1. Suppose the position of a moving particle is given by $p(t) = t^2 - t$. Calculate the following:

   Average velocity from $t = 2$ to $t = 2.1$.

   Average velocity from $t = 2$ to $t = 2.01$.

   Instantaneous velocity at $t = 2$.

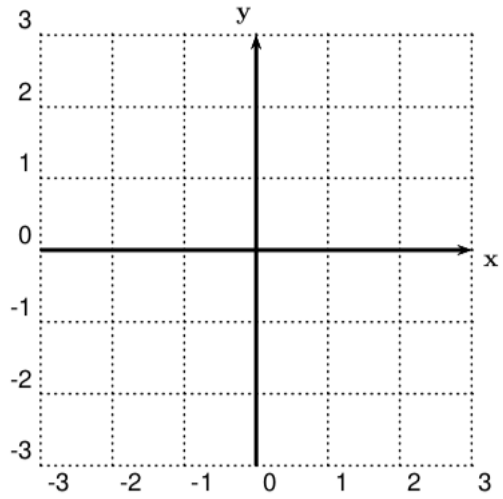
2. $\lim_{x \to c} f(x) = L$ means $f(x)$ gets *arbitrarily* close to L for x *sufficiently* close to c.

   Critique the following: As x approaches 100, $1/x$ gets closer and closer to 0, therefore

$$\lim_{x \to 100} \frac{1}{x} = 0.$$

3. Draw a function that has the following properties:

$$\lim_{x\to -2^-} f(x) = 0, \quad \lim_{x\to -2^+} f(x) = 1, \quad \lim_{x\to 1} f(x) = -1, \quad f(1) = 2, \quad \lim_{x\to \infty} f(x) = -\infty$$



4. Determine the following (each answer should be a number, ∞, $-\infty$, or *DNE*).

$\lim_{x\to 1^-} \frac{1}{x-1} =$

$\lim_{x\to 1^+} \frac{1}{x-1} =$

$\lim_{x\to 1} \frac{1}{x-1} =$

$\lim_{x\to 1^-} \frac{x^2-1}{x-1} =$

$\lim_{x\to 1^+} \frac{x^2-1}{x-1} =$

$\lim_{x\to 1} \frac{x^2-1}{x-1} =$