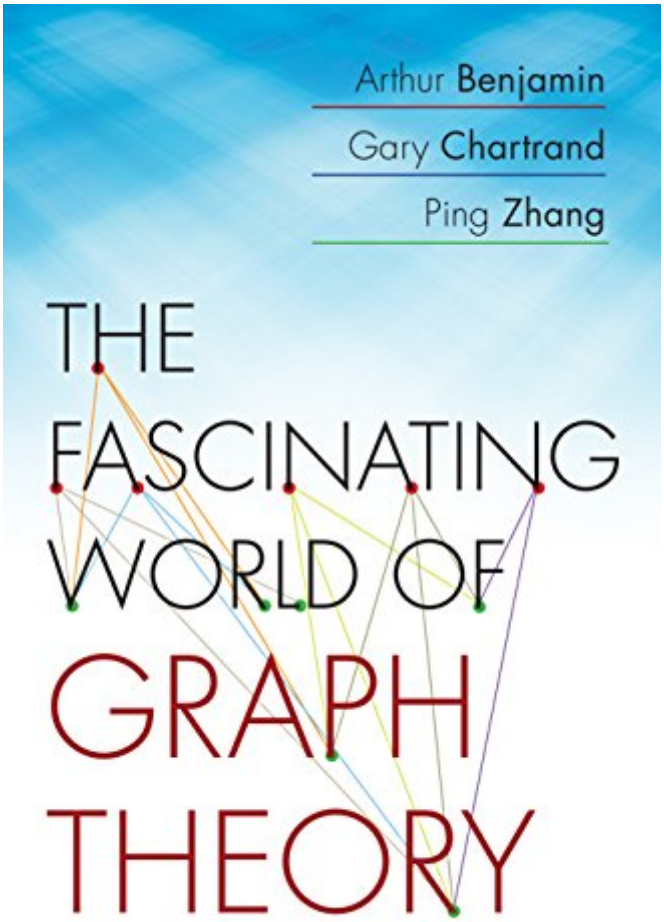
The Fascinating World Of Graph Theory



Synopsis

Graph theory goes back several centuries and revolves around the study of graphsÃ¢â ¬â •mathematical structures showing relations between objects. With applications in biology, computer science, transportation science, and other areas, graph theory encompasses some of the most beautiful formulas in mathematicsÃ¢â ¬â •and some of its most famous problems. The Fascinating World of Graph Theory explores the questions and puzzles that have been studied, and often solved, through graph theory. This book looks at graph theory's development and the vibrant individuals responsible for the field's growth. Introducing fundamental concepts, the authors explore a diverse plethora of classic problems such as the Lights Out Puzzle, and each chapter contains math exercises for readers to savor. An eye-opening journey into the world of graphs, The Fascinating World of Graph Theory offers exciting problem-solving possibilities for mathematics and beyond.

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Customer Reviews

Good but I keep looking for a book that is less focused on theory (theorems, proofs, etc) and more on application.

It’s a good book. Not 5 star good, but I would buy it again. It’s good enough to implement algorithms from.

Are you a theoretical mathematician? If you are, then this book is for you. Authors Arthur Benjamin, Gary Chartrand and Ping Zhang, have written an outstanding book that introduces you to one of the many remarkable areas of mathematics: Graph Theory.The authors begin with some curious problems--all of which can be looked at mathematically by means of the main concept of this book: graphs. Next, they discuss theorems from many areas of mathematics that have bee judged among the most beautiful. Then, the authors describe the most fundamental property that a graph can possess, by dealing with the idea that within the graph, travel is possible between every two locations. Also, the authors provide the simplest structure that a connected graph can possess, leading the reader to the class graphs called trees, because they often look like trees. They then doodle with a well-known problem: The Chinese Postman Problem, which deals with minimizing the length of a round trip that a letter carrier might take. Then, the authors discuss a class of graphs named for a famous physicist and mathematician of the nineteenth century: Sir William Rowan Hamilton. In addition, through graph theory, they explain how different types of scheduling are possible. Also, the authors then explain problems of whether a graph can be divided into certain other kinds of graphs, primarily cycles. They then discuss how various voting techniques can result in often surprising outcomes. Next, the authors continue by looking at interesting problems that can be drawn in the plane without any of their edges crossing. Then, they discuss the Four Color Problem: Famous not only for the length of time it took to solve, but for the controversial method that is used to solve it. Finally, the authors conclude with a curious theorem called Road Coloring Theorem, which tells us that in certain traffic systems consisting only of one-way streets in which the same number of roads leave each location, roads can be colored so that directions can be given to arrive at some destination, regardless of the location where the traveler presently resides.This excellent book introduces you to a subject to which you may have had little or no exposure: The field of graph theory. Among the many things discussed in this great book, is how often a rather curious problem or question can lead not only to a mathematical solution, but to an entire topic in mathematics.

As a retired mathematician, I had not visited graph theory since graduate school, where I learned a great deal about it from the Mathematician Frank Harary’s book. So, I was excited to see this title

and could not wait to see what was new inside the book.But ... Well, how shall I put it? After the introduction, I was underwhelmed by this book.First, the authors tipped-off that they had solved the "Five Princes Problem" introduced in chapter 1 but announced they would not show the solution until chapter 10. Since I could not wait until chapter 10, I naturally flipped to that chapter, but the "Five Princes Problem" was not mentioned there at all? So, then I checked the index, hoping the reference in the intro was simply mistaken, and that it might appear in some other chapter? But the index had only the single entry that appeared in the introduction. (How could you?)Similarly with the "Konigsberg Bridge Problem," which as it turns out, has a trivial solution depending on where you begin? Well, how could one find seeking out a less elegant but much more complicated solution interesting? I certainly did not!But also, you did not warn the reader that most of the book would be about proving theorems of use only to Mathematicians who might use graph theory for other more advanced mathematical purposes? After about two dozen of them, those theorems that lead to no where, get to be pretty boring.Finally, to add insult to injury, my graph theory hero, Frank Harary was mentioned only once throughout the entire book, on pages 252-254 and in a poem in the epilogue. Aggrrr! Two stars

Was not what the title led me to think it was. It is network theory.

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