Professor Yotov has pointed out to me that Theorem 3.4.8 is false. I can only plead a temporary insanity. The appropriate corrections (I hope) follow starting on the next page. (Thanks to Greg Price and Daniel Worrall for corrections to the correction.)

Various other corrections are given after that.

Theorem 3.4.8 is false as may be seen by looking at the 2×2 matrix

$$A = \begin{pmatrix} 1 & 1 \\ 0 & 0 \end{pmatrix}$$

We therefore need to rewrite the rest of Section 3.4 as follows:-

Theorem 1.3.6 may be interpreted in terms of elementary matrices.

Lemma 3.4.9 *Given any $n \times n$ matrix A, we can find elementary matrices $F_1, F_2, \dots, F_p$ and $G_1, G_2, \dots, G_q$ together with a diagonal matrix D such that*

$$F_pF_{p-1}\dots F_1AG_1G_2\dots G_q = D.$$

A simple modification now gives the central theorem of this section.

Theorem 3.4.10 *Given any $n \times n$ matrix A, we can find elementary matrices $L_1, L_2, \dots, L_p$ and $M_1, M_2, \dots, M_q$ together with a diagonal matrix D such that*

$$A = L_1L_2\dots L_pDM_1M_2\dots M_q.$$

Proof. By Lemma 3.4.9, we can find elementary matrices F_r and G_s together with a diagonal matrix D such that

$$F_pF_{p-1}\dots F_1AG_1G_2\dots G_q = D.$$

Since elementary matrices are invertible and their inverses are elementary (see Lemma 3.4.6), we can take $L_r = F_r^{-1}$, $M_s = G_{q+1-s}^{-1}$ and obtain

$$\begin{aligned} &L_1L_2\dots L_pDM_1,\ M_2,\ \dots,\ M_q \\ &\qquad = F_1^{-1}F_2^{-1}\dots F_p^{-1}F_p\dots F_2F_1AG_1G_2\dots G_qG_q^{-1}G_{q-1}^{-1}\dots G_1^{-1} = A \end{aligned}$$

as required. □

There is an obvious connection with the problem of deciding when there is an inverse matrix.

Lemma 3.4.11 *Let $D = (d_{ij})$ be an $n \times n$ diagonal matrix.*

(i) If all the diagonal entries d_{ii} of D are non-zero, D is invertible and the inverse $D^{-1} = E$ where $E = (e_{ij})$ is given by $e_{ii} = d_{ii}^{-1}$ and $e_{ij} = 0$ for $i \neq j$.

(ii) If some of the diagonal entries of D are zero, then D is not invertible.

Proof. (i) If all the diagonal entries of D are non-zero, then, taking E as proposed, we have

$$DE = ED = I$$

by direct calculation.

(ii) If $d_{rr} = 0$ for some r, then, if $C = (c_{ij})$ is any $n \times n$ matrix, we have

$$\sum_{j=1}^{n} d_{rj}c_{jk} = 0$$

so DC has all entries in the rth row equal to zero and, in particular $DC \neq I$. □

Lemma 3.4.12 *Let L_1, L_2, ..., L_p, M_1, M_2, ..., M_q be elementary $n \times n$ matrices and let D be an $n \times n$ diagonal matrix. Suppose that*

$$A = L_1L_2 \dots L_pDM_1M_2 \dots M_q.$$

(i) If all the diagonal entries d_{ii} of D are non-zero, then A is invertible.

(ii) If some of the diagonal entries of D are zero, then A is not invertible.

Proof. Since elementary matrices are invertible (Lemma 3.4.6 (v) and (vi)) and the product of invertible matrices is invertible (Lemma 3.4.3), we have $A = LDM$ where L and M are invertible.

If all the diagonal entries d_{ii} of D are non-zero, then D is invertible and so, by Lemma 3.4.3, $A = LDM$ is invertible.

If A is invertible, then $D = L^{-1}AM^{-1}$ is the product of inertible matrices, so invertible. Thus none of the diagonal entries of D can be zero. □

As a corollary we obtain a result promised at the beginning of this section.

