

Harville, David A.

Matrix algebra from a statistician's perspective. (English) Zbl 0881.15001
New York, NY: Springer. xvii, 630 p. (1997).

Motivation for writing this book came from the observation that the usual linear algebra courses on this continent on the one hand do often not include enough material needed in connection with linear models and multivariate analysis, and on the other hand concentrate on topics of minor interest to the statistician, such as complex matrices and eigenvalue theory.

Accordingly, on the one hand the author includes detailed discussions of quadratic forms, partitioned matrices, generalized inverses (pseudoinverses), matrix differentiation, vec and vech operators, and minimization of quadratic polynomials under linear constraints. On the other hand, he excludes complex matrices and discusses linear transformations and eigenproblems only very briefly near the end of the book (with an artificial restriction of spectral theory to the real domain).

Otherwise the book is fairly standard. Prerequisite is an introductory linear algebra course. The presentation is simple and detailed and includes exercises, so that the book can also be used as a text for a second linear algebra course, in addition to its purpose as a reference book for statisticians. Numerical linear algebra is not discussed systematically, but computational aspects are addressed briefly in several chapters. Probabilistic or statistical applications themselves are not included.

Reviewer: [E.Kreyszig \(Ottawa\)](#)

MSC:

- [15-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to linear algebra
- [15A06](#) Linear equations (linear algebraic aspects)
- [15A09](#) Theory of matrix inversion and generalized inverses

Cited in 2 Reviews Cited in 345 Documents
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Keywords:

[linear systems](#); [Kronecker product](#); [textbook](#); [pseudoinverses](#); [linear models](#); [multivariate analysis](#); [quadratic forms](#); [partitioned matrices](#); [generalized inverses](#); [matrix differentiation](#); [minimization of quadratic polynomials](#); [exercises](#)