Chapra
Applied Numerical Methods with MATLAB
for Engineers and Scientists, 3rd Ed.
Errata: November 3, 2011

Errata for first printing:

p. 46; Prob. 2.15: First line after equation should read:

Use MATLAB to create a plot of the **cosine** (solid line) along...

p. 70; First line of code should read:

```
% create animation with getframe and movie
```

p. 85; Prob. 3.12: Second line within loop should read

```
y(i) = 12 + 6 *cos(2*pi*t(i)/ ...
```

p. 86; Prob. 3.14: Second part of piecewise function should be

$624 - \mathbf{3}t \quad 8 \le t \le 16$

p. 161; The first two MATLAB commands used to set up the function and its derivative should have "m" enclosed in parentheses as:

```
>> y = @(m) sqrt(9.81*m/0.25)*tanh(sqrt(9.81*0.25/m)*4)-36;
>> dy = @(m) 1/2*sqrt(9.81/(m*0.25))*tanh((9.81*0.25/m) ...
            ^(1/2)*4)-9.81/(2*m)*sech(sqrt(9.81*0.25/m)*4)^2;
```

p. 178; Prob. 6.4d: Change "five iterations" to "**three** iterations."

p. 191; The third MATLAB commands used to invoke the `goldmin` function and should be changed to

```
>> [xmin,fmin,ea]=goldmin(z,0,8)
```

p. 203; Fig. P7.33: Labels for **Lift** and **Friction** should be switched.

p. 300; First line of code at top of page should be changed to

```
>> format short e, x0 =[3; 3];
```

p. 318; Prob. 13.11: Solution equation should add subscript lower case italic *i* to the *c* as shown below:

$$y_i = c_i e^{\lambda t}$$

p. 349; Change MATLAB commands at top of page to

```
>> x = [10 20 30 40 50 60 70 80];
>> y = [25 70 380 550 610 1220 830 1450];
>> [a,r2] = linregr(x,y)

a =
19.4702 -234.2857

r2 =
0.8805
```

Change MATLAB commands at bottom of page to

```
>> [a,r2] = linregr(log10(x),log10(y))

a =
1.9842 -0.5620

r2 =
0.9481
```

p. 357; Prob. 4.16: Add the following:

Test it for the data from Examples 14.2 and 14.3.

p. 359; Prob. 14.30: Change the last line in the problem statement to:

Use your result to determine the shear stress **($\mu\, du/dy$) at the surface where $\mu = 1.8\times10^{-5}$ N·s/m^2.**

p. 376; Prob. 15.10: After equation, should read:

Use general linear least-squares to estimate the initial concentration of each organism...

p. 377; Prob. 15.18: First line should read:

15.18 Use **general linear least squares** to find...

p. 379; Prob. 15.27: First line should read:

15.27 Use **nonlinear regression and** the following set of pressure-volume data to...

p. 402; First line in last paragraph of Case Study, change “Hz” to **cycles/yr**.

p. 427; Prob. 17.15: Change last line to:

Determine v at $T =$ **400 °C**.

p. 542; Prob. 21.24: Change first temperature in Table from 19 to **20.2.**

p. 544; Prob. 21.38: Change $\partial f/(\partial x \partial y)$ to $\partial^2 f/(\partial x \partial y)$.

p. 578 ; Change first Lorenz equation to :

$$\frac{dx}{dt} = -\sigma x + \sigma y$$

p. 582; Change first MATLAB command to:

```
>> plot3(y(:,1),y(:,2),y(:,3))
```

p. 586; Prob. 22.18:

Second equation should be

$$\frac{dCB_1}{dt} = -\frac{1}{\tau} CB_1 + kCA_1$$

Fourth equation should be

$$\frac{dCB_2}{dt} = \frac{1}{\tau}\left(CB_1 - CB_2\right) + kCA_2$$

p. 587; Prob. 22.21: In Table, units of area should be $\mathbf{10^4\ m^2}$.

p. 615; Prob. 23.21. Change problem statement to:

23.21 Perform the same computations as in Prob. 23.20 but **based on the first floor of the** structure in Prob. 22.22.

Errata for second printing:

p. 17; Eq. 1.18: First C_d should be changed to c_d:

$$c_d = \frac{1}{2}\rho A C_d$$

p. 179; Prob. 6.16: Below equation, L = 5 m^3 should be changed to L = 5 m.

p. 180; Prob. 6.20: Units of k_2 should be g/(s^2 m$^{0.5}$).

p. 379: Prob. 15.27: The beginning of the problem should read**:**

15.27 **Employ nonlinear regression and** the following set of pressure-volume data to...

p. 379: Prob. 15.28: The problem statement below the table should read**:**

15.27 **Use nonlinear regression to estimate** the initial population of each organism (*A*, *B*, ...

p. 397; Last line: Change 31.25 to 18.75

```
y=5+cos(2*pi*12.5*tspan)+sin(2*pi*18.75*tspan);
```