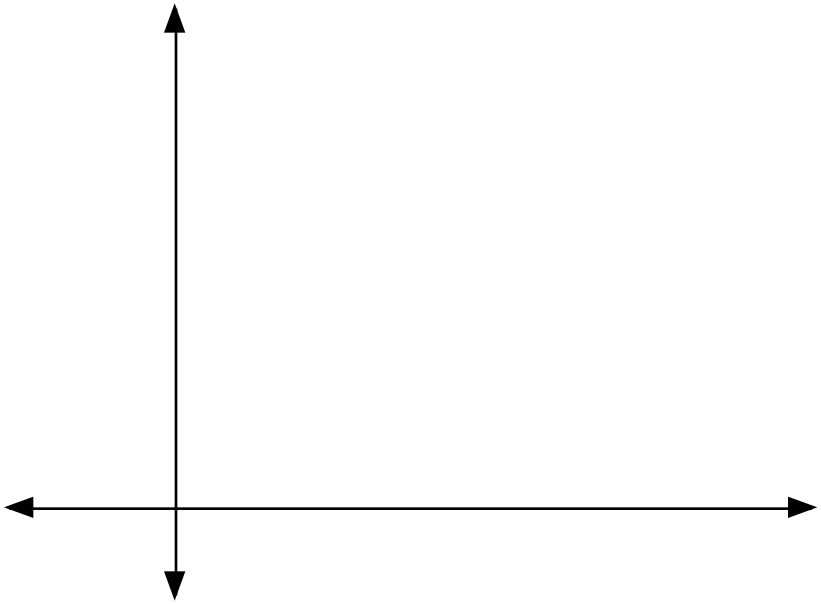
Name: _____

Classwork 4

1. Expand $(x+1)^9$

2. $f(x) = \dfrac{x^2 - 5x + 6}{x - 3}$ Find $\lim\limits_{x \to 3} \dfrac{x^2 - 5x + 6}{x - 3}$

x	f(x)
4	
3.5	
3.1	
3.05	
3.01	
3.001	
3.0001	

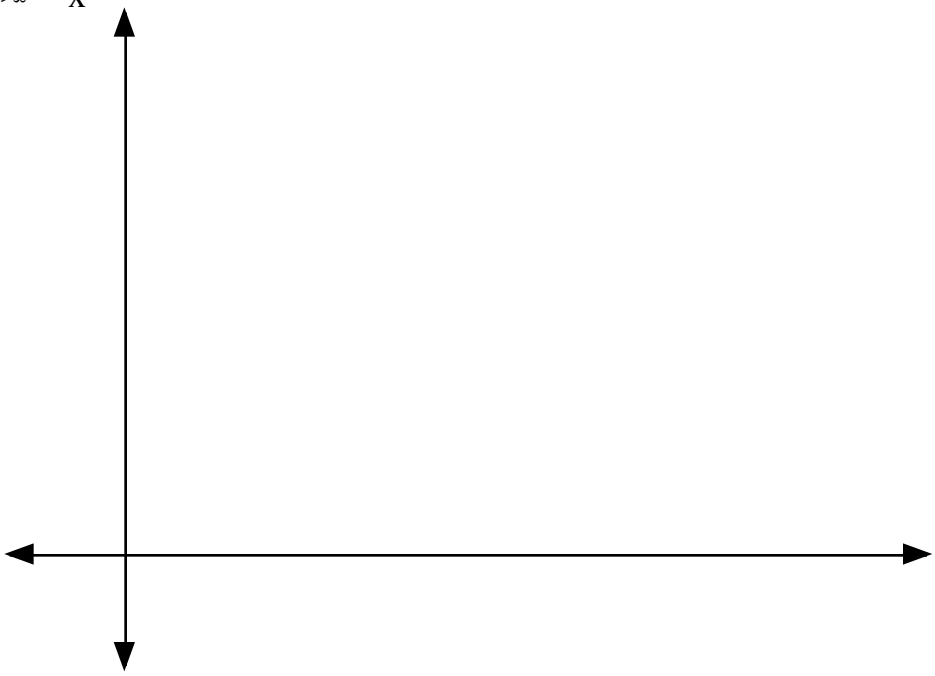


Is there another way you could have *calculated* this limit?

3. $f(x) = \dfrac{x^3 - 3x^2 - 10x}{x + 2}$ a) Find $\lim\limits_{x \to -2} f(x)$

4. $f(x) = \frac{x + 5}{x}$ Find $\lim_{x \to \infty} \frac{x + 5}{x}$

x	f(x)
1	
10	
100	
1000	
10000	
100000	
1000000	



Is there another way you could have *calculated* this limit?

Hint: How could you do 1/2 + 1/3 without a calculator?

5. $f(x) = \frac{x^2 + 3}{x}$ Find $\lim_{x \to \infty} \frac{x^2 + 3}{x}$

x	f(x)

Do you think this limit will be the same as in #4? Why or why not?

6. Find $\lim_{x \to \infty} \frac{x^2 - 8}{x^3 - 5x + 4}$

Why is this answer different than #4 or #5?

7. Find $\lim_{x \to \infty} \frac{3x^4 - 2x^2 + 5}{x^4}$

8. $f(x) = \frac{x}{x - 4}$ Find $\lim_{x \to 4} \frac{x}{x - 4}$.

9. Find $\lim_{x \to 0} \frac{1}{x} + x$

10. List several techniques for finding the limits of functions.

Practice Problems

1. Find $\lim_{x \to 0} \frac{x - 3}{x}$

2. Find $\lim_{x \to 0} \frac{x^2 + 6x}{x}$

3. Find $\lim_{x \to 0} \frac{x^2}{x} - x^2$

4. Find $\lim_{x \to \infty} \frac{x^2}{x} - x^2$