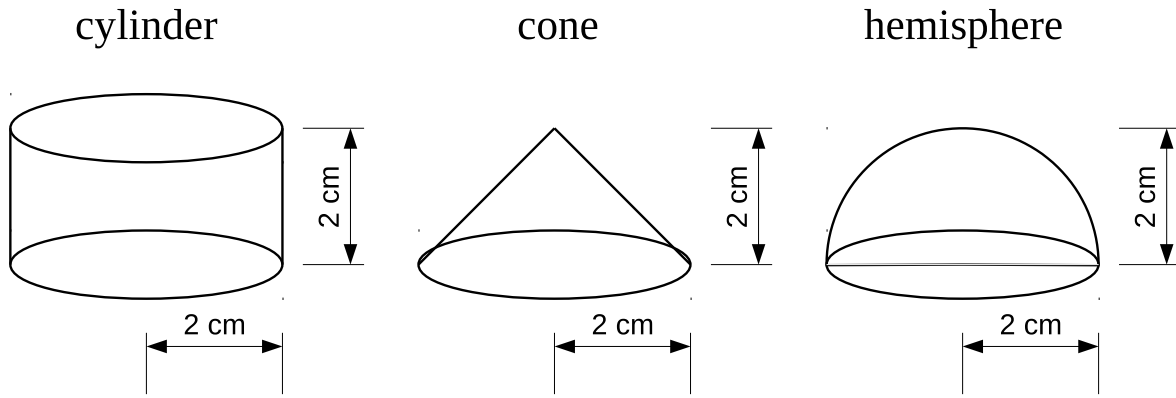**Assignment #5**
A Pre-Calculus Calculation
Due on Tuesday, 14 June, 2016.

Recall from class that *Cavalieri's Principle* is the fact that if two objects have corresponding cross-sections in some fixed proportion, then their areas (if they're 2-dimensional) or volumes (if they're 3-dimensional) are in the same proportion.

cylinder   cone   hemisphere

1. Use Cavalieri's Principle to show that the volume of a cylinder of radius 2 *cm* and height 2 *cm* is equal to the volume of a cone f radius 2 *cm* and height 2 *cm* plus the volume of a hemisphere (*i.e.* half of a sphere) of radius 2 *cm*. *[10]*

HINT: Think of the cone and the hemisphere as being one combined object.

NOTE: This is an adaptation of an argument given by Archimedes (*c.* 287–212 B.C.).