Lemma 3.4.13 *If A and B are $n \times n$ matrices such that $AB = I$, then A and B are invertible with $A^{-1} = B$ and $B^{-1} = A$.*

Proof. Combine the results of Theorem 3.4.10 with those of Lemma 3.4.12. □

Later we shall see how a more abstract treatment gives a simpler and more transparent proof of this fact.

We are now in a position to provide the complementary result to Lemma 3.4.4.

Lemma 3.4.14 *If A is an $n \times n$ square matrix such that the system of equations*

$$\sum_{j=1}^{n} a_{ij}x_j = y_i \qquad [1 \leq i \leq n]$$

has a unique solution for each choice of y_i, then A has an inverse.

Proof. If we fix k, then our hypothesis tells us that the system of equations

$$\sum_{j=1}^{n} a_{ij}x_j = \delta_{ik} \qquad [1 \le i \le n]$$

has solution. Thus, for each k with $1 \le k \le n$, we can find x_{jk} with $1 \le j \le n$ such that

$$\sum_{j=1}^{n} a_{ij}x_{jk} = \delta_{ik} \qquad [1 \le i \le n].$$

If we write $X = (x_{jk})$ we obtain $AX = I$ so A is invertible. $\square$

FURTHER CORRECTIONS (Almost all due to Daniel Worral to whom I and any prospective reader owe a debt of gratitude.)

Correction from Greg Price Last line of Exercise 11.5.25 should read:-
Show that $\hat{T} \in s'$ and $\hat{T} \neq 0$, but $\hat{T}\mathbf{b} = 0$ for all $\mathbf{b} \in c_{00}$. Deduce that $\Theta_{c_{00}}$ is not surjective.

Correction from Dr Andrej Radovic. Displayed formula in Exercise 1.2.3 (i) should be:-

$$a_i x_i = b_i$$

Page 9 Replace the paragraph after Exercise 1.2.2. by
If we repeat Exercise 1.2.2 several times, one of two things will eventually occur. If $m > n$, we will arrive at a system of $m - n + 1$ equations in one unknown. If $n \geq m$, we will arrive at of 1 equation in $n - m + 1$ unknowns.

Page 9 Theorem 1.2.4 Replace '$m > n$' by '$n > m$'

Page 12 Very end of proof of Lemma 1.3.3 replace $q \leq i$' by '$q \neq i$'

Page 14 Theorem 1.3.8. Delete second sentence reading ' Then there exists an r with $0 \leq r \leq p$ with the following property.'

Page 15 Exercise 1.3.9 (ii) Replace 'Theorem 1.3.8' by 'Theorem 1.3.7'.

Page 17 Definition 1.4.6 'A non-empty subset of $\mathbb{R}^n$' should read 'A non-empty subset E of $\mathbb{R}^n$'

Page 19 Exercise 1.5.6 Last line remove 'in $\mathbb{R}$'

Page 21 Lemma 2.1.2 end of statement replace '$c = w_2v_1 - v_2w_2$' by '$c = w_2v_1 - v_2w_1$'

Page 21 Statement of Example 2.1.5, third line, replace 'intersect a some point' by 'intersect at some point'

Page 23 Example 2.1.8 proof:
Third line of first display. replace $\mathbf{v} = \gamma\mathbf{c} + (1-\alpha)\mathbf{c}'$ by $\mathbf{v} = \gamma\mathbf{c} + (1-\gamma)\mathbf{c}'$

Third display. Replace $\alpha(\mathbf{a} - \mathbf{b}) = (1-\alpha)(\mathbf{a}' - \mathbf{b}')$ by $\alpha(\mathbf{a} - \mathbf{b}) = (1-\alpha)(\mathbf{b}' - \mathbf{a}')$

Second line fourth display. Replace $\mathbf{c}'' = \lambda'\mathbf{a} + (1-\lambda')\mathbf{b}$ by $\mathbf{c}'' = \lambda'\mathbf{a}' + (1-\lambda')\mathbf{b}'$

Page 24 third line. Replace 'Exercise 2.1.4 (ii)' by 'Exercise 2.1.4 (iii)'

Page 24 Exercise 2.1.9, first displayed equation should read $\lambda\mathbf{a} + (1-\lambda)\mathbf{b} = \lambda'\mathbf{a}' + (1-\lambda')\mathbf{b}'$

Page 47 In the proofs of Lemma 3.3.8 (i) replace c_{kj} by c_{kl} (seven occurrences)

Page 49 Last sentence of paragraph after Exercise 3.3.12. to read 'As usual, we write $-A = (-1)A$ and $A - B = A + (-B)$.'

