

## Solving nonlinear equations with Newton's method

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### Abstrak

This brief book on Newton method is a user-oriented guide to algorithms and implementation. In just over 100 pages, it shows, via algorithms in pseudocode, in MATLAB, and with several examples, how one can choose an appropriate Newton-type method for a given problem, diagnose problems, and write an efficient solver or apply one written by others. *Solving Nonlinear Equations with Newton's Method* contains troubleshooting guides to the major algorithms, their most common failure modes, and the likely causes of failure. It also includes many worked-out examples (available on the SIAM website) in pseudocode and a collection of MATLAB codes, allowing readers to experiment with the algorithms easily and implement them in other languages.

This book is intended to complement Kelley larger book, *Iterative Methods for Linear and Nonlinear Equations* (SIAM, 1995), which focuses on in-depth treatment of convergence theory, but does not discuss the details of solving particular problems, implementation in any particular language, or evaluating a solver for a given problem.