

**WRITE YOUR NAME:**

MAC 2241 Homework 4  
Due in class, Friday February 24th  
You can use more paper if necessary, but please STAPLE

**Question 1.** Evaluate the limit, if it exists.

$$\lim_{x \rightarrow -4} \frac{\sqrt{x^2 + 9} - 5}{x + 4}$$

**Question 2.** Evaluate the limit, if it exists.

$$\lim_{x \rightarrow 0} \frac{\sin^2 x}{x^2}$$

**Question 3.** Evaluate the limit, if it exists.

$$\lim_{x \rightarrow 0} \frac{\sin^2 x}{x}$$

**Question 4.** Evaluate the limit, if it exists.

$$\lim_{x \rightarrow 0} \frac{\sin x}{x^2}$$

For the above problems, you should use algebraic methods and/or rules you have learned. Just plugging in numbers is not enough, and remember that on quizzes and tests, you don't get to use a calculator.

However, you may find it useful as "side work" to plug in specific values of  $x$  near  $-4$  or  $0$  (using a calculator or computer) in order to check whether your answers are plausible.