MA 114 Worksheet #19: Centers of Mass

1. Find the center of mass for the system of particles of masses 4, 2, 5, and 1 located at the coordinates $(1, 2)$, $(-3, 2)$, $(2, -1)$, and $(4, 0)$.

2. Point masses of equal size are placed at the vertices of the triangle with coordinates $(3, 0)$, $(b, 0)$, and $(0, 6)$, where $b > 3$. Find the center of mass.

3. Find the centroid of the region under the graph of $y = 1 - x^2$ for $0 \leq x \leq 1$.

4. Find the centroid of the region under the graph of $f(x) = \sqrt{x}$ for $1 \leq x \leq 4$.

5. Find the centroid of the region between $f(x) = x - 1$ and $g(x) = 2 - x$ for $1 \leq x \leq 2$.