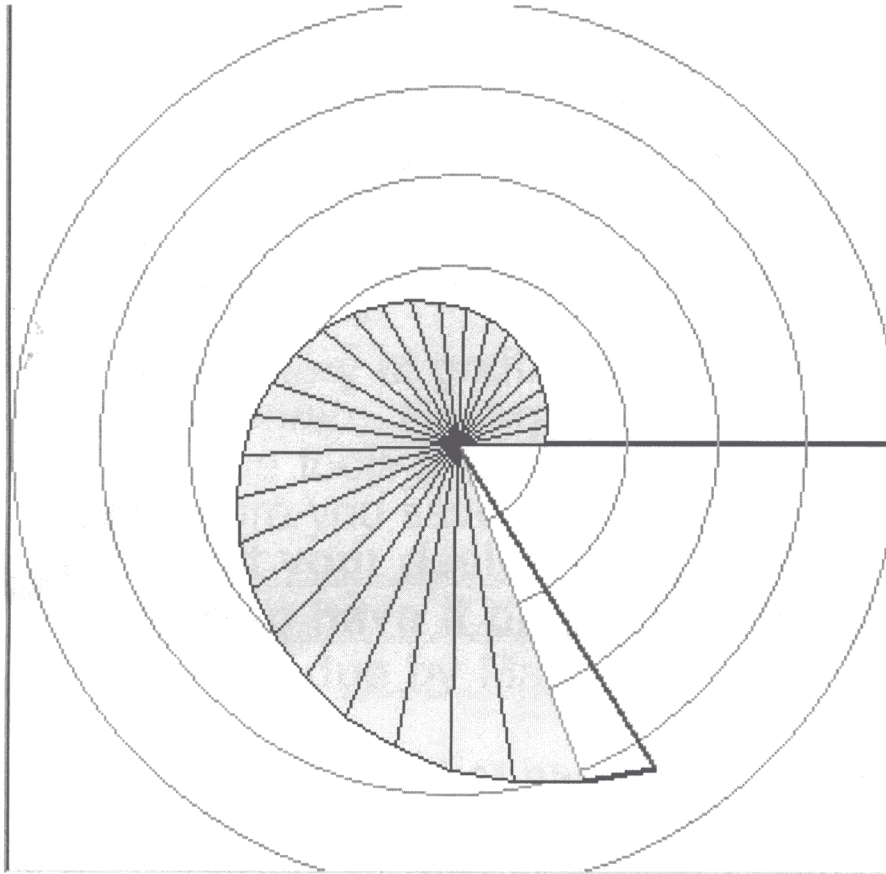


Logarithmic Spirals



The logarithmic spiral has an equation $r = ae^{b\sigma}$ where r is the distance from the origin, σ is the angle from the x axis, and a and b are constants. The logarithmic spiral is also known as the growth spiral. Notice as the angle increases the radius increases exponentially.

In class we have been looking at the equivalence relationship between exponential equations and logarithmic equations

$$x = a^y \text{ is equivalent to } y = \log_a x$$

We have also explored exponential growth and have looked at population of rabbits, spirals and some viruses.

Remember the cultural math folktale book, One Grain Of Rice, where the raja learned about exponential growth?

This extra credit project will explore spirals used in graffiti art and the mathematics in this style of art. Students will access the Culturally Situated Design Tools at

<http://www.rpi.edu/~eglash/csdt.html>

Read through the history of graffiti art and look at the examples in the program. Next go to the tutorial and learn how to use the tools to create your own virtual graffiti art. Make sure you save your work as you design the piece. **Print out your design for a grade (100 points) and also to have it displayed on the exhibit wall. This project is due by May 6, 2005.**

On May 9th, the art pieces that have been submitted will be judged by students, teachers and administrators. Four prizes will be awarded; one for the most original, one for the most mathematically complex; one for the best cultural representation and one for color and design.

The mathematical selection must include spirals, shadowing, coding and proportion in the design. The cultural representation piece needs to include cultural designs associated with a specific culture such as Islamic Star or Mayan art.

On May 16th we will award the prizes for the 4 categories.