Program Name

NonEuclidean

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Category

Work in Progress (Mathematics)

Description

This program is a drawing program, but draws in Poincare's model of the Non-Euclidean plane instead of the Euclidean plane. It is a work in progress with many features not yet implemented. Suggestions are welcome.

The program displays a palette of tools, currently stolen from the NeXT demo program Draw. The only tools which work at the moment are the tools which draw lines and circles.

If you hold down the Alternate key while drawing a line, you will obtain the complete line rather than just a line segment.

Recall that in Poincare's model of Non-Euclidean geometry, Non-Euclidean straight lines are circles which meet the

boundary of the disk at 90 degrees, and Non-Euclidean circles are ordinary circles, but with unexpected centers.

It is easy to see that the parallel postulate is not true in this model. Indeed, given a line and a point, try drawing all lines through the point parallel to the given line.

Non-Euclidean geometry is homogeneous; the entire plane can be translated, moving one arbitrary point to a second point while preserving all angles and distances. The model does not make this clear, suggesting that there is something special about the origin. Later on, the program will allow users to translate objects along paths with the mouse and then this feature will become clear. Sadly, translation is not yet implemented.

Uses

The program will be used in a computer lab for students studying college level geometry. This includes mathematics majors who will later teach in high school.

NeXT Release

2.1

Installation Instructions

None needed.

Comments

This program can be distributed freely.