# Precalc – Warm Up – 2/9/11

Name:_____ Period:_____

1) Find the following limits:

a) $\lim_{x\to 5}\frac{x^2-25}{x-5}$

b) $\lim_{x\to 5}\frac{x^2-9}{x-3}$

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# Precalc – Limits and Instantaneous Rate of Change!! – 2/9/11

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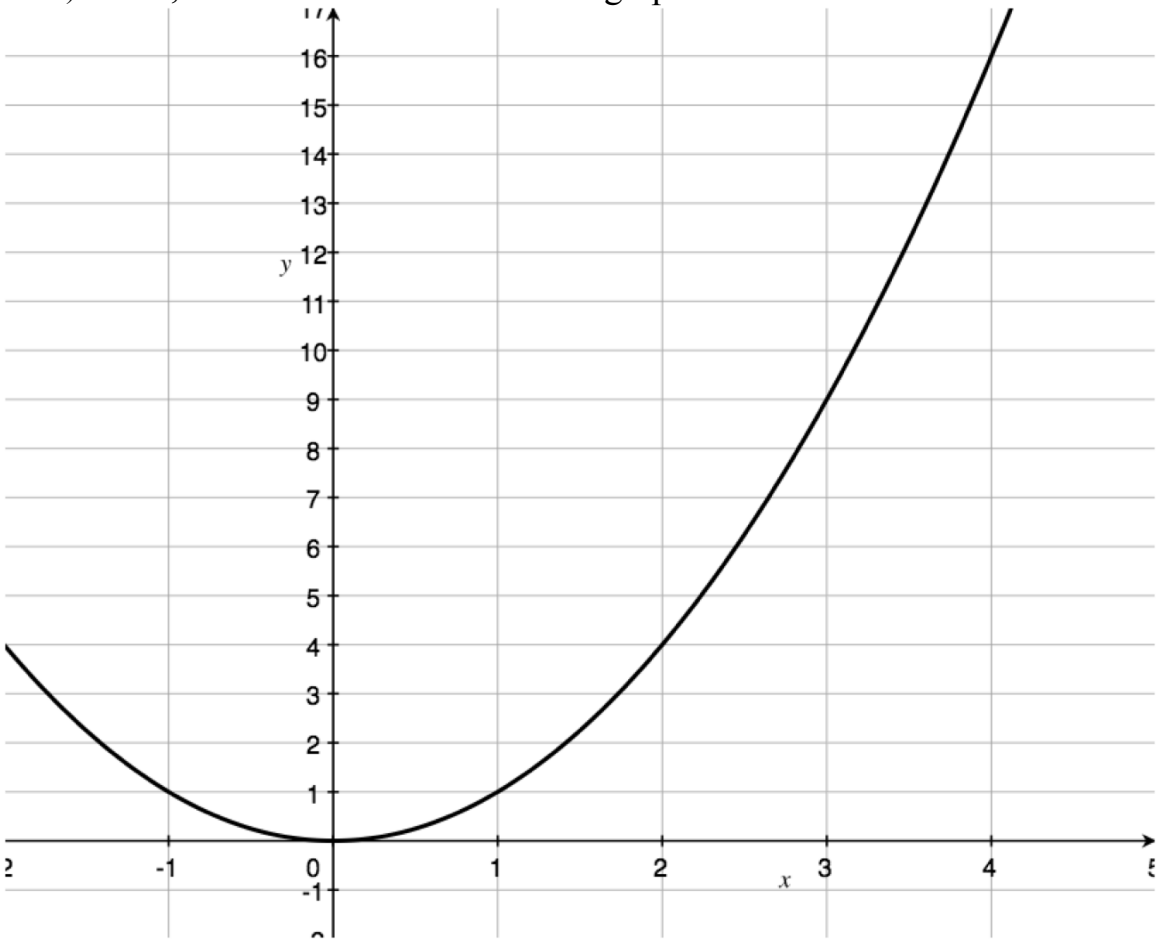
Students will be able to fins an instantaneous rate of change using limits

1) Consider the function $f(x) = x^2$. Imagine that we want to find the instantaneous rate of change of $f(x)$ at x=3.

   a) Using $x_1 = 3$ find $y_1 = f(x_1)$

   b) Insert $x_1$ and $y_1$ into the instantaneous rate of change formula

   c) Now, let's see what we have on a graph:



d) Now, back to the algebra:

2) One more example: Find the instantaneous rate of change of $f(x) = x^2 - 2x - 4$ at x=4.

a) Find $y_1$

b) Substitute in instantaneous rate of change

c) Substitute for $y_2$

d) Take the limit

Practice

1) Find the instantaneous rate of change of the function $f(x) = x^2 + 3x + 2$ at x=1.

2) Find the instantaneous rate of change of the function $f(x)=x^2+2x-8$ at x=2.

3) Find the instantaneous rate of change of the function $f(x)=x^2-3x-18$ at x=6.

4) Find the instantaneous rate of change of the function $f(x)=x^2+4x+2$ at x=2.

5) Find the instantaneous rate of change of the function $f(x)=x^2+6x+96$ at x=-8.

# Precalc – Exit Slip – 2/9/11

Name:_____ Period:_____

Find the following limits.

1) Find the instantaneous rate of change of the function $f(x) = x^2 + 4x + 0$ at x=2.