

**Math 231 Section A1**  
**Quiz 10**  
**July 24, 2007**

Name: \_\_\_\_\_

1) (13 points) Consider the curve  $y = (x - 4)^3$  from  $(0, -64)$  to  $(4, 0)$ .

a) Write parametric equations for the curve.

b) Find the slope of the tangent line to the curve at the point  $(2, -8)$ .

c) Find the area between the curve and the  $x$ -axis.

2) (7 points) Let  $C$  be the curve parameterized by  $x(t) = 4t^2 - 9$  and  $y(t) = \sin^2(t)$  for  $0 \leq t \leq \pi$ . Set up, but do not evaluate, the integrals giving the following.

a) The arc length of  $C$ .

b) The surface area gotten by revolving  $C$  around the line  $x = 100$ .

Extra Credit: Find the surface area gotten by revolving the curve  $x(t) = t^2/2 - \ln(2t)$  and  $y(t) = 2t$  for  $0 \leq t \leq 1$  around the line  $y = 1$ .