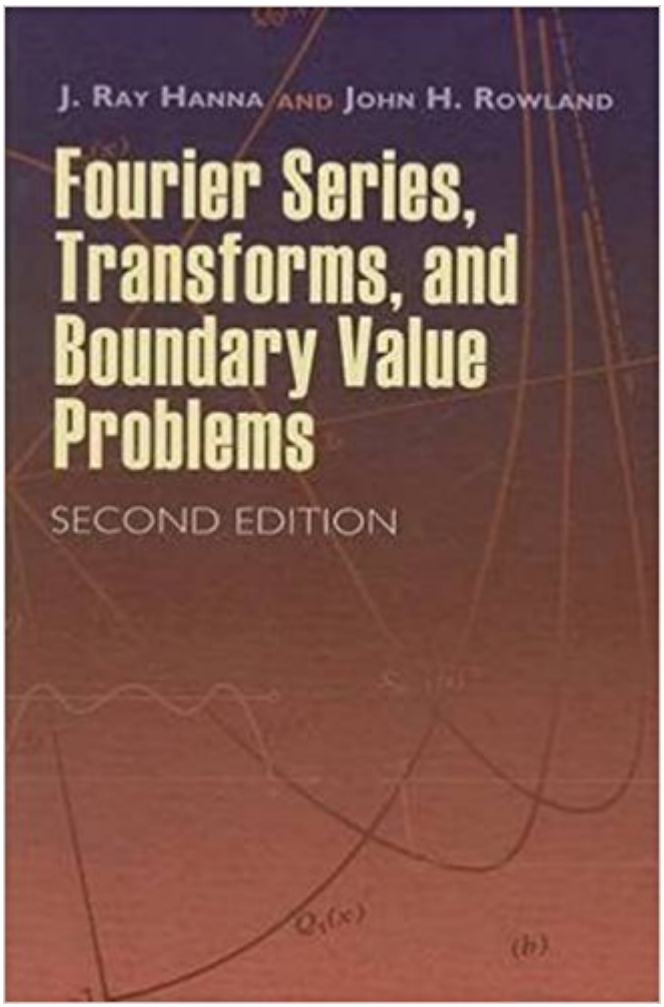
Fourier Series, Transforms, And Boundary Value Problems: Second Edition (Dover Books On Mathematics)



Synopsis

This introduction toÂ Fourier and transform methods emphasizes basic techniques rather than theoretical concepts. It explains the essentials of the Fourier method and presents detailed considerations of modeling and solutions of physical problems. All solutions feature well-drawn outlines that allow students to followÂ an appropriate sequence of steps, and many of the exercises include answers.The chief focus of this text is the application of the Fourier method to physical problems, which are describedÂ mathematically in terms of boundary value problems. Problems involving separation of variables, Sturm-Liouville theory, superposition, and boundary complaints are addressed in a logical sequence. Multidimensional Fourier series solutions and Fourier integral solutions on unbounded domains are followed by the special functions of Bessel and Legendre, which are introduced to deal with the cylindrical and spherical geometry of boundary value problems. Students and professionals in mathematics, the physical sciences, and engineering will find this volume an excellent study guide and resource.

Book Information

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Customer Reviews

This book was required for a Partial Differential Equations course I had taken at Old Dominion University. I took the course once before using a different text, not fully understanding the concepts well enough to practice them or solve problems once the semester was finished. Taking the course again utilizing this Dover book was much better than the first time taking the course. Part of this was surely the professor, but this book also was much more focused in it scope. Instead of opening the

book developing the equation for heat flow through a 2 dimensional rod, this book started off with a basic review of concepts from ordinary differential equations that would be built upon for PDE and led straight into the importance of using orthagonalities for manipulating the resulting equation(s) into unique solutions. Also, at the much reduced cost compared to other text, it is that much the better.Unfortunately the book does not develop some of the later concepts very well and the organization of the book I don't believe is the best, as the book introduces quite a few concepts in consecutive chapters then starts to apply the earlier concepts at the end, I prefer for concepts to be applied as their taught, but that maybe just my preference. The book also is limited in scope which is good so some professor's don't try to cram in to much in a semester, but it really should have provided more insight in applications of the wave equation, specifically scattering waves, and into resonance and application of Green's Theorem. Despite these flaws, I would still recommend the book over other, more current PDE texts.