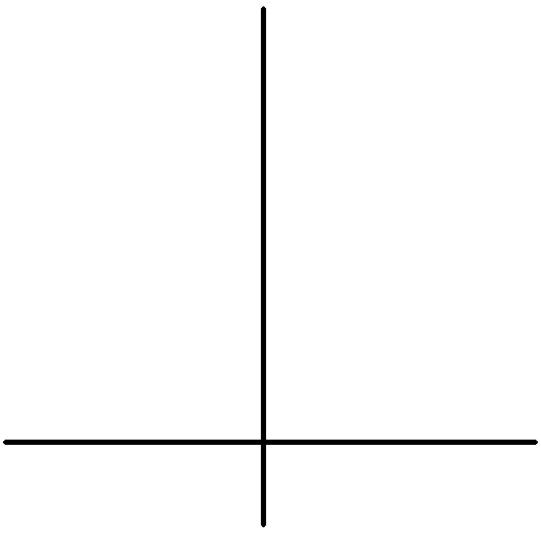
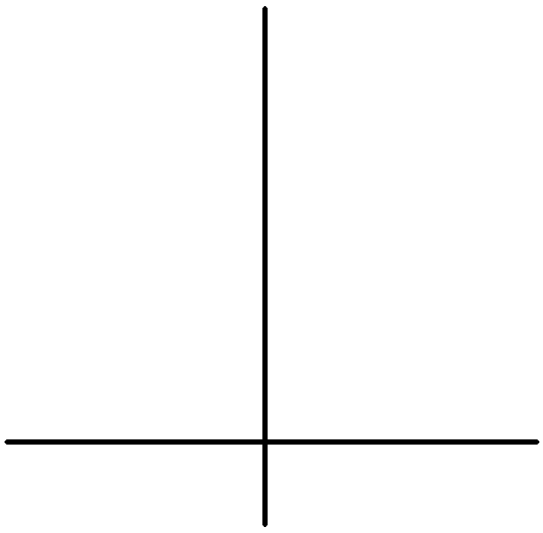
2.2 Limits Involving Infinity

Day 1

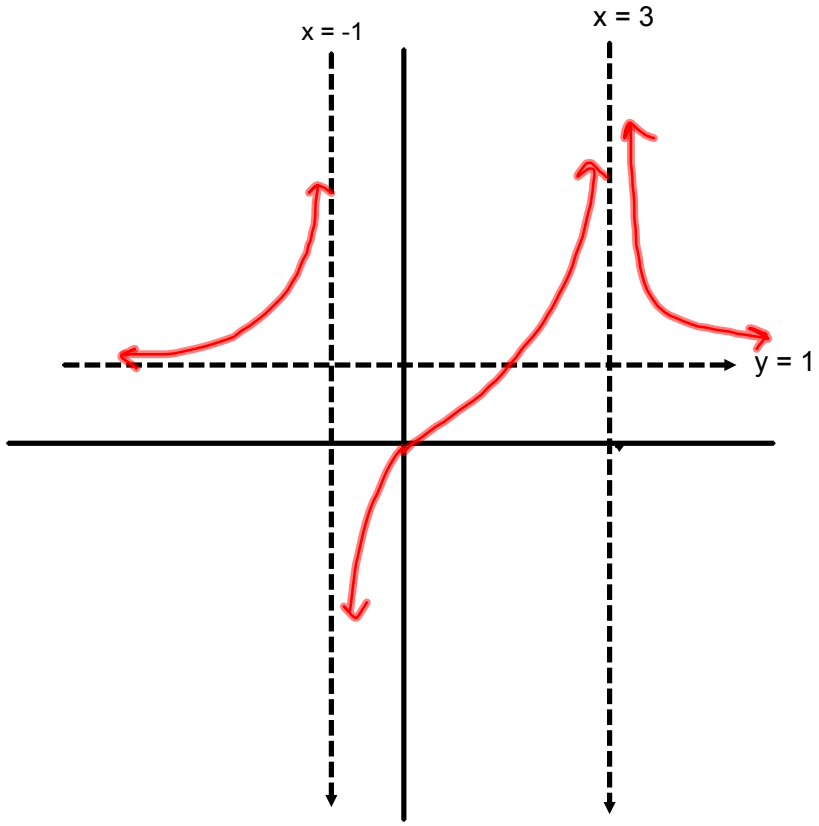
$\lim_{x \to \infty} f(x) = a$



$\lim_{x \to a} f(x) = \infty$



The graph of f(x) is below



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

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

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

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

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

$\lim_{x \to 3^-} f(x) =$

$\lim_{x \to 3^+} f(x) =$

Vertical Asymptotes

How are they found?

Rational Function is in the form: $\dfrac{ax^n + bx^{n-1} + cx^{n-2}}{ax^n bx^{n-1} cx^{n-2}}$

Ex 2) Find the vertical asymptotes. $\dfrac{x+2}{x^2 - 5x + 4}$

Horizontal Asymptotes / End Behavior

$$f(x) = \frac{x + 2}{x^2 + 2x + 7}$$

$$f(x) = \frac{2x^2 + 7}{3x^2 - 5x + 2}$$

$$f(x) = \frac{x^3 + 2x + 1}{x - 2}$$

IMPORTANT: $\lim_{x \to 0} \frac{\sin x}{x} =$