Exploring Analytic Geometry with Mathematica

by Donald L. Vossler

The study of two-dimensional analytic geometry has gone in and out of fashion several times over the past century. This classic field of mathematics has once again become popular due to the growing power of personal computers and the availability of powerful mathematical software systems, such as *Mathematica*, that can provide an interactive environment for studying the field.

By combining the power of *Mathematica* with an analytic geometry software system called *Descarta2D*, the author has succeeded in meshing an ancient field of study with modern computational tools, the result being a simple, yet powerful, approach to studying analytic geometry. Students, engineers and mathematicians alike who are interested in analytic geometry can use this book and software for the study, research or just plain enjoyment of analytic geometry.

- A classic study in analytic geometry, complete with in-line *Mathematica* dialogs illustrating every concept as it is introduced.
  - Excellent theoretical presentation
  - Fully explained examples of all key concepts
- Interactive *Mathematica* notebooks for the entire book.
  - provides a complete computer-based environment for study of analytic geometry
  - all chapters and reference material are provided on the CD in addition to being printed in the book.
- Complete software system: *Descarta2D*
  - a software system, including source code, for the underlying computer implementation, called *Descarta2D* is provided
  - Part VII of the book is a listing of the (30) *Mathematica* files notebooks supporting *Descarta2D*; the source code is also in on the CD
- Explorations
  - More than 120 challenging problems in analytic geometry are posed. Complete solutions are provided both as interactive *Mathematica* notebooks on the CD and as printed material in the book.
- *Mathematica* and *Descarta2D* Hints are provided to expand the reader's knowledge and understanding of *Descarta2D* and *Mathematica* .
- Detailed reference manual
  - Complete documentation for *Descarta2D*
  - Fully integrated into the *Mathematica* Help Browser

About the author

Donald L. Vossler is a mechanical engineer and computer software designer with more than 20 years experience in computer aided design and geometric modeling. He has been involved in solid modeling since its inception in the early 1980's and has contributed to the theoretical foundation of the subject through several published papers. He has managed the development of a number of commercial computer aided design systems and holds a US Patent involving the underlying data representations of geometric models.

CD-ROM included

Full contents of book included on CD-ROM, which will operate on Macintosh, Windows and UNIX machines with *Mathematica* 3.0.1 or 4.0 installed.