Matrix Mathematics

Errata and Addenda for the Second Edition

Dennis S. Bernstein
dsbaero@umich.edu

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This document contains an updated list of errata for the second edition of Matrix Mathematics. Please email me if you discover additional errors, and I will include them in future updates.

- Page 3, line 20: Replace “∪” and “∩” with “∩” and “∪”, respectively.
- Page 13, Fact 1.7.12, statement (i): Delete “⊆ f⁻¹[f(A)]”.
- Page 24, Fact 1.10.6: Append “)” to the left hand side of the inequality, and “[” to the right hand side of the inequality.
- Page 46, Fact 1.13.10: In the inequality below “In particular,” multiply the right hand side by 27.
- Page 49, Proof of Fact 1.13.21: Replace “obtuse” with “isosceles”.
- Page 51, Fact 1.14.5: Replace “(y² + z²)²” with “(y² − z²)²”.
- Page 61, Fact 1.17.32: For r = 0; define Mr by (∏ₙᵢ=₁ xᵢᵢ)¹/ₙ.
- Page 67, Fact 1.18.5: Delete the statement beginning with “Now,” and the following statement.
- Page 68, Fact 1.18.9: Replace the last sentence with: “Furthermore, equality holds if and only if there exists α ≥ 0 such that either [x₁ · · · xₙ] = α[y₁ · · · yₙ] or [y₁ · · · yₙ] = α[x₁ · · · xₙ].”
- Page 76, Fact 1.20.2: In xxiii), change “≤” to “=”.
- Page 83, Fact 1.21.2, statement xxviii): Replace “tan⁻¹ x/y” with “tan⁻¹ (x+y)/(1−xy)”.
- Page 105, Fact 2.5.6: Replace “Ωⁿ×m” with “Ωⁿ×m”.
- Page 106, Proof of Proposition 2.5.9: Change the second “≤” to “=”.
- Page 110, line -2: Change “Fⁿ” to “Fⁿ”.
- Page 123, Fact 2.9.27: In statement i), require “S ⊆ Fᵐ”. 

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Page 124, Fact 2.9.30: In statement \(i\), delete “\(\subseteq f^{-1}[f(S)]\)”.

Page 126, Fact 2.10.14, statement \(iii\): Replace “\(N(A^*) \cap \mathcal{R}(B^*)\)” with “\(N(B^*) \cap \mathcal{R}(A^*)\)”.

Page 128, Fact 2.10.24: For the two equalities, assume that both \(x\) and \(y\) are nonzero.

Page 131, Fact 2.11.4: In \(iv\) replace the first “\(=\)” with “\(= \{0\}\) and”.

Page 137, Fact 2.12.8: In \(ii\) change “\(R\)” to “rank”.

Page 138, Fact 2.12.18: In the definition of \(C\) replace \((A^T + yx^T)k\) with \((A^T + yx^T)k^{-1}y\).

Page 155, Fact 2.16.6: Replace “\(1^T_{1 \times n}A^1_{1 \times 1}\)” with “\(1^T_{1 \times n}A^1_{1 \times 1}\)”.

Page 170, Fact 2.20.11: Replace “\(18R^2 \leq a^2 + b^2 + c^2\)” with “\(18rR \leq a^2 + b^2 + c^2\)”.

Page 172, Fact 2.20.13, lines 6 and 12: Replace “\(ac + bc\)” with “\(ac + bd\)”.

Page 185, Section 3.2, line 2: Replace “Section 11.5” with “Section 11.6”.

Page 193, Fact 3.7.7: Change “Let \(A \in \mathbb{R}^{n \times n}\)” to “Let \(A \in \mathbb{R}^{n \times n}\); and assume that \(A\) is symmetric.”.

Page 203, Fact 3.10.1: In \(xliii\) replace \((x^T x)^{-1}\) with \(- (x^T x)^{-1}\).

Page 215, Fact 3.12.2: Replace “only if” with “only if \(A\) is semisimple and”.

Page 227, Fact 3.13.19: In statement \(iii\) replace “\(=\)” with “\(\subseteq\)”.

Page 227, Fact 3.13.20: The solution to the problem is yes.

Page 236, Fact 3.18.10: Delete “Toeplitz”.

Page 248: Replace “\(c^2 + e^2\)” with “\(c^2 + d^2\)”.

Page 272, line -4: Change “\(n = 1\)” to “\(i = 1\)”.

Page 276, Fact 4.8.2, line -5: Change “\(\beta_0\)” to “\(\beta_{n-1}\)”.

Page 276, Fact 4.8.2, line -2: Change “Fact 1.17.11” to “Fact 1.17.10”.

Page 306, Fact 4.11.22: Change “\(x > 0\) and \(y > 0\)” to “\(x >> 0\) and \(y >> 0\)”.

Page 333, Proposition 5.7.4: Change “hold” to “are equivalent”.

Page 404, Fact 6.3.1: Assume that \(z^T Sb \neq 0\).

Page 412: Change “Finally,” to “Finally, assume that \(A\) does not have full rank. Then,\)”.

Page 423, Fact 6.5.5: Change “and assume” to “and assume that \(A\) is Hermitian and”.

Page 424, Fact 6.5.8: Change “\(\text{rank}(D - B^* A^+ B)\)” to “\(\text{rank}(C - B^* A^+ B)\)”.

Page 463, Proposition 8.2.7: In \(v)\) change “\(\beta_0, \ldots, \beta_{n-1} \geq 0\)” to “\((-1)^{n-i}\beta_i \geq 0\)”.

Page 466, proof of Corollary 8.3.7, line 2: Replace “\(\mathbb{R}\)” by “\(\mathbb{F}\)”.
• Page 473, Lemma 8.5.1: Change \( \lambda_{n_r} \) to \( \lambda_r \); change \( \mu_{n_r} \) to \( \mu_r \); and change \( \lambda_r \in \mathbb{R} \) to \( \mu_r \in \mathbb{R} \).

• Page 526, Fact 8.12.15: The upper left inequality of the Problem is false.

• Page 534, Fact 8.13.4: Change “and assume that \( A \) is positive semidefinite” to “assume that \( A \) is positive semidefinite, and assume that \( B \) is skew Hermitian.” Also, on the left hand side of the first inequality, replace “\( A + B \)” with “\( B \)”.

• Page 568, Fact 8.19.14: The answer to the problem is “yes”.

• Page 611, Corollary 9.4.12: Change “\( A \in \mathbb{F}^{m \times l} \)” to “\( B \in \mathbb{F}^{m \times l} \)”.

• Page 636, Fact 9.9.5: Change “\( A \leq B \)” to “\( -B \leq A \leq B \)”.

• Page 702, Fact 10.12.6: Change “\( 2sB \)” to “\( 2sB^2 \)”.

• Page 821, Line 6 of the proof of Proposition 12.9.3: Change “Proposition 12.5.3” to “Proposition 12.8.3”.

• Page 823, Proof of Proposition 12.9.3: In the matrix at the bottom of the page, the entries below the sub-anti-diagonal are incorrect.