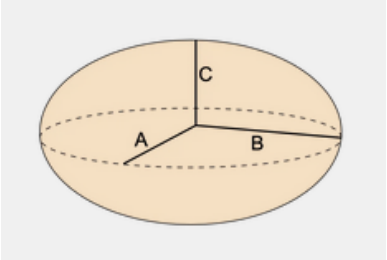
CE 3305 – Fluid Mechanics Exam 2 Extra Credit

Problem

A small piece of volcanic ejecta from Amboy Crater is at the front of the classroom

The mass of the object is 23.93 grams. The porosity of typical pumice is η = 64–85% by volume `https://en.wikipedia.org/wiki/Pumice`

The ellipsoid method to approximate volume uses 3 measurements A,B, and C, called semi-axes.



$V = \frac{4}{3} * \pi * A * B * C$

The porosity of typical pumice is η = 64–85% by volume. The porosity can be used to approximate the solids volume from the expression:

$V_{total} \cdot (1 - \eta) \approx V_{solids}$

Determine:

1. An estimate of the volume of the irregular shaped object (in milliliters).
2. An estimate of the solids volume, based on a porosity of 64%
3. Will it float?