

MATH 1420 WRITTEN HOMEWORK 1
DUE FRIDAY, FEBRUARY 10

Remember that for all problems you should write up a complete explanation. That is, don't just show me calculations. You also need to explain why the steps you follow are valid.

Problem 1. Calculate the limit

$$\lim_{x \rightarrow \infty} \frac{\sin x + \cos x}{x}.$$

[Hint: Don't squeeze your brain too hard trying to figure out what to do.]

Problem 2. Determine whether the following statement is true or false. If it is true, justify your response with an explanation. If it is not true, justify your response with a counterexample.

"If $f(x)$ is continuous on the interval $[a, b]$ and $f(a) < 0 < f(b)$ then $f(x) = 0$ at exactly one point between a and b ."