

Name: _____ Section: _____

Answer all questions and show your work. Unsupported answers may receive *no credit*. You may not use a calculator on this quiz. Allow 15 minutes for the quiz.

1. Consider a semicircular lamina Q described by

$$Q = \{(x, y) \mid x^2 + y^2 \leq 4, y \geq 0, -2 \leq x \leq 2\}$$

with density $\rho = 3$ units of mass per unit of area.

- (a) (2 points) Use geometry to find the total mass m of the lamina.

- (b) (2 points) Compute the moment M_x of the lamina about the x -axis.

- (c) (2 points) Find the center of mass of the lamina.

2. (4 points) Consider the curve C with parametric equations

$$x = t^2, \quad y = t^3 - 3t + 4.$$

Is the point $(4, 2)$ on the curve C ? If the answer is no, explain why. If the answer is yes, find t .