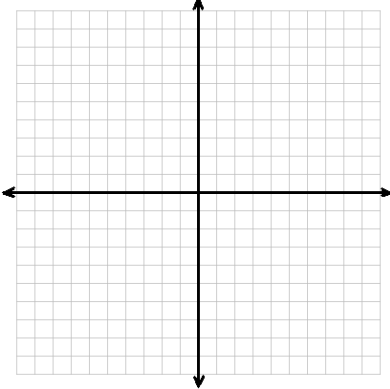


Finding Limits Algebraically (Part 1)

Warm Up:

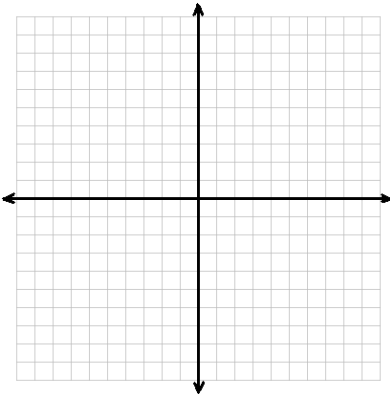
1. a) Graph $f(x) = 4$



b) $\lim_{x \rightarrow 1} f(x) = \underline{\hspace{2cm}}$

c) $\lim_{x \rightarrow 2} 4 = \underline{\hspace{2cm}}$

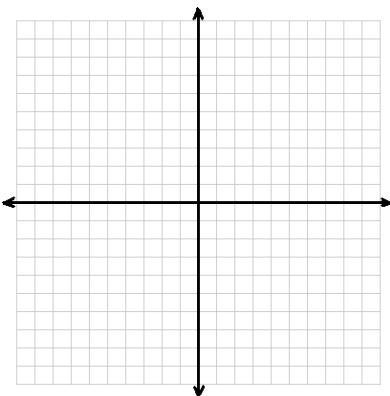
2. a) Graph $f(x) = x + 3$



b) $\lim_{x \rightarrow 3} (x + 3) = \underline{\hspace{2cm}}$

c) $\lim_{x \rightarrow 2} (x + 3) = \underline{\hspace{2cm}}$

3. a) Graph $f(x) = x^2$



b) $\lim_{x \rightarrow 0} x^2 = \underline{\hspace{2cm}}$

c) $\lim_{x \rightarrow 2} x^2 = \underline{\hspace{2cm}}$

Limits of Polynomials and Rational Expressions

Example 1: Find $\lim_{x \rightarrow -2} (x^2 - 4x + 1)$

Practice Problem 1: $\lim_{x \rightarrow -2} \left(\frac{2x - 6}{x - 2} \right)$

Finding Limits Algebraically (Part 1)

Indeterminant Form

Example 2: $\lim_{x \rightarrow -2} \left(\frac{x^2 - 2x - 8}{x^2 - 4} \right)$

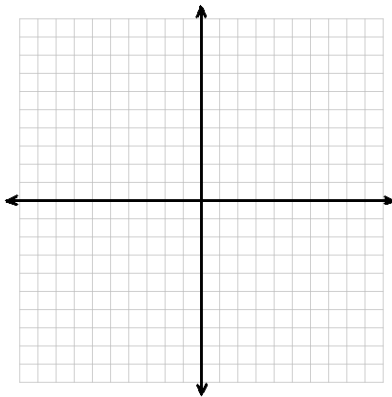
Practice Problem 2: $\lim_{x \rightarrow 1} \left(\frac{x^2 - 2x + 1}{x^3 - 1} \right)$

Limit of Denominator is 0

Consider the function $f(x) = \frac{1}{x}$ and its graph.

What is $\lim_{x \rightarrow 0^-} \left(\frac{1}{x} \right)$?

What is $\lim_{x \rightarrow 0^+} \left(\frac{1}{x} \right)$?



Examples:

3. $\lim_{x \rightarrow 2} \left(\frac{2x + 5}{x - 2} \right)$

4. $\lim_{x \rightarrow -3} \left(\frac{x^2 + 2x - 3}{x^2 + 6x + 9} \right)$

Practice Problems:

3. $\lim_{z \rightarrow 0} \left(\frac{4}{x^2} \right)$

4. $\lim_{x \rightarrow 2} \left(\frac{2x - 4}{x^3 - 6x^2 + 12x - 8} \right)$

More Practice

1. $\lim_{x \rightarrow 4} 12$

2. $\lim_{x \rightarrow -3^-} 2\pi$

3. $\lim_{x \rightarrow 2^+} 6$