

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each problem is worth 3 points for correct and clearly justified answers. An additional quality point will be awarded to submissions which are presented in a manner appropriate to good college-level work.

1. Do #28 in §15.4.
2. a) Show that the centroid of the triangle with vertices $(0,0)$, $(0,a)$, and $(b,0)$ is $(\frac{a}{3}, \frac{b}{3})$.

b) Now give the triangle from part a a density varying linearly with distance from the y -axis. Now where is the centroid?
3. Suppose a wedge of cheese fills the region in the first octant bounded by the planes $y = z$, $y = 4$, and $x = 4$. You could divide the wedge into two equal pieces (by volume) if you sliced the wedge with the plane $x = 2$. Instead find a with $0 < a < 4$ such that slicing the wedge with the plane $y = a$ divides the wedge into two equal pieces. [Briggs & Cochran]