Page 51 Lemma 3.4.6
(iii) 'the ith row is moved to the $\sigma(i)$th row' should be 'the $\sigma(i)$th row is moved to the ith row'
(iv) 'the $\sigma(j)$th column is moved to the jth column' should be 'the jth column is moved to the $\sigma(j)$th column'

Page 56 Exercise 3.5.1
Add as first sentence:-
'For the purposes of this exercise only let us extend our notion of an elementary matrix to include diagonal matrices with at least $n-1$ diagonal elements having value 1 and all diagonal elements non-zero.'

Pages 61 and 62. Interchange diagrams for Figures 4.2 and 4.3.

Page 62 first displayed formula after Exercise 4.1.1.
Replace '$\mathcal{D}(\mathbf{a}+\mathbf{b}, \mathbf{b}) + \mathcal{D}(\mathbf{a}+\mathbf{b}, \mathbf{a})$' by '$\mathcal{D}(\mathbf{a}, \mathbf{a}+\mathbf{b}) + \mathcal{D}(\mathbf{b}, \mathbf{a}+\mathbf{a})$'

Page 65 First paragraph. Last displayed formula replace $\operatorname{area}\Gamma' = \Gamma \times \mathcal{D}A$ with $\operatorname{area}\Gamma' = \operatorname{area}\Gamma \times \mathcal{D}A$
In the next sentence delete 'under the transformation $\mathbf{x} \mapsto A\mathbf{x}$'

Page 65 Paragraph before Exercise 4.2.2. Replace by:-

By Theorem 3.4.10, we know that, given any 2×2 matrix A, we can find elementary matrices L_1, L_2, ..., L_p and M_1, M_2, ..., M_q together with a diagonal matrix D such that

$$A = L_1 L_2 \dots L_p D M_1 M_2 \dots M_q.$$

We now know that

$$\mathcal{D}A = \mathcal{D}L_1 \times \mathcal{D}L_2 \times \cdots \mathcal{D}L_p \times \mathcal{D}D \times \mathcal{D}M_1 \times \mathcal{D}M_2 \times \cdots \mathcal{D}M_p.$$

In the last but one exercise of this section, you are asked to calculate $\mathcal{D}E$ for each of the matrices E which appear in this formula.

Page 69 Delete everything from the end of the proof of Lemma4.3.5 to the end of the page and replace by:-

We can now exploit Theorem 3.4.10 which tells us that, given any 3×3 matrix A, we can find elementary matrices L_1, L_2, ..., L_p and M_1, M_2, ..., M_q together with a diagonal matrix D such that

$$A = L_1 L_2 \dots L_p D M_1 M_2 \dots M_q.$$

Theorem 4.3.6 *If A and B are 3×3 matrices then* $\det BA = \det B \det A$.

Proof. We know that we can write A in the form given in the paragraph above so

$$\begin{aligned}
\det BA &= \det(BL_1 L_2 \dots L_p D M_1 M_2 \dots M_q)\\
&= \det\big(BL_1 L_2 \dots L_p D M_1 M_2 \dots M_{q-1}) M_q\big)\\
&= \det\big(BL_1 L_2 \dots L_p D M_1 M_2 \dots M_{q-1}\big) \det M_q\\
&\ \vdots\\
&= \det(BL_1 L_2 \dots L_p D) \det M_1 \det M_2 \dots \det M_q\\
&= \det\big((BL_1 L_2 \dots L_p) D\big) \det M_1 \det M_2 \dots \det M_q\\
&= \det(BL_1 L_2 \dots L_p) \det D \det M_1 \det M_2 \dots \det M_q\\
&\ \vdots\\
&= \det B \det L_1 \det L_2 \dots \det L_p \det D \det M_1 \det M_2 \dots \det M_q
\end{aligned}$$

