

Math 16A, Fall 2000, Professor Harrison  
Practice Quiz, 6 December 2000

Name\_\_\_\_\_

GSI\_\_\_\_\_Section\_\_\_\_\_

Instructions: You have 30 minutes in which to answer the questions on BOTH SIDES of this quiz. Please read the questions carefully; no credit will be given for answering a different question than the one stated. No calculators, notes, or other references may be used.

1. (a) Is the following statement True or False? (circle one):

If  $f'(x) = 3x^2$  then  $f(2) = 8$ .

(b) (4 points) If you said it was true, explain why. If you said it was false, come up with a specific counterexample which disproves it.

2. (a) Is the following statement True or False? (circle one):

If  $g : [-2, 2] \rightarrow \mathbb{R}$  is a smooth function such that  $g(-2) > 0$  and  $g(2) > 0$ , then  $\int_{-2}^2 g(x) dx > 0$ .

(b) (4 points) If you said it was true, explain why. If you said it was false, come up with a specific counterexample (formula or graph) which disproves it.

3. (8 points) One of the following functions is an antiderivative of  $\ln(x)$  for  $x > 0$ . Which is it? Justify your answer.

- a)  $\frac{1}{2} (\ln(x))^2$
- b)  $\ln(x^2/2)$
- c)  $2 - x + x \ln(x)$
- d)  $1/x$

4. (8 points) Use the Fundamental Theorem of Calculus to find the area of the shaded region below the graph of  $y = e^{x/5}$ .

