

Project 13.6c: Cylinders and Quadric Surfaces

Objective

The objective of this project is to illustrate how Maple can be used to draw cylinders and quadric surfaces.

Narrative

If you have not already done so, do Project 13.5b and read Section 13.6 in the text.

One of the limitations of `implicitplot3d` is that it does not always produce good graphics. Another is that it requires a great deal of computer memory (RAM); thus you may get an “insufficient memory” error message if your hardware is limited or your graphic is complex (and you may need to consult your local computer guru to find out how to boost the available RAM on your computer). We will investigate better approaches to drawing surfaces later in this course.

Tasks

1. Use Maple to draw graphics of the cylinders and quadric surfaces for problems 3, 9, 11, 17, and 19 of Section 13.6 in the text. In each case, use the option `axes=normal`. Experiment with viewpoints and other viewing options (other than `axes=normal`), as well as with domains for the variables, until you get a good view of the surface.

At this time, make a hard copy of your typed input and Maple’s responses. Then, ...

2. a) Label by hand the positive x -, y -, and z -coordinate axes on each of the graphics you produced in Task 1.
3. b) To the right of each image, draw by hand a sketch of each surface showing the surface’s main features.