Chapter 14   Technology Application Projects

Mathematica/Maple Module
Plotting Surfaces
Efficiently generate plots of surfaces, contours, and level curves.

Mathematica/Maple Module
Exploring the Mathematics Behind Skateboarding: Analysis of the Directional Derivative
The path of a skateboarder is introduced, first on a level plane, then on a ramp, and finally on a paraboloid. Compute, plot, and analyze the directional derivative in terms of the skateboarder.

Mathematica/Maple Module
Looking for Patterns and Applying the Method of Least Squares to Real Data
Fit a line to a set of numerical data points by choosing the line that minimizes the sum of the squares of the vertical distances from the points to the line.

Mathematica/Maple Module
Lagrange Goes Skateboarding: How High Does He Go?
Revisit and analyze the skateboarders' adventures for maximum and minimum heights from both a graphical and analytic perspective using Lagrange multipliers.