# Quiz 2

MATH 221

**Name:** _____

For full credit please explain all of your answers. **No calculators** are allowed.

**Problem 1.** Let $f(x) = 5x - 6$.

(a) Find $L = \lim_{x \to 1} f(x)$ without proving it.

(b) Find a number $\delta > 0$ such that for all $x$ with $0 < |x - 1| < \delta$ we have $|f(x) - L| < 1$.

**Problem 2.** Let

$$f(x) = \begin{cases} 2x & x \geq 0 \\ x^2 - 2 & x < 0 \end{cases}$$

Find $\lim_{x \to 0^+} f(x)$ and $\lim_{x \to 0^-} f(x)$. Does $\lim_{x \to 0} f(x)$ exist, why or why not?