A treatise on non-aquatic gastropod Mollusca, a.k.a. *snails*

Aayush Bajaj

January 24, 2023

Contents

Definitions

If you wish to converse with me define your terms.

— Voltaire

Classifications

Habitat

Behaviours

Mathematics

Glossary

References

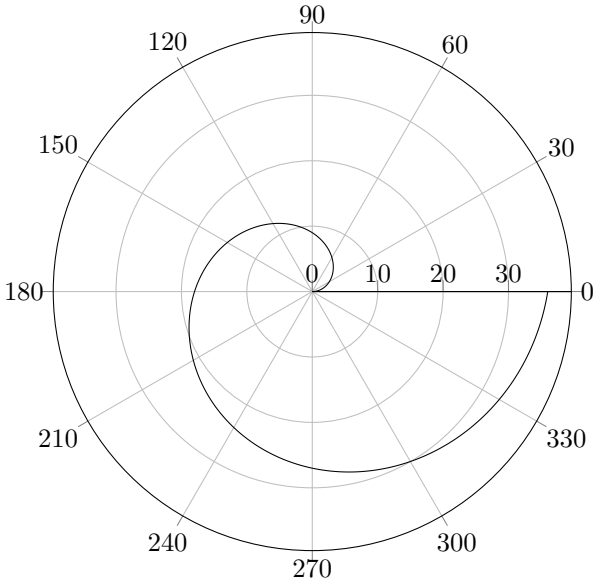
Snails are defined as gastropods that have a shell.

This shall be a fun exercise. I will need to learn how to produce a tree diagram in LaTeX as well as a TikZ picture of a golden spiral overlaid atop a snail (at the very least).

To accomplish the latter I shall leverage the arc length of a curve as $\theta_1 \to \infty$ for l, where

$$l = \int_{\theta_0}^{\theta_1} \sqrt{[f(\theta)]^2 + [f'(\theta)]^2} \mathrm{d}\theta$$

Then for a given curve such as $r = e^{\frac{\theta}{10}}$:



The length of the arc is:

$$
\begin{aligned}
l &= \int_0^{\theta_1} \sqrt{(e^{-\frac{\theta}{10}})^2 + (-\frac{1}{10}e^{-\frac{\theta}{10}})^2}\mathrm{d}\theta \\
&= \int_0^{\theta_1} \sqrt{(1+\frac{1}{100})e^{-\frac{2\theta}{10}}}\mathrm{d}\theta \\
&= \frac{\sqrt{101}}{10}\int_0^{\theta_1} e^{-\frac{\theta}{10}}\mathrm{d}\theta \\
&= \sqrt{101}(1-e^{-\frac{\theta_1}{10}}). \\
&= \sqrt{101} \text{ (as } \theta_1 \to \infty)
\end{aligned}
$$