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are now studied are usually beyond traditional mathematical analysis, the numerical methods that are being developed and used require testing and validation. This is often done with PDEs that have known, exact, analytical solutions. The development of analytical solutions is also an active area of research, with many advances being reported recently, particularly traveling wave solutions for nonlinear evolutionary PDEs. Thus, the current development of analytical solutions directly supports the development of numerical methods by providing a spectrum of test problems that can be used to evaluate numerical methods. This book surveys some of these new developments in analytical and numerical methods, and relates the two through a series of PDE examples. The PDEs that have been selected are largely

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"named" since they carry the names of their original contributors. These names usually signify that the PDEs are widely recognized and used in many application areas. The authors' intention is to provide a set of numerical and analytical methods based on the concept of a traveling wave, with a central feature of conversion of the PDEs to ODEs. The Matlab and Maple software will be available for download from this website shortly. www.pdecomp.net Includes a spectrum of applications in science, engineering, applied mathematics Presents a combination of numerical and analytical methods Provides transportable computer codes in Matlab and Maple

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Partial Differential Equations presents a balanced and comprehensive introduction to the concepts and techniques required to solve problems containing unknown functions of multiple variables. While focusing on the three most classical

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Understanding the properties and applications of PDEs, students will be equipped to better analyze and interpret central processes of the natural world.

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