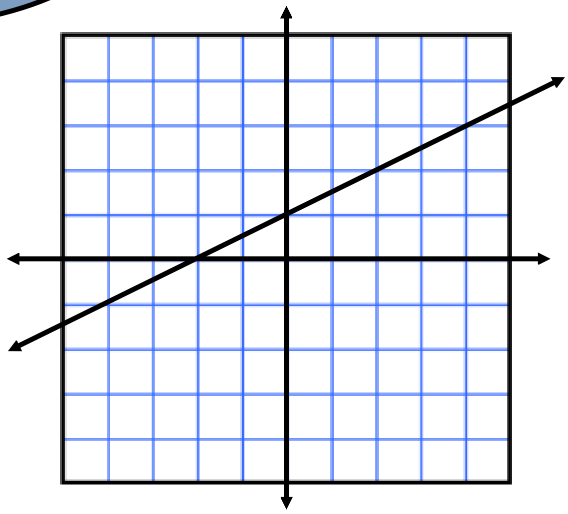
Calculus AB
1-2
Limits

Examine: $f(x) = \frac{1}{2}x + 1$

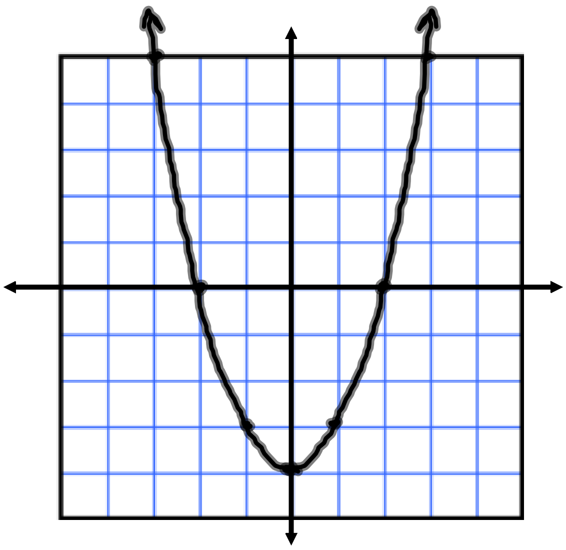


$f(0) =$

$f(2) =$

New Concept: $\lim_{x \to 2} f(x) =$

One sided limits:



Examine: $f(x) = x^2 - 4$

Left-hand Limits -

$\lim_{x \to 1^-} f(x) =$

Right-hand Limits -

$\lim_{x \to 1^+} f(x) =$

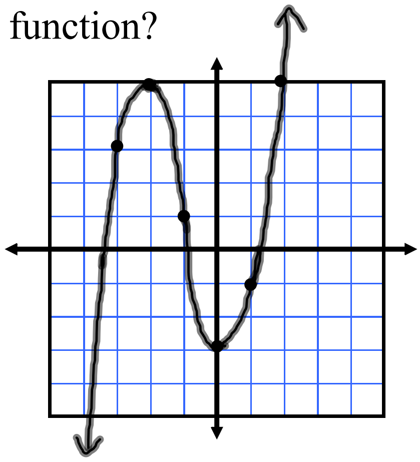
Theorem - The existence of a limit

Does $\lim_{x \to 1} f(x)$ exist? If so, what is it?

How is evaluating a limit different from evaluating a function?

Consider:

$$f(x) = x^3 + 3x^2 - 2x - 3$$



$\lim_{x \to -2^-} f(x) =$

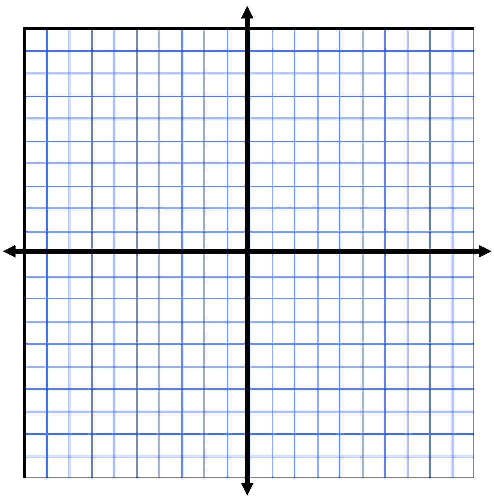
$\lim_{x \to -2^+} f(x) =$

$\lim_{x \to -2} f(x) =$

$f(-2) =$

Using your calculator, graph

$$f(x) = \frac{x^2 - 5x - 6}{x + 1}$$



$\lim_{x \to -1^+} f(x) =$

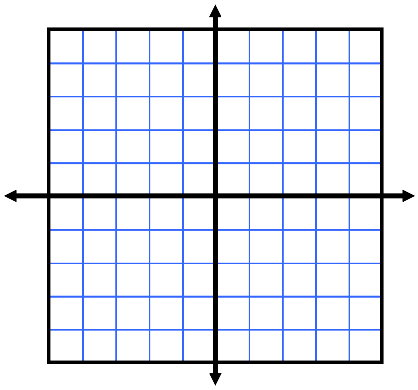
$\lim_{x \to -1^-} f(x) =$

$\lim_{x \to -1} f(x) =$

$f(1) =$

Examine the graph of

$$f(x) = \frac{1}{x}$$



$$\lim_{x \to 0^-} f(x) =$$

$$\lim_{x \to 0^+} f(x) =$$

$$\lim_{x \to 0} f(x) =$$

Handout
4 - 11 all

(excerpt from the Stewart book)