This homework set has five (5) problems. Some of them are routine, others require more thought. You are encouraged to work with others and to ask questions of your instructor; however, you must write up your solutions independently. On this and all subsequent homework sets please write neatly in complete sentences. Writing mathematics is a craft, aim to hone this skill!

1. Design an Aerobie Frisbee that could be balanced horizontally on the head of a pin.

2. Look up the meaning of the term *convex hull*. Give an example of a uniformly dense domain $D \in \mathbb{R}^2$ whose center of mass is different than that of its convex hull.


4. Over what region $E \in \mathbb{R}^3$ is the triple integral

$$\int \int \int_E (1 - x^2 - 2y^2 - 3z^2) \, dV$$

greatest?

5. Find the volume of a hypersphere in $\mathbb{R}^4$. 