Looking at the special case $B = I$, we see that

$$\det A = \det L_1 \det L_2 \dots \det L_p \det D \det M_1 \det M_2 \dots \det M_q,$$

and so $\det BA = \det B \det A$. □

Theorem 4.3.7 *If A is a 3×3 matrix, then A is invertible if and only if* $\det A \neq 0$.
Proof Write A in the form

$$A = L_1 L_2 \dots L_p D M_1 M_2 \dots M_q$$

with $L_1,\ L_2,\ \dots,\ L_p,\ M_1,\ M_2,\ \dots M_q$ elementary and D diagonal. By Lemma 4.3.5, we know that, if E is an elementary matrix, then $|\det E| = 1$. Thus

$$|\det A| = |\det L_1||\det L_2| \dots |\det L_p||\det D||\det M_1||\det M_2| \dots |\det M_q| = |\det D|.$$

Page 70 Replace the proof of Lemma 4.3.11 by:-

Proof. Parts (i) to (iv) are immediate. Since we can find elementary matrices $L_1,\ L_2,\ \dots,\ L_p$ and $M_1,\ M_2,\ \dots,\ M_q$ together with a diagonal matrix D such that

$$A = L_1 L_2 \dots L_p D M_1 M_2 \dots M_q,$$

part (i) tells us that

$$\begin{aligned}\det A^T &= \det(M_q^T M_{q-1}^T \dots M_1^T D^T L_p^T L_{p-1}^T \dots L_1^T)\\ &= \det M_q^T \det M_{q-1}^T \dots \det M_1^T \det D^T \det L_p^T \det L_{p-1}^T \dots \det L_1^T\\ &= \det M_q \det M_{q-1} \dots \det M_1 \det D \det L_p \det L_{p-1} \dots \det L_1 = \det A\end{aligned}$$

as required. □

Page 70, last sentence of Exercise 4.3.10. Replace
'(Note that you cannot use the summation convention here.)' by
'(Since i, j and k have different ranges, the summation convention used in this book can not be used here without modification.)'

Page 73 Lemma 4.4.5 (iii) first equation replace

$$\prod_{3 \le r < s \le n} \big(\rho(s) - \rho(r)\big) = \prod_{3 \le r < s \le n} (r - s),$$

by

$$\prod_{1 \le r < s \le n} |s - r| = \prod_{1 \le r < s \le n} (s - r) > 0$$

Page 78 First part of bottom display. Replace '$\mathcal{D}(A)$' by '$\det A$'

Page 79 Exercise 4.5.10 (i) first line. Replace Exercise 4.5.7 by Exercise 4.5.8.

Page 79 Exercise 4.5.10 (iv) final formula replace
$\sum_{j=1}^{n} a_{ij}A_{kj} = \delta_{kj} \det A$ by $\sum_{j=1}^{n} a_{ij}A_{kj} = \delta_{ik} \det A$

Page 80 Exercise 4.5.14 line between the two displayed equations.
Replace 'and $\mathbf{x}$ is the solution of show that'
by 'and $\mathbf{x}$ is the solution of $A\mathbf{x} = \mathbf{b}$, show that'

Page 90 Example 5.2.9 (iv) last line
Replace 'with jth term $a_j + b_j$ is a vector space.' by
'with jth term λa_j.'

Page 95 Lemma 5.4.2 Proof first line
Replace 'We first prove the if part.' by 'We first prove the only if part.'

Page 95 First complete paragraph, first line
Replace 'The only if part is even simpler.' by 'The if part is even simpler.'

Page 98 Sentence before Lemma 5.4.6. add words to read:-
We use a kind of 'etherialised Gaussian elimination' called the Steinitz replacement lemma (or Steinitz exchange lemma).

Page 99 and 100. In the proof of Lemma 5.4.6 replace $\sum_{j=r+1}^{n}$ by $\sum_{j=r+1}^{m}$ twice and replace $\sum_{j=r+2}^{n}$ by $\sum_{j=r+2}^{m}$ twice.

