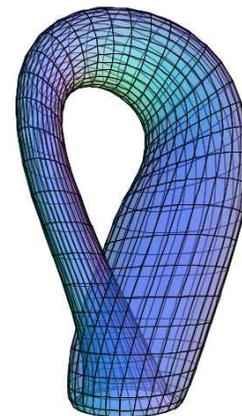
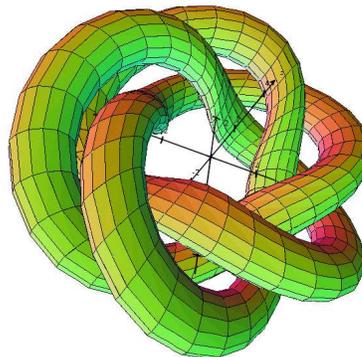
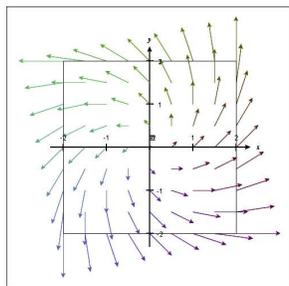
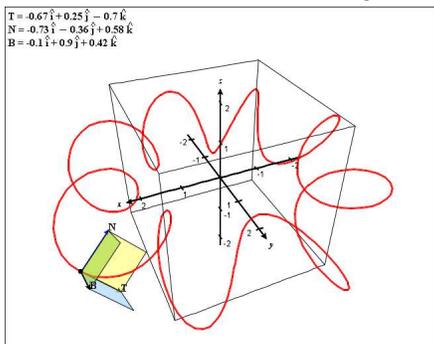
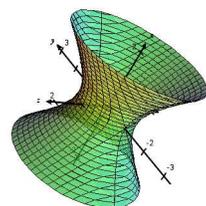


## VIEWING FEATURES:

- All 3D graphs can be rotated in real time in response to the movement of the mouse on the graph by the user. Graphs can be made to rotate in any direction to help students gain perspective.
- You can use 3D glasses for a more convincing 3D view of the 3D plots in CalcPlot3D. You can use **Red-Cyan/Red-Blue** 3D glasses for almost all of the options, but there is one option for the **Amber-Blue** 3D glasses that were recently distributed for the Super Bowl halftime feature, and there is an option for **Red-Green** 3D glasses. And there are two options for viewing the images in 3D without 3D glasses: **Stereo Pair** and **Cross-eyed**.
- A Format Axes Dialog is available to change the minimum and maximum values of each variable and to modify other properties of the axes.
- The user can enter any desired viewpoint (point from which to view the plot) or focus point (point to use as the center of rotation) for the 3D graph.
- The user can control many aspects of how the surface graphs are displayed, including:
  - whether or not to display edges (the mesh framework of the surface)
  - the number of gridlines to be used
  - switch between wire mesh and filled polygons
  - view the surfaces in semi-transparent or opaque modes (Semi-transparent mode allows the user to see through the surfaces, although it is slower to rotate. Opaque mode makes the surfaces opaque and allows for much faster rotation.)
  - the F1, F2, F3, F4 keys can be used to step through standard solid color, wire mesh, and reverse solid color for the surfaces representing functions 1-4, respectively. This helps the user to more easily differentiate between the various surfaces when two or more are graphed, especially if they are close to being parallel in certain places (which normally makes them look the same color there).
- A large number of intuitive control keys are available to accomplish common viewing tasks. All of these keys are specified with the corresponding feature on the menu at the top of the applet.

## OTHER FEATURES INCLUDE:

- The user can **print** the current view along with a list of the equations/notation for the surfaces, space curves, points and vectors.
- Most discontinuous surfaces are rendered correctly.
- Level surfaces can be visualized using a special “**movie mode**” which recognizes when a constant, C, is used in the definition of one or more functions of two variables. It asks for a start and end value, the number of steps/frames to use, and the minimum delay that should be used between frames. Then it calculates the frames (up to memory capacity) and then displays them as a movie that flows from beginning to end and then back again smoothly.
- The directional derivative can be explored visually, showing the direction vector, gradient vector, trace curve, and tangent line. The user can vary the input point (x, y) and the direction of the direction vector for any surface.
- Instructors can create/save script files that can be loaded in during class as a dynamic slide show. Essentially this allows you to save a series of views with the functions and settings of the current state. This makes it easier to demonstrate more during class when time is limited.



An electric potential function:

$$f(x, y) = \frac{3}{\sqrt{x^2 + y^2}} - \frac{7}{\sqrt{(x-2)^2 + (y+1)^2}}$$

A contour plot for this potential function, showing some equipotential lines.

