I. Using the washer disk method, set up the integral needed to find the volume of the solid of revolution formed when the region bounded by the graphs of \( y = \sqrt{x} \), \( y = 0 \), and \( x = 4 \) is revolved about
a) the x-axis  b) the y-axis

c) the line \( y = -1 \)  
d) the line \( x = 5 \)

II. Sketch the region bounded by the graphs of \( y = \sqrt{x} \), \( x = 1 \), \( x = 4 \), and the x-axis and find the center of mass of a lamina in the shape of the region if the density at any point is given by \( \delta(x, y) = x \).

III. A system of discrete particles is located along a seesaw-type device which remains horizontal. The first particle has mass 5 and is located at the point with coordinate -3, the second particle has mass 4 and is located at the point with coordinate \( 3/2 \). The third particle has mass 3. Where is it located?

IV. Sketch the region bounded by the graphs of \( y = \frac{1}{x} \), \( x = 1 \), \( x = 3 \), and the x-axis and find the centroid of the region.
V. Sketch the region bounded by the graphs of \( x = 3 - y^2 \) and \( x - 2y = 0 \) and set up the integrals needed to find the centroid of the region.

VI. Find the center of mass of a thin rod lying along the x-axis from \( x = 0 \) to \( x = 4 \) having density function
\[
\delta(x) = \begin{cases} 
2, & 0 \leq x \leq 3 \\
x + 3, & 3 < x \leq 4
\end{cases}
\]

VII. Go back and solve all of the integrals that you set up.