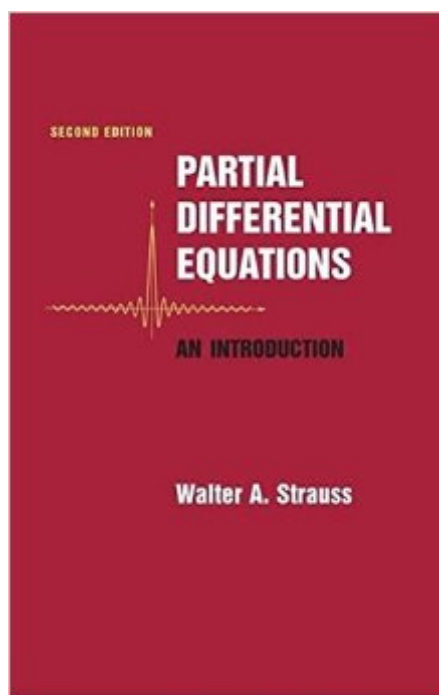


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# Partial Differential Equations: An Introduction



## Synopsis

Our understanding of the fundamental processes of the natural world is based to a large extent on partial differential equations (PDEs). The second edition of Partial Differential Equations provides an introduction to the basic properties of PDEs and the ideas and techniques that have proven useful in analyzing them. It provides the student a broad perspective on the subject, illustrates the incredibly rich variety of phenomena encompassed by it, and imparts a working knowledge of the most important techniques of analysis of the solutions of the equations. In this book mathematical jargon is minimized. Our focus is on the three most classical PDEs, the wave, heat and Laplace equations. Advanced concepts are introduced frequently but with the least possible technicalities. The book is flexibly designed for juniors, seniors or beginning graduate students in science, engineering or mathematics.

## Book Information

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## Customer Reviews

I've spent the past seven years or so working on analytical and numerical solutions to the various partial differential equations that price financial derivatives. My focus has been very much on getting and extending useable answers. When it comes to PDEs specifically, I'm mostly self-taught, but my background in real variables and functional analysis is solid (viz., one and two graduate semesters, respectively, at Pennsylvania and Harvard). In some areas of mathematics, a single, classic text whose exposition is top-notch, or that inspires despite its exposition, manages to cover the field well. For example, I'm thinking of books like Halmos (Measure Theory) or Segal and Kunze in real variables and integration theory; Lax or Reed and Simon 1 (Functional Analysis) in functional

analysis; Lang in algebra; and Kelley or Milnor (Topology from the Differentiable Viewpoint) in topology. (Full citations are in Listmania; see my profile. All of these books are great texts for very different reasons, as my Listmania remarks suggest.) I've yet to find a single reference for PDEs that addresses all of my questions, but a number of books taken together manage nicely. I jumped around in these books when I was learning the subject, and I'm convinced that such cherry-picking is the best approach for PDEs, since the field is so broad in theory and applications. The downsides, of course, are expense and potential confusion from conflicting notation and approach.

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