# Archimedes Classic Volume Problems

The following is from a problem in our Math 125 course:

Archimedes (ca. 287-212 B.C.) was able to use clever geometric means to determine the relative volumes of a cylinder and the cone and paraboloid that would fit snugly into it (1800 years before Newton and Leibniz). With calculus, you don't have to be a genius to reach the same conclusions.

$$\frac{V_{cone}}{V_{cylinder}} = ??$$

$$\frac{V_{paraboloid}}{V_{cylinder}} = ??$$
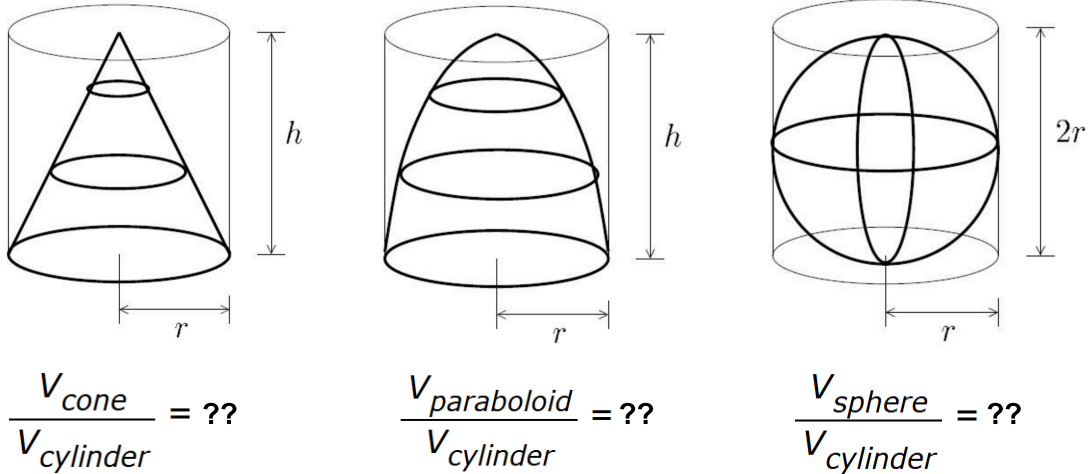
$$\frac{V_{sphere}}{V_{cylinder}} = ??$$

Go ahead and see if you can solve this problem using calculus or some other method. And if you want a starting place for more on the history, here is a Wikipedia article on Archimedes writings on the sphere and cylinder.

We printed these four shapes in order to make a replica of this problem.

It is a great exercise to use calculus methods to prove the volumes of classic shapes. It is a great place to start your exploration with these ideas to confirm that the results match with the volume formula that you have encountered before. Now start to ask your own volume of revolution questions, there are unlimited number of questions you could ask!