit on the two integrals from " x <sub>2</sub> " to " x <sub>3</sub> "
243	Eq. (4.93)	Move this equation one line down (below the line "For converting to ....")
243	Eq. (4.92)	This equation is missing: (x - a)/(b - a) = (z - c)/(d - c) Add it in the place previously occupied by Eq. (4.93):
251	Middle of page	Delete " Initial value of "
269	Eqs. (a), (b), (d)	The independent variable is t in all three equations. Therefore all the derivatives must be with respect to t (not z or x).
271	Bottom line	Change " = dy <sub>3</sub> /dt " to " = dy <sub>3</sub> /dx "
279	Lines 5,6	Enter " method =1; " between lines 5 and 6
279	Line 12	Delete " method =1; " at line 12
283	Line 3 (bottom of page)	Change "The vector of dependent variable" to "The vector of independent variable"
285	Middle of page	Move "5.3b." from below Figure 5.3 to above Figure 5.3
287	Eq. (5.70)	Change "O(h <sup>2</sup> )" to "O(h <sup>3</sup> )"
294	Line 2	Move "where" to line below Eq. (5.93)
294	Eq. (5.96)	Last term is " 9f(x <sub>i-3</sub> , y <sub>i-3</sub> ) ] "
294	Eq. (5.97)	Last term is " f(x <sub>i-2</sub> , y <sub>i-2</sub> ) ] "
295	Line 3	Change "value" to "values"
301	Line 6	Change "F(X,P1,P2,...)" to "F(X,Y,P1,P2,...)"
301	Line 2 (bottom of page)	Change "F(X,P1,P2,...)" to "F(X,Y,P1,P2,...)"
302	Line 4 (bottom of page)	Change "F(X,P1,P2,...)" to "F(X,Y,P1,P2,...)"
304	Line 12 in Adams.m	Change "F(X,P1,P2,...)" to "F(X,Y,P1,P2,...)"
305	Line 13 in AdamsMoulton.m	Change "F(X,P1,P2,...)" to "F(X,Y,P1,P2,...)"
314	Line 1 (bottom of page)	Change "t <sub>1</sub> =4.36" to "t <sub>1</sub> =4.36e-2"
315	Eq. (2)	The term $\left(\frac{d\Phi}{d\eta}\right)$ in the denominator should be raised to the power of 2.
315	Eq. (3)	The term y <sub>1</sub> in the denominator should be raised to the power of 2.
317	Line 17 (bottom of page)	Change "Inside diameter" to "Inside radius"
317	Line 4	Change "/vmax" to "/vstar"

	(bottom of page)	
318	Line 13	Change " $\lambda^2 y(1)$ " to " $\lambda^2 y(1)^2$ "
320	Middle of page	Change "Inside diameter" to "Inside radius"
320	Bottom of page	Change "Volumetric flow rate = 2.91" to "Volumetric flow rate = 8.00"
320	Line 2	Change "2.91 L/s" to "8.00 L/s"
	(Discussion of Results)	
321	Figure E5.4b	Has changed because of the above changes to the program.
322	Eq. (5.108)	Move Eq. (5.108) up 2 lines (locate it just below Eq. (5.107))
328	Eq. (5.151a & b)	Change "j=0" to "i=0" under the summation signs
334	Line 4	Add: "options = optimset;"
	(bottom of page)	
334	Line 3	Replace " $\theta(k) = \text{fzero}(\text{fth}, 30, 1e-6, 0, y(:,k), w)$ "
	(bottom of page)	with " $\theta(k) = \text{fzero}(\text{fth}, 30, \text{options}, y(:,k), w)$ ";"
335	Line 22	Add: "options = optimset;"
334-335		Example5_5.m and Ex5_5_func.m have changed. Please download the updated software and re-install.
335	Line 23	Replace " $\theta = \text{fzero}(\text{fth}, 30, 1e-6, 0, y, w)$ "
		with " $\theta = \text{fzero}(\text{fth}, 30, \text{options}, y, w)$ ";"
345	Middle of page (above Eq. (5.189))	Change "implicit Euler" to "explicit Euler"
350	Eq. (5.223)	Change " $y_{n+2}$ " to " $y_{n+1}$ " on the left-hand-side
356	Line 1	Delete ".1"
	(bottom of page)	
357	Problem 5.7	Change "Lokta" to "Lotka"
	Line 2	
372	Line 1	Change "independent" to "dependent"
383	Part (b)	Change the partial derivative in the 4th boundary condition to be with respect to y (not x)
385-393		Example6_1.m and elliptic.m have been changed. Please go to <a href="http://sol.rutgers.edu/~constant">http://sol.rutgers.edu/~constant</a> to obtain software updates.
396	Footnote	Change number of footnote from 2 to 3
407	Line 10	Change "DY =" to "DT ="
413-416		Example6_3.m has been changed. Please go to <a href="http://sol.rutgers.edu/~constant">http://sol.rutgers.edu/~constant</a> to obtain software updates.
416	Line 15	Change " by Crank-Nicolson implicit "
	from bottom	to " by explicit (6.66) "
432	Eq. (6.126)	Change " $R_{Em,n+1} + T_{Em,n+1}$ " to " $R_{Em,n+1} - T_{Em,n+1}$ "
435	Footnote	Change number of footnote from 3 to 4
436	2nd paragraph	Change "Eq. (6.1470)" to "Eq. (6.147)" from bottom
462	Eq. (7.40) & Eq. (7.41)	The Greek symbol "sigma" in the denominator of both equations must be outside the square root sign

464 Figure 7.5(a) Change "Area = alpha" to "Area = 1 - alpha"  
469 Line 1 Change "in independent" to "is independent"

477	Eq. (7.114)	Move equation down one line (below the first line of item 2.)
504	Line 2 from bottom	Change "foreach" to "for each"
525	Table P7.2 Experiment No. 34, Time = 7	Change "24.50" to "45.50"
529	Line 2	Change "dat" to "data"
508	Line 10	Change "independent " to "dependent " (Note: The MATLAB script, Example7_1.m, should also be modified. You may make the change yourself or download the updated software from <a href="http://sol.rutgers.edu/~constant">http://sol.rutgers.edu/~constant</a> and re-install.