

Lab 6: Centroids

In this lab you will do several problems that will help you practice determining the center of mass (centroid) of a two-dimensional object. Do the problems neatly in pencil on a **separate** piece of paper and staple your pages. Clearly lay out your work using proper notation and circle/highlight/box your final answer. In each problem, your method of calculating the integral should be obvious. **Problems with just an answer and no work will not receive credit.**

You are encouraged to work groups of 2 to 4 people. If you do work with more than one person, you only need to hand in one lab write-up per group; make sure you put everyone's name on it. This lab is worth 40 points; each problem is worth 10. This is due next **Wednesday, August 27.**

1. Determine the centroid for the region bounded by $y = x^2$ and $y = \sqrt[3]{x}$.
2. Determine the centroid of a quarter-circle of radius R in Quadrant I (consider the circle to be centered at the origin). Note that if you find one of the coordinates, then finding the other requires very little calculation (but if you use such a shortcut, please verbally explain it).
3. Determine the centroid of the region bounded by $y = 4x - x^2$ and the x -axis. Note that one of the coordinates requires very little calculation (but if you use such a shortcut, please verbally explain it).
4. Determine the centroid of the region bounded by $y = \sqrt{x}$, $y = 3$, and the y -axis.