

## Errata to S. J. Colley, *Vector Calculus*, 2nd ed., first printing

May 20, 2005

- p. 14, line –15.                    Replace  $y = -2 - 4$  in the first display in Example 5 with  $y = -2t - 4$ .
- p. 41, Exercise 13.                 Replace  $\mathbf{0}$  with 0.
- p. 72, line –7.                    Replace “Example 2” with “Example 5”.
- p. 75, lines –3, –2.               Replace  $\mathbf{e}_\varphi$  in the second equation of display (9) with 
$$\mathbf{e}_\varphi = \frac{xz \mathbf{i} + yz \mathbf{j} - (x^2 + y^2) \mathbf{k}}{\sqrt{x^2 + y^2} \sqrt{x^2 + y^2 + z^2}} = \cos \varphi \cos \theta \mathbf{i} + \cos \varphi \sin \theta \mathbf{j} - \sin \varphi \mathbf{k}.$$
- p. 105, line –7.                    Replace “are inside a ball of radius  $\delta$ ” with “are inside an open ball of radius  $\delta$ ”.
- p. 116, Exercise 42 (c).            Replace “ $\|(x, y)\| < \delta$ ” with “ $0 < \|(x, y)\| < \delta$ ”.
- p. 129, line –8.                    Replace  $\sum_{i=1}^n \|\mathbf{b}_i\|^2$  with  $\sum_{i=1}^m \|\mathbf{b}_i\|^2$  and  $\sum_{i=1}^n \sum_{j=1}^n b_{ij}^2$  with  $\sum_{i=1}^m \sum_{j=1}^n b_{ij}^2$ .
- p. 140, line 13.                    Replace “found from from” with “found from”.
- p. 152, line 2 of Theorem 5.3.    Replace  $\mathbf{x}: \mathbf{T} \rightarrow \mathbf{R}^m$  with  $\mathbf{x}: T \rightarrow \mathbf{R}^m$ .
- p. 169, line –2.                    Replace  $-x_2$  in upper left entry of the matrix with  $x_2$ .
- p. 169, last line.                  Replace  $-1$  in upper left entry of the matrix with 1. Then replace  $-2$  with 4 at the end of the line.
- p. 173, Exercise 14.                Replace “a ellipsoidal dome” with “an ellipsoidal dome”.
- p. 187, line –7.                    Replace  $v(t) = -gt \mathbf{j} + \mathbf{v}_0$  with  $\mathbf{v}(t) = -gt \mathbf{j} + \mathbf{v}_0$ .
- p. 243, line 9.                    In equation (4), replace  $p_1(x)$  with  $p_1(\mathbf{x})$ .
- p. 244, caption for Figure 4.7, line 4.    Replace  $\mathbf{R}^n$  with  $\mathbf{R}^2$ .
- p. 251, line 4 of Lagrange’s form of the remainder.    Insert “in the domain of  $f$ ” after “line”.
- p. 257, line –2.                    Replace “local maximum (respectively, a local minimum)” with “local minimum (respectively, a local maximum)”.
- p. 267, before Exercise 24.        Replace “use a computer to assist you indentifying all the critical points the given function  $f$ ” with “use a computer to assist you in identifying all the critical points of the given function  $f$ ”.

