

Math 1A Quiz 4  
October 26th, 2007

Name \_\_\_\_\_ SID \_\_\_\_\_

1. Show that  $\sin^{-1}(\tanh(x)) = \tan^{-1}(\sinh x)$ . [Hint: draw a right triangle with  $\sin^{-1}(\tanh x)$  as one of its angles!]

2. Find all  $x$  such that  $\cos^{-1}(\cos x) = \pi/3$ .

3. Find

$$\lim_{x \rightarrow 0} \frac{e^{-1/x^2}}{x}$$

Bonus Point: Find two functions  $f$  and  $g$ , defined for all real numbers, such that  $f$  and  $g$  are both invertible, but  $fg$  and  $f + g$  are both not invertible. (Worth 2 points, one for this quiz, and one applicable to *any* quiz!)