Page 104 First paragraph of proof of Theorem 5.5.4. last sentence. Replace 'Theorem 5.4.7 (iv)' by 'Theorem 5.4.7 (v)'

Page 119 The first two displayed equations after Exercise 6.1.3 are incorrect
Replace $(A + B)C = AB + AC$ by $(A + B)C = AC + BC$
Replace $(\alpha + \beta)\gamma = \alpha\gamma + \beta\gamma$

Page 120 Last displayed formula of the proof of Theorem 6.1.4. Replace $B = Q(AP) = QAP$ by $B = (QA)P = QAP$.

The proof of Theorem 6.2.2 is correct but perhaps a little too short. Replace by

Proof. Observe that (using Exercises 5.3.11 and 5.5.5

$$\begin{aligned}
&\lambda \text{ is an eigenvalue of } \alpha\\
&\Leftrightarrow (\lambda\iota - \alpha)\mathbf{u} = \mathbf{0} \text{ has a non-trivial solution}\\
&\Leftrightarrow (\lambda\iota - \alpha) \text{ is not injective}\\
&\Leftrightarrow (\lambda\iota - \alpha) \text{ is not invertible}\\
&\Leftrightarrow \det(\lambda\iota - \alpha) = 0
\end{aligned}$$

as stated. □

Page 126 Exercise 6.3.2 (iii) end of first paragraph replace $x_3 = 0$ by $x_1 = 0$.

Page 128 last paragraph but one, last sentence replace '$\mathbf{e}_2$ and $\mathbf{e}_2$' by '$\mathbf{e}_1$ and $\mathbf{e}_2$'

Page 132 Exercise 6.4.8, last displayed formula. Replace $\lambda^2 + b\lambda + a$ by $\lambda^2 + a\lambda + b$

Page 134 second line. Insert comma after 'Often'

Page 136 Statement of Lemma 6.6.2 replace PAP^{-1} by $P^{-1}AP$

Page 136 proof of Lemma 6.6.2 replace the displayed equations by

$$\begin{aligned}
A^q &= (PDP^{-1})(PDP^{-1})\dots(PDP^{-1})\\
&= PD(P^{-1}P)D(P^{-1}P)\dots(P^{-1}P)DP^{-1} = PD^qP^{-1}.
\end{aligned}$$

Page 142 Second displayed equation. Replace $x_3 = l_{33}^{-1}(y_3 - l_{31}x_1 - l_{32}x_3)$ by $x_3 = l_{33}^{-1}(y_3 - l_{31}x_1 - l_{32}x_2)$

Page 142 Statement of Theorem 6.7.4, third line delete 'invertible'

Page 142 Second line of proof. Replace $(a)(1) = (a)$ by $(1)(a) = (a)$

Page 145 Solution of Example 6.7.8
In second *and* third set of displayed equations replace $-y - z$ by $y - 2z$

Page 161 Proof of Lemma 7.1.3 (i) Last λ_j in display should be λ_r

Page 161 Title of Lemma 7.1.5 Replace 'Gram–Schmidt method' by 'Gram–Schmidt process'

Page 162 Proof of Lemma 7.1.5 (i) displayed equation.
Replace $\sum_{j=1}^{k} \langle \mathbf{x}, \mathbf{e}_r \rangle \langle \mathbf{e}_j, \mathbf{e}_r \rangle$ by $\sum_{j=1}^{k} \langle \mathbf{x}, \mathbf{e}_j \rangle \langle \mathbf{e}_j, \mathbf{e}_r \rangle$

Page 162 Proof of Lemma 7.1.5 (ii)
Last sentence remove full stop from display and add 'with $\mathbf{x} \notin \operatorname{span}\{\mathbf{e}_1, \mathbf{e}_2, \ldots, \mathbf{e}_n$ by linear independence.'

Page 163 Paragraph after Theorem 7.1.7. Replace B by A five times.

