FORM A

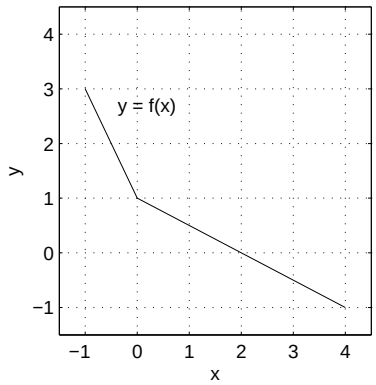
MATH 242, Fall 2006
Exam 1: October 4, 10:10-11:00

Only the blue book will be graded. On the front cover, please write **Form A** clearly, along with your name and section number. Please start each problem on a new page, circle final answers, and cross out incorrect work. **Unless otherwise noted, you must justify all answers to receive full credit.** You may not use calculators, notes, or any other kinds of aids.

1. (5 points each) Shown here is a graph of $y = f(x)$. Let $g(x) = f^{-1}(x)$. Find each value, if it exists. Remember to explain your answers.

   (a) $g(0)$

   (b) $g'(0)$



2. (10 points) Simplify $\sinh(\ln 2 - \ln 4)$ to a rational number.

3. (10 points each) Find y' in each case.

   (a) $y = \ln(x^2 2^x)$ (b) $y = \dfrac{1}{e^{\cos x}}$

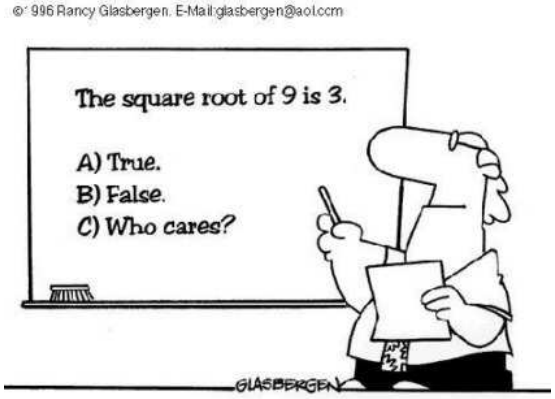
4. (15 points each) Evaluate each limit.

   (a) $\lim_{x \to 0} x \tan^{-1}\left(\dfrac{1}{x}\right)$ (b) $\lim_{x \to 0} \dfrac{\tanh(5x^2)}{x^2}$

5. (15 points each) Evaluate each integral.

   (a) $\int \dfrac{4x+1}{4x^2+1}\,dx$ (b) $\int e^{-x}\sqrt{1+e^{-x}}\,dx$

$$\frac{d}{dx}\left(\sin^{-1} x\right) = \frac{1}{\sqrt{1-x^2}}$$
$$\frac{d}{dx}\left(\tan^{-1} x\right) = \frac{1}{1+x^2}$$



Many students actually look forward to Mr. Atwadder's math tests.