Quiz 2

Name: _____

1. Find the values of these limits.

$$\lim_{x\to\pi} \cos(x) = -1 \qquad\qquad \lim_{t\to 0} \frac{1}{t+1} = 1$$

If we plug in the value of the limiting variable, both of these functions make sense. The answers are $\cos(\pi) = -1$ and $\frac{1}{0+1} = 1$.

2. Determine the behavior of the following limit, and explain your conclusion.

$$\lim_{t\to 0} \frac{|t|}{t}$$

As seen in class, we need to plug in numbers for t close to 0 both from above and below. In doing so, you'll find that for negative numbers you get outputs of -1, and for positive numbers you get $+1$, meaning the limit does not exist.

3. What is the idea of a limit, and why do we need them?

The idea of a limit is to determine what the outputs of a function $f(t)$ are approaching when we send the variable t to a number. We need them because some functions or expressions do not make sense at inputs we wish to evaluate (like the difference quotient).