

# Logarithmic Spiral

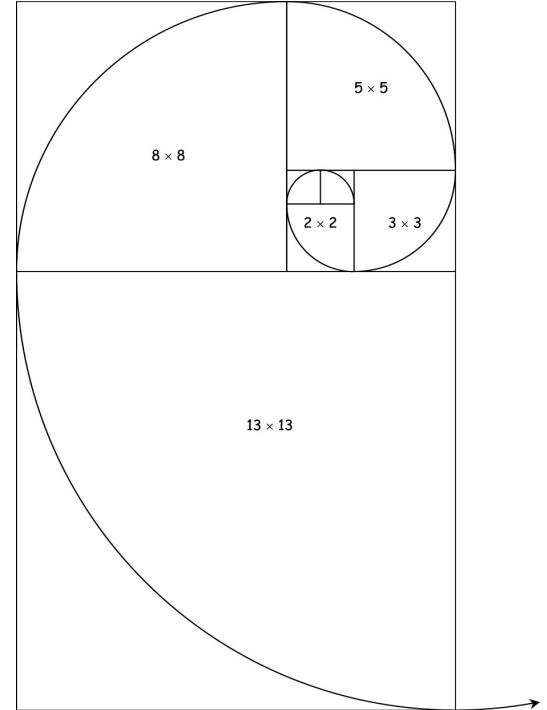
## Mathematical Patterns for Natural Beauty

- Also known as growth spiral, equiangular spiral, and spira mirabilis
- Golden ratio; golden section

### Prior Art

- First studied by Descartes & Bernoulli 1638.

$$x = ae^{k\varphi} \cos \varphi, \quad y = ae^{k\varphi} \sin \varphi$$



### Advantages

- Animation curves & smooth time rates
- Decorative 2D & 3D curves
- Smooth travel paths
- Simulation of certain natural patterns
- Inverse of exponential curve - exponential growth
- Continuous acceleration & smooth force

### Natural Examples



# Grading Criteria

- Technical implementation of logarithmic spiral
- Exhibition of pattern for example of artistic beauty or useful application
- Contextual & literary exploration of sources of mathematical and aesthetic value

## Sub-requirements

- Dynamic user input (GUI; multi-use)
- 3D gfx engine
- web deployment (easily accessible)