Page 163 Proof of Theorem 7.1.7 last displayed equation on the page.
Replace $\big(\langle \mathbf{b}, \mathbf{e}_j - \langle \mathbf{a}, \mathbf{e}_j \rangle\big)$ by $\big(\langle \mathbf{b}, \mathbf{e}_j \rangle - \langle \mathbf{a}, \mathbf{e}_j \rangle\big)$

Page 165 Replace the single sentence 'Lemma 7.2 now yields the following result' by
'Notice that $\langle \alpha^* \mathbf{x}, \mathbf{y} \rangle = \langle \mathbf{y}, \alpha^* \mathbf{x} \rangle = \langle \alpha \mathbf{y}, \mathbf{x} = \langle \mathbf{x}, \alpha \mathbf{y} \rangle$. Lemma 7.2 yields the following result.'

Page 169 Proof of Theorem 7.3.1 (ii) last sentence but one. Replace 'Similarly, we can can take $a = \sin\phi$, $b = \cos\phi$ for some real ϕ.' by
'Similarly, we can can take $c = \sin\phi$, $d = \cos\phi$ for some real ϕ.'

Page 170 Proof of Theorem 7.3.1 (ii). Last sentence $\sin\theta = b$ should be replaced by $\sin\theta = -b$

Page 171 Proof of Theorem 7.3.3 (i)
Replace the given proof by
Proof (i) As in the proof of Theorem 7.3.1 (ii), the condition $AA^T = I$ tells

us that

$$A = \begin{pmatrix} \cos\theta & \sin\theta \\ \sin\phi & -\cos\phi \end{pmatrix}$$

with $\theta - \phi \equiv 0$ modulo 2π. Since $\det A = -1$, we have

$$-1 = -\cos\theta\cos\phi - \sin\theta\sin\phi = -\cos(\theta - \phi),$$

so $\theta - \phi \equiv 0$ modulo 2π and

$$A = \begin{pmatrix} \cos\phi & \sin\phi \\ \sin\phi & -\cos\phi \end{pmatrix}.$$

Page 194 Statement of Lemma 8.1.8 second display.
Replace $l_{ij} = \langle \mathbf{e}_i, \mathbf{f}_j \rangle$ with $l_{ij} = \langle \mathbf{e}_j, \mathbf{f}_i \rangle$

Page 194 last line.
Replace $l_{ir} = \langle \mathbf{e}_i, \mathbf{f}_r \rangle$ with $l_{ir} = \langle \mathbf{e}_r, \mathbf{f}_i \rangle$

Page 195 second displayed equation should read

$$\sum_{r=1}^{n} l_{sr}\mathbf{e}_r = \sum_{r=1}^{n} \delta_{sr}\mathbf{f}_r = \mathbf{f}_s.$$

First line of third displayed equation should read

$$\langle \mathbf{f}_i, \mathbf{f}_j \rangle = \left\langle \sum_{r=1}^{n} l_{ir}\mathbf{e}_r, \sum_{s=1}^{n} l_{js}\mathbf{e}_s \right\rangle$$

Page 196 Paragraph after the proof of Lemma 8.2.3, last sentence.
Replace 'A proof which does not use complex numbers (but requires substantial command of analysis) is given in Exercise 8.5.8.'
by
'In Exercise 8.5.8 we give a proof which does not use complex numbers (but requires substantial command of analysis) that α has at least one real eigenvalue. This can be developed into a proof of Lemma 8.2.3 which does not use complex numbers.

Page 197 Proof of Theorem 8.2.5 (i). Last paragraph second line.
Add '(by Exercise 7.1.10)' so that it reads
'$\mathbf{e}_1^\perp$ has dimension m (by Exercise 7.1.10) so, by the inductive hypothesis,'

Page 199 First two sentences. Replace

'Our construction gives $P \in O(\mathbb{R}^n)$, but does not guarantee that $P \in SO(\mathbb{R}^n)$. If $\det P = 1$, then $P \in SO(\mathbb{R}^n)$. If $\det P = -1$, then replacing $\mathbf{e}_1$ by $-\mathbf{e}_1$ gives a new P in $SO(\mathbb{R}^n)$.'

by

'Our construction so far only gives $P \in O(\mathbb{R}^n)$. However, if $\det P = 1$, then $P \in SO(\mathbb{R}^n)$ and if $\det P = -1$, then replacing $\mathbf{e}_1$ by $-\mathbf{e}_1$ gives a new P in $SO(\mathbb{R}^n)$. Thus we may ensure that $P \in SO(\mathbb{R}^n)$.'

