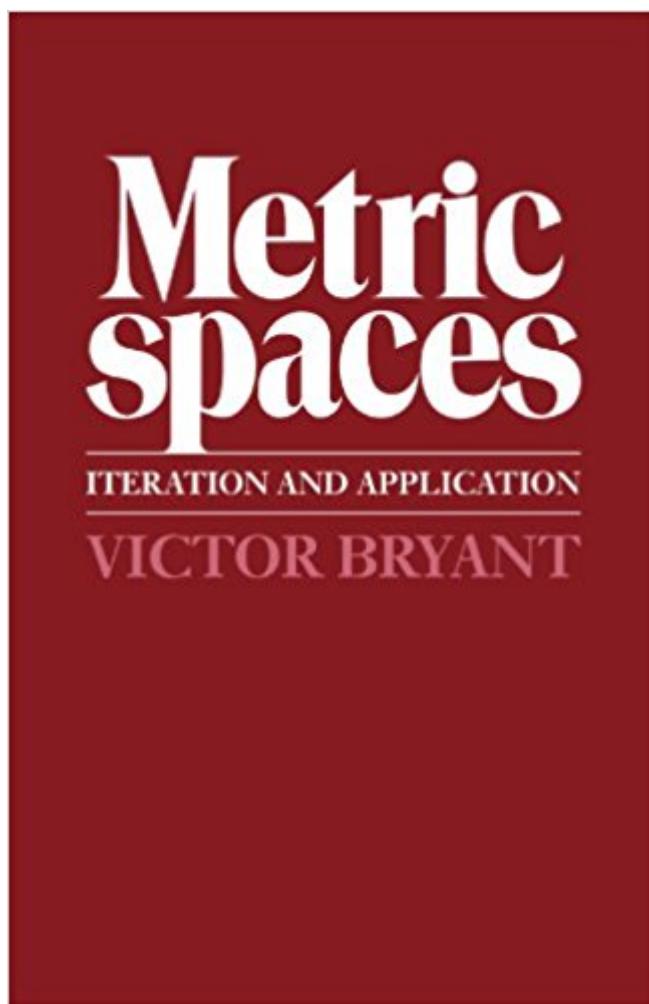The book was found

Metric Spaces: Iteration And Application

Synopsis

Here is an introductory text on metric spaces that is the first to be written for students who are as interested in the applications as in the theory. Knowledge of metric spaces is fundamental to understanding numerical methods (for example for solving differential equations) as well as analysis, yet most books at this level emphasise just the abstraction and theory. Dr Bryant uses applications to provide motivation and to sustain the development and discusses numerical procedures where appropriate. The reader is expected to have had some exposure to elementary analysis, but the author provides examples throughout to refresh the student's memory and to test and extend understanding. In short, this is an introductory textbook that will appeal to students of mathematics and engineering and will give them the required background for more advanced courses in both analysis and numerical analysis.

Book Information

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Customer Reviews

"...a fresh approach to a standard subject in topology and analysis...A healthy, vigorous introduction to analysis." American Scientist

An introduction to metric spaces for those interested in the applications as well as theory.

Great book and excellent service!

Clear and concise; this book covers the material well without getting bogged down in verbosity or clutter. This is my favorite writing on metric spaces.

This is a great book. The ideas are well motivated, and its short and to the point. The author mentions in the book that an introductory analysis course would be helpful, but that you don't even need to remember or understand any of it. Well, I think I fell into that category as someone who took such a course and came away without remembering much of it. After reading this book, it all started to come together. The book is a little pricey, but its worth it.

This book is the best on the subject of metric spaces and their use in iteration that I have ever seeen.

This is an excellent little book on metric spaces, with emphasis on iterations and dynamical systems. Highly recommended both as a stand-alone text, and as a complement to other, more traditional texts.

This short book is a gem. Metric Spaces by Victor Bryant is an enjoyable introduction to analysis. I liked the author's informal conversational approach to this rather abstract topic. Nonetheless, I did find it necessary to reread some sections for full understanding.Bryant motivates the reader immediately with a look at iterative techniques, fixed point functions, converging sequences, and approximation solutions - all in an engaging style. Later topics included distance concepts, function spaces, and the relationship between closed sets, complete sets, and compact sets. The fourth chapter was devoted to the contraction mapping principle and its use in solving differential equations.Is this book for you? The author says: "The only prerequisite is to have done a course on elementary analysis: it is not a prerequisite to have understood it nor to have remembered it at all." I had never taken any formal courses in analysis, and the highly structured axiomatic approach of analysis texts had never appealed to me. I only had a vague idea as to the properties of a metric space. But I was lured into buying Bryant's short text by the previous reviewers. And thankfully so.Bryant certainly enjoys his subject, but he just as clearly recognizes that not everyone might have such an abiding interest. Throughout the text, he points out opportunities where the reader might skip forward if the going has become less interesting. (For the record I refused to be enticed by these short cuts.)Problems are embedded in the text, one or two at a time, and are used to reinforce points under discussion. Most have clear hints and I found many problems straightforward,

but others were more difficult. A few problems were identified as appropriate for the "keen" student. The most abstract mathematics are reserved for the last (optional) chapter, but the author does encourage the reader to stay with it: "It would be a pity to stop ..." Chapter five recasts the first four chapters into a more generalized form of real analysis and addresses the question: "What makes analysis work?"Bryant had an unusual goal for a mathematics text. "I have tried to provide a readable and natural introduction to an abstract subject in a down-to-earth manner." Also, he says, "My aim is to provide a book which can be read and enjoyed ..." He succeeded in doing just that.

A short but excellent book for someone who wants a well motivated refresher on analysis. By grounding the ideas with applications of fixed point theorems (such as proving the existence of unique solutions to certain types of differential equations) the author makes accessible an area of mathematics that is often treated in an axiomatic and uninteresting way.I believe the author is correct when he recommends the book for people who have already had some exposure to analysis. At best a student should already have completed the standard non-rigorous college calculus sequence to get the most out of this book.

I am an electrical engineer and I bought this book about 1986. It was the first book that I came across that gave an account of the reasons why iterative techniques work. I was fascinated by this book and enjoyed reading it. This book will reward those that are willing to go a little beyond the elementary mathematics normally required for undergraduate engineering. For those who would like to know why iterative methods work (e.g. in load flow calculations for electrical networks) then this is a good book to start with.

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