Additions to Second Edition Errata List

April 26, 2002

We thank Len Smiley for pointing out these errors.

Page 85 Figure 1.4.12: The arc indicating the angle θ is misplaced. It should go from **h** to **a**, as shown below.

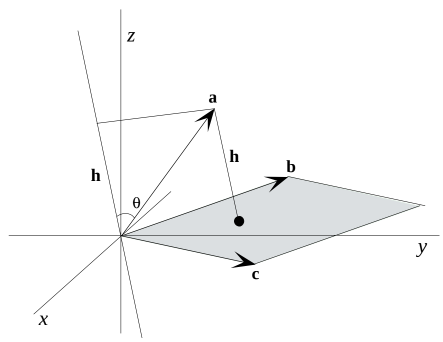

FIGURE 1.4.12.

Page 105 The proof of Proposition 1.5.34 should read

Set $\vec{\mathbf{a}}_i = \begin{bmatrix} a_{1,i} \\ \vdots \\ a_{n,i} \end{bmatrix}$. Then $|a_{k,i}| \le |\vec{\mathbf{a}}_i|$, so $\sum_{i=1}^{\infty} |a_{k,i}|$ converges, so by Theorem 0.5.8, $\sum_{i=1}^{\infty} a_{k,i}$ converges. Proposition 1.5.34 then follows from Proposition 1.5.13.

Page 171 Margin note next to Equation 2.1.4: $[A\vec{\mathbf{b}}]$ should be $[A, \vec{\mathbf{b}}]$.

Page 179 In the second line of Theorem 2.2.4, the $\mathbf{x}$ should be $\vec{\mathbf{x}}$: $A\vec{\mathbf{x}} = \vec{\mathbf{b}}$, not $A\mathbf{x} = \vec{\mathbf{b}}$.

Page 181 In the proof of Theorem 2.2.4, the $\mathbf{x}$ should be $\vec{\mathbf{x}}$: $A\vec{\mathbf{x}} = \vec{\mathbf{b}}$, not $A\mathbf{x} = \vec{\mathbf{b}}$.

Page 337 The first margin note suggests, incorrectly, that all odd functions and all even functions have Taylor polynomials. It should read

"The Taylor function of an odd function can have only odd terms, and the Taylor function of an even function can have only even terms."

Page 343 In the displayed equation in the margin, $Q(t)$ should be $Q(f)$:

$$Q(f) = \int_0^1 (f(x))^2 \, dx.$$

The bottom margin note is incorrect; the theorem described is due to Fermat but it is not Fermat's little theorem.

Page 345 Equation 3.5.6 should have a "plus or minus":

$$\sqrt{a}x + \frac{b}{2\sqrt{a}} = \pm\sqrt{\frac{b^2 - 4ac}{4a}}.$$

Page 372 First paragraph: "the principal axis theorem," not "the principle axis theorem."

Page 418 Second line after Equation 4.2.9: "the needle intersects," not "the needle intersect."

Page 607 There were two mistakes in Example 6.5.6 The tangent vector field is $\begin{bmatrix} -\sin t \\ \cos t \\ 1 \end{bmatrix}$, not $\begin{bmatrix} -\sin t \\ \cos t \\ 0 \end{bmatrix}$, and $\vec{\gamma}'(t)$ is $\begin{bmatrix} -\sin t \\ \cos t \\ 1 \end{bmatrix}$. Thus the first half of the example should read:

What is the work of the vector field $\vec{F}\begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{bmatrix} y \\ -x \\ 0 \end{bmatrix}$ over the helix oriented by the tangent vector field $\begin{bmatrix} -\sin t \\ \cos t \\ 1 \end{bmatrix}$, and parametrized by $\gamma(t) = \begin{pmatrix} \cos t \\ \sin t \\ t \end{pmatrix}$, for $0 < t < 4\pi$?

The parametrization preserves orientation, since

$$\omega\big(\vec{\gamma}'(t)\big) = \underbrace{\begin{bmatrix} -\sin t \\ \cos t \\ 1 \end{bmatrix}}_{\vec{\mathbf{t}}(t)} \cdot \underbrace{\begin{bmatrix} -\sin t \\ \cos t \\ 1 \end{bmatrix}}_{\vec{\gamma}'(t)} = 2 > 0. \qquad 6.5.13$$

Page 639 The geometric interpretation of the curl that is given applies equally to curl F and $-$ curl F. It should read:

The curl probe. Consider an axis, free to rotate in a bearing that you hold, and having paddles attached, as in Figure 6.8.2. If you stand this paddle wheel on a table, paddle end down, next to a clock lying flat on the table, then the wheel turns clockwise if it follows the motion of the hands of the clock. We will orient the axis of the probe up, away from the paddle. We will assume that the bearing is packed with a viscous fluid, so that its angular speed (not acceleration) is proportional to the torque exerted by the paddles. If a fluid is in constant motion with velocity vector field $\vec{F}$, then the curl of the velocity vector field at $\mathbf{x}$, $(\vec{\nabla} \times \vec{F})(\mathbf{x})$, is measured as follows:

> *Insert the paddle of the curl probe into the vector field at a point* $\mathbf{x}$ *and adjust it so that it is spinning counterclockwise the fastest. Then the curl of the vector field at* $\mathbf{x}$ *points in the direction of axis of the probe. The speed at which the probe spins is proportional to the magnitude of the curl.*

Page 670 In the first sentence after Definition A1.2, $\text{Assoc}(x, y) = (x + y) + z$ should be $\text{Assoc}(x, y, z) = (x + y) + z$.

Page 671 Exercise A1.2 left out "$\text{Assoc}(x, y, z) =$." The first sentence of the exercise should read

"Show that the functions $A(x, y) = x + y$, $M(x, y) = xy$, $S(x, y) = x - y$, and $\text{Assoc}(x, y, z) = (x + y) + z$ are $\mathbb{D}$-continuous, and that $1/x$ is not."