

Book review: “*Algebra and Discrete Mathematics for Economics: Numbers, Graphs and Matrices in Input-Output Economics*”

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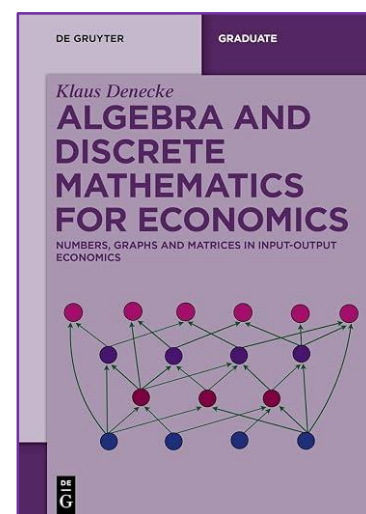
Klaus Denecke

Algebra and Discrete Mathematics for Economics: Numbers, Graphs and Matrices in Input-Output Economics

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This is an attractively produced book with very easy-to-read coloured typography. The cover itself is simple and features a coloured schematic diagram of a transportation problem which represents the sub-theme. The contents describe, with examples, how Algebra and Discrete Mathematics are essential tools also for economists in era of global economics where goods and services are exchanged world-wide, and input-output analytic tables use the advantage of a relatively stable flow of commodities and services. The flow itself is described by a directed edge-valued graph where the sets of values consist of positive rational numbers. Therefore numbers, especially non-negative rational numbers, multiple-partite graphs and matrices with non-negative rational entries play an important role, even the twin prime problem!

The book has twelve chapters as follows:

1. General basic concepts
2. Commodities and money



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3. Numbers
4. Linear Diophantine equations & consumer theory
5. Graphs
6. Matrices
7. Universal algebra
8. An algebraic approach to production systems
9. Graphs and matrices in material management
10. The use of matrices for internal service billings
11. Matrices in economic systems
12. Formal concept analysis in economics.

The worked examples stand out with their blue background, and those tried were both apt and correct. The sub-headings are also in blue and the historical examples are interesting and should feed the wider liberal education of the active reader. The book has both a bibliography and an index, which direct the reader to related ideas and make it quite easy to navigate the book. :

This book convincingly demonstrates that Algebra and Discrete Mathematics are very useful for mathematical modelling in economics in particular, and other parts of business in general. It does this very well. This book should be of interest to number theorists and other readers of this journal too, in that it is, in a sense, supplementary to some previous papers which also suggest extensions to, and applications of, number theory and discrete mathematics such as [1, Ch. 7, pp. 103–114] and [2, Ch. 1].

This book would be very useful as a first-year text in any Business or Commerce degree, or even as an elective unit in a Master of Business Administration program for students with a limited undergraduate mathematical background. This book is quite outstanding as a pedagogical tool for an academic's library.

References

- [1] Shannon, A. G., Ollerton, R. L., Özkan, E., & Deveci, Ö. 2025. Polyphase sorting for computer tape merging: Multinacci number conjectures. In: Singla, M., & Verma, M. (eds), *Advances in Computer Science*: Vol. 26, New Delhi: AkiNik Publications.
- [2] Shannon, A. G., Deveci, Ö., & Aküzüm, Y. (2025). Pure mathematics applied to bio-engineering problems. In: Dutta, H., & Akdemir, A. D. (eds). *Mathematical Analysis for Engineering and Applied Sciences: Foundational and Fundamental Aspects*. Boca Raton, FL: CRC/Taylor & Francis.