

Bonus Homework for §8.3 Calculus 2 2/11/2005

Each problem is worth zero points, but there is a chance you'll learn some math.

1. Find the x coordinate of the center of mass of the region bounded by $y = 9 - x^2$ and the x axis (think first about what it should be). 0
2. Find the y coordinate of the center of mass of the region bounded by $y = 9 - x^2$ and the x axis. 3.6
3. Find the x coordinate of the center of mass of the right-hand portion of the region bounded by $y = x^3$ and $y = x$. $8/15$
4. Find the x coordinate of the center of mass of the region between $y = x^3$ and the line tangent to it at $(1,1)$. $-4/5$
5. Find the x coordinate of the center of mass of the portion of the circle $x^2 + y^2 = 4$ which lies to the right of the line $x = 1$. $\frac{6\sqrt{3}}{4\pi - 3\sqrt{3}} \approx 1.41$
6. Find the x coordinate of the center of mass of the region bounded between $y = 1/x$, $y = 1/x^2$, and $x = 2$. $\frac{2 - 2\ln 2}{2\ln 2 - 1} \approx 1.59$
7. Find the x coordinate of the center of mass of the region between $x = 5y - y^2$ and $y = x$. ≈ 2.64
8. The curves $y = \sin x$ and $y = \cos x$ intersect infinitely many times. Find the x coordinate of the center of mass of one of the regions bounded between them. $3\pi/4$