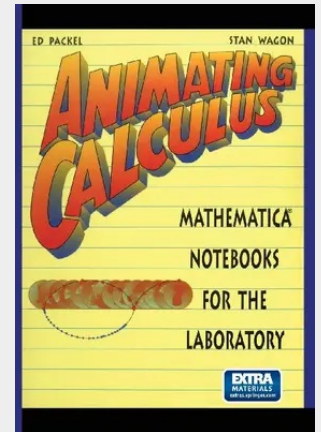


Animating Calculus

Mathematica® Notebooks for the Laboratory

Calculus and change. The two words go together. Calculus is about change, and approaches to teaching calculus are changing dramatically. Thus it is both timely and appropriate to apply techniques of animation to the varied and important graphical aspects of calculus. As a computer algebra system, Mathematica is an excellent tool for numerical and symbolic computation. It also has the power to generate striking and colorful graphical images and to animate them dynamically. The combination of these capabilities makes Mathematica a natural resource for exploring the changing world of calculus and approaches to mastering it. In addition, Mathematica notebooks are easy to edit, allowing flexible input for commands to Mathematica and stylish text for explanation to the reader. Much has been written about the use and importance of technology in the teaching and learning of calculus. We will not repeat the arguments or feign objectivity. We are enthusiastic believers in the value of a significant laboratory experience as part of learning calculus, and we think Mathematica notebooks are a most appropriate and exciting way to provide that experience. The notebooks that follow represent our choice of laboratory topics for a course in one-variable calculus. They offer a balance between what we think belongs in a first-year calculus course and what lends itself well to exploration in a Mathematica laboratory setting.

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