Quiz 2A, Calculus 2

Dr. Graham-Squire, Spring 2013

Name: _____

1. (6 points) Consider the definite integral

$$\int_0^2 \frac{x^3}{\sqrt{4-x^2}}\,dx.$$

   (a) Is the integral an improper integral or not? If it is, explain why and express it appropriately with a limit.

   (b) Use trigonometric substitution with $x = 2\sin\theta$ to simplify the integral. You should simplify by canceling terms until you are left with just the integral of a trig function to a power, then explain in words how you would finish the integration. You do not need to actually do the whole integration! If you can't do the trig substitution, you can solve it by another method for partial credit. Show your work!

2. (4 points) Set up but do not integrate a definite integral to find the area enclosed by the curves

$$f(x) = x^2 - x - 2 \qquad \text{and} \qquad g(x) = 4 - x^2.$$