- p. 268, before Exercise 44 (a). Replace “continuous function” with “differentiable function”.
- p. 273, line 2 of Theorem 3.2. Replace “ $\mathbf{x} \in \mathbf{R}^n$ ” with “ $\mathbf{x} \in X$ ”.
- p. 280, Exercise 17. Replace “Find three numbers” with “Find three positive numbers”.
- p. 283, line –7. Replace “Given  $n$  data points  $(x_1, y_1), (x_2, y_2), \dots, (x_n, y_n)$ , the function...” with “Given  $n$  data points  $(x_1, y_1), (x_2, y_2), \dots, (x_n, y_n)$  with not all of  $x_1, \dots, x_n$  equal, the function...”.
- p. 286, line –18. Replace “ $\mathbf{F}(\mathbf{x}''(t)) \cdot \mathbf{x}'(t)$ ” with “ $\mathbf{F}(\mathbf{x}(t)) \cdot \mathbf{x}'(t)$ ”.
- p. 287, item 2 in Theorem 4.4. Replace “If  $\mathbf{x}_0$  is a strict local minimum” with “If  $\mathbf{x}_0$  gives a strict local minimum”.
- p. 296, Exercise 10. The exercise should read: “Find the area  $A$  of the largest rectangle so that two squares of total area 1 can be placed snugly inside the rectangle without overlapping, except along their edges. (See Figure 4.41.)”
- p. 312, line –3. Replace “value” with “volume”.
- p. 338, line 2. Replace  $\left| \det \begin{bmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ a_1 & a_2 & 0 \\ b_1 & b_2 & 0 \end{bmatrix} \right|$  with  $\left\| \det \begin{bmatrix} \mathbf{i} & \mathbf{j} & \mathbf{k} \\ a_1 & a_2 & 0 \\ b_1 & b_2 & 0 \end{bmatrix} \right\|$ .
- p. 340, line –13. Replace “restricting  $u$  to nonnegative values” with “restricting  $x$  to nonnegative values”.
- p. 345, line –3. Insert “of Chapter 2” after “see Definition 3.8”. Also replace “linear function” with “linear approximation”.
- p. 346, caption for Figure 5.87. Replace “linear function” with “linear approximation”.
- p. 380, line 16. Replace “velocity of the path” with “position along the path”.
- p. 385, line 8. Replace  $u(t)$  with  $u'(t)$  twice.
- p. 404, caption to Figure 6.30. Replace “encloses points that lie in  $\mathbf{R}^2$ ” with “encloses points that lie in  $R_2$ ”.
- p. 407, line –12. Replace “may be any function  $y$  and  $z$ ” with “may be any function of  $y$  and  $z$ ”.
- p. 451, line 7. Replace  $D = \{(x, y) \mid x^2 + y^2 \leq 3\}$  with  $D = \{(x, y) \mid x^2 + y^2 \leq 9\}$ .
- p. 508, line 6. Replace “ $\text{Span}\{\mathbf{T}_{u_1}, \mathbf{T}_{u_2}, \mathbf{T}_{u_2}\}$ ” with “ $\text{Span}\{\mathbf{T}_{u_1}, \mathbf{T}_{u_2}, \mathbf{T}_{u_3}\}$ ”.
- p. 526, answer to §1.5, Exercise 21. Replace “ $\sqrt{31/34}$ ” with “ $31/\sqrt{34}$ ”.
- p. 529, answer to §2.1, Exercise 7. Replace “range =  $\{(x, y, z) \mid y \neq 0, z \geq 0\}$ ” with “range =  $\{(x, y, z) \mid y \neq 0, y^2 z = (xy - y - 1)^2 + (y + 1)^2\}$ ”.

p. 533, answer to §2.3, Exercise 9.

Replace  $F_y = y\sqrt{x^2 + y^2 + z^2}$  with  $F_y = y/\sqrt{x^2 + y^2 + z^2}$ .

p. 533, answer to §2.3, Exercise 13.

$F_x$  should be  $F_x = \frac{x^4 - 2xyz + 3x^2z^2 + 3x^2}{(x^2 + z^2 + 1)^2}$  and  $F_y$  should be  $F_y = \frac{z}{x^2 + z^2 + 1}$ .

p. 536, answer to §2.5, Exercise 21(a).

Insert  $\frac{\partial}{\partial \theta}$  immediately after  $-\frac{2 \sin \theta \cos \theta}{r}$  in the expression for  $\frac{\partial^2}{\partial y^2}$ .

p. 538, answer to Exercise 13 of the Miscellaneous Exercises.

There are no multiple parts for this exercise, so delete "(a)".