MA 114 Worksheet #21: 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 $0 \le x \le 1$.

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

5. Find the centroid of the region between $f(x) = x - 1$ and $g(x) = 2 - x$ for $3/2 \le x \le 2$.

MA 114 Math Excel Worksheet #21: Centers of Mass

1. Determine the center of mass for the region bounded by $y = 2\sin(2x)$, $y = 0$, $x = 0$, and $x = \pi/2$.

2. Determine the center of mass for the region bounded by $y = x^3$ and $y = \sqrt{x}$.

3. Find the centroid of the region bounded by $y = 3 + \sqrt{4 - x^2}$, $y = 0$, $x = -2$ and $x = 2$.

4. Find the centroid of the region bounded by $y = 0$ and $y = b\sqrt{1 - x^2/a^2}$

5. Find the centroid of the triangle whose sides have equations $y = 6 - x$, $y = 6 + 3x$, and $x = 5$.