Page 201 First displayed equation should be

$$Q = (\mathbf{e}_1|\mathbf{e}_2|\mathbf{e}_3) = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 2^{-1/2} & -2^{-1/2} \\ 0 & 2^{-1/2} & 2^{-1/2} \end{pmatrix},$$

Page 202 Fourth displayed formula

Replace

$$RAR^T = \begin{pmatrix} u & v \\ v & w \end{pmatrix} = D = \begin{pmatrix} \lambda_1 & 0 \\ 0 & \lambda_2 \end{pmatrix}$$

by

$$RAR^T == D = \begin{pmatrix} \lambda_1 & 0 \\ 0 & \lambda_2 \end{pmatrix}$$

Page 209 Exercise 8.5.8 (i) first displayed equation

$\|\mathbf{u} + \delta\mathbf{h}\| = 1 + \delta^2$ should be $\|\mathbf{u} + \delta\mathbf{h}\|^2 = 1 + \delta^2$

Page 276

Proof of Lemma 11.4.1

First displayed equation replace

$$\sum_{j=1}^{n} \lambda_j \hat{\mathbf{e}}_j = 0,$$

by

$$\sum_{j=1}^{n} \lambda_j \hat{\mathbf{e}}_j = \mathbf{0},$$

Last but one displayed equation replace

$$\mathbf{u}'(\mathbf{e}_k) - \mathbf{u}'(\mathbf{e}_k) = \mathbf{0}$$

by

$$\mathbf{u}'(\mathbf{e}_k) - \mathbf{u}'(\mathbf{e}_k) = 0$$

Final displayed equation replace

$$\left(\mathbf{u}' - \sum_{j=1}^{n} \big(\mathbf{u}'(\mathbf{e}_j)\big)\hat{\mathbf{e}}_j\right) \sum_{k=1}^{n} x_k \mathbf{e}_k = \mathbf{0}$$

by

$$\left(\mathbf{u}' - \sum_{j=1}^{n} \big(\mathbf{u}'(\mathbf{e}_j)\big)\hat{\mathbf{e}}_j\right) \sum_{k=1}^{n} x_k \mathbf{e}_k = 0$$

Page 277 First displayed equation replace

$$\left(\mathbf{u}' - \sum_{j=1}^{n} \big(\mathbf{u}'(\mathbf{e}_j)\big)\hat{\mathbf{e}}_j\right) \mathbf{x} = \mathbf{0}$$

by

$$\left(\mathbf{u}' - \sum_{j=1}^{n} \big(\mathbf{u}'(\mathbf{e}_j)\big)\hat{\mathbf{e}}_j\right) \mathbf{x} = 0$$

Page 310 Third line replace ‘note note’ with ’note’

Page 348 Second paragraph first line Gauss’ should be Gauss’s

Page 359 Definition 14.3.1
First line replace ‘$M : U \to \mathbb{R}$’ by ‘$M : U \to \mathbb{C}$’
Last line replace ‘$\langle \mathbf{z}, \mathbf{w} \rangle$’ by ‘$\rangle \mathbf{z}, \mathbf{w} \langle$’

Page 362 Exercise 14.3.7 First line
Replace ‘$n-1$ dimensional’ by ‘$(n-1)$-dimensional’
Replace ‘n dimensional’ by ‘n-dimensional’

Page 400 Paragraph after Exercise 16.1.5
Second line, replace ‘n dimensional’ by ‘n-dimensional’
Third line, replace ‘$n-1$ dimensional’ by ‘$(n-1)$-dimensional’

NOTE ON HYPHENATION

Daniell Worall considers that I under-hyphenate. In particular he points out that the modern tendency (demonstrated by Wikipedia) is to hyphenate: finite-dimensional, one-dimensional, two-dimensional, three-dimensional, infinite-dimensional and so on. I agree that this is more consistent.