

# AP Calc Warm Up – 9/20/10

Name: \_\_\_\_\_

Period: \_\_\_\_\_

1) Find the following limits.

a.  $\lim_{x \rightarrow 4} \frac{1}{x+8} =$

b.  $\lim_{x \rightarrow 4} \frac{1}{x-4} =$

c.  $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3} =$

d.  $\lim_{x \rightarrow 5} \frac{x^2 - 2x - 15}{x + 4} =$

e.  $\lim_{x \rightarrow 0} \frac{\sin x}{x} =$

# AP Calc

## Practice Finding Limits

Name:\_\_\_\_\_Date:\_\_\_\_\_Period:\_\_\_\_\_

Students will be able to find an infinite limit using any strategy (graph, analytical or graphing calculator)

Let's consider the following limit

$$\lim_{x \rightarrow \infty} \frac{1}{x}$$

Analytically:

Graphically:

With a graphing calculator:

Let's consider the following limit:

$$\lim_{x \rightarrow \infty} \frac{x^2 - 3x + 4}{x - 3}$$

Analytically:

Graphically:

With a graphing calculator:

Let's consider the following limit:

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

Analytically:

Graphically:

With a graphing calculator:

## Practice

1)  $\lim_{x \rightarrow 5} 12$

2)  $\lim_{x \rightarrow 0} \pi$

3)  $\lim_{x \rightarrow 2} 4x$

4)  $\lim_{x \rightarrow 5} 3x^2 - 4x - 1$

5)  $\lim_{x \rightarrow 0^-} 5x^3 - 7x^2 + 2^x - 2$

6)  $\lim_{y \rightarrow -1} 3y^4 - 6y^3 - 2y$

7)  $\lim_{x \rightarrow 4} \frac{2x-4}{x-1}$

8)  $\lim_{x \rightarrow -2} \frac{x^2 + 4x + 4}{x^2}$

9)  $\lim_{x \rightarrow 1} \frac{2x-2}{x-1}$

10)  $\lim_{x \rightarrow 4} \frac{x^2 - 16}{x - 4}$

11)  $\lim_{t \rightarrow -2} \frac{t^3 + 8}{t + 2}$

12)  $\lim_{x \rightarrow 2} \frac{x^2 - 4x + 4}{x^2 + x - 6}$

13)  $\lim_{x \rightarrow -1} \frac{x^2 + 6x + 5}{x^2 - 3x - 4}$

14)  $\lim_{x \rightarrow 1} \frac{x^3 + x^2 - 5x + 3}{x^3 - 3x + 2}$

15)  $\lim_{x \rightarrow 3} \frac{x}{x-3}$

16)  $\lim_{x \rightarrow 5} \frac{x}{x^2 - 25}$

17)  $\lim_{y \rightarrow 6} \frac{y+6}{y^2 - 36}$

18)  $\lim_{x \rightarrow 4} \frac{3-x}{x^2 - 2x - 8}$

19)  $\lim_{x \rightarrow 1} \frac{4}{x^2 - 2x + 1}$

20)  $\lim_{x \rightarrow 5} \frac{x}{|x-5|}$

21)  $\lim_{x \rightarrow 3} \frac{-x^2}{x^2 - 6x + 9}$

$$22) f(x) = \begin{cases} x-1, & x \geq 3 \\ 2x-3, & x < 3 \end{cases} \quad \text{find } \lim_{x \rightarrow 3} f(x)$$

$$23) f(x) = \begin{cases} x^3-1, & x \geq -1 \\ 2x, & x < -1 \end{cases} \quad \text{find } \lim_{x \rightarrow -1} f(x)$$

$$24) f(x) = \begin{cases} \frac{x-2}{x-1}, & x \geq 1 \\ \frac{x}{x-1}, & x < 1 \end{cases} \quad \text{find } \lim_{x \rightarrow 1} f(x)$$

$$25) \lim_{x \rightarrow 0} \frac{\sqrt{x+4}-2}{x}$$

$$26) \text{ Let } f(x) = \begin{cases} x^2-2x-3, & x \neq 2 \\ k-3, & x = 2 \end{cases}$$

find  $k$  such that  $\lim_{x \rightarrow 2} f(x) = f(2)$

$$27) f(x) = \begin{cases} \frac{x^2-49}{x-7}, & x \neq 7