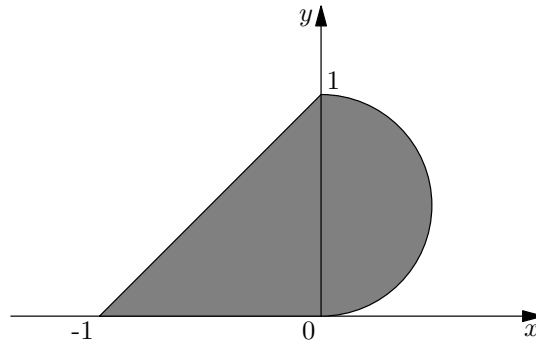


MATH141(0332/0342) Calculus II Fall 2009

Worksheet 3, Section 6.5-6.8

Name: _____

1. (5 points) Find the center of gravity of the following shape.



2. (5 points) Consider the curve C parametrized by

$$(x, y) = (3 + 7\cos(-16t), 5 - 7\sin(-16t)), \text{ for } -\frac{\pi}{2} \leq t \leq \frac{\pi}{2}.$$

Then C is a circle of center (__, __), radius __, and is traversed __ times in the _____ (clockwise/couterclockwise) direction.

3. (10 points) Consider the curve C with parameterization $x = \sqrt{3}t^2, y = t^3 - t$.

(a) Roughly sketch the curve. As a hint, the curve has a self-intersection point (“node”). Note that $y = 0$ when $t = 0, 1$, or -1 ; this should help in plotting. Try to show on your picture what happens as $t \rightarrow +\infty$ and $t \rightarrow -\infty$.

(b) Find the arclength of the curve as t ranges from 0 to 1. (If you do this correctly, answer should come out to something very simple.)