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

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Definitions

If you wish to converse with me define your terms.

— Voltaire

Snails are defined as gastropods that have a shell. Gastropods are a <u>class</u> of invertebrates which include slugs, squids, octupuses *and* snails. These gastropods belong to a **larger** <u>phylum</u> of animals called *Mollusca*.

Classifications

The gastropod class includes both aquatic and non-aquatic snails and are the most diverse class of *Molluscs*, residing in **every** marine environment from high-energy surge zones to ocean floorbeds.

Restricting our study to *non-aquatic* gastropods brings us to 2 particular <u>families</u>; the **prosobranchia** and the **pulmonata**.

Prosobranchia

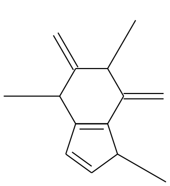
Pulmonata

Species → Genus → Family → Class → Phylum → Kingdom → Domain → Life

Figure 1: Hierarchy of taxonomic ranks

Habitat

Behaviours



written exclusively under the influence

Facts

Snails are hermaphrodites, they all have pp

Mathematics

Let us briefly consider the length of Jamiroquai the Garden Snail *(a.k.a cornu aspersum)*. Approximating the shell function to be defined in polar coordinates as $r = e^{\frac{-\theta}{10}}$ we may then use

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

On

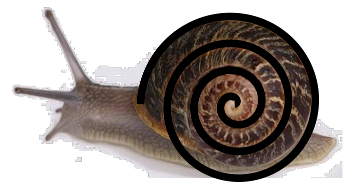


Figure 2: Jamiroquai

Such that the unravelled length of Mr Aspersum's shell becomes

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

Glossary

Phylum Herbivore, Omnivore, Carnivore

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

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

The length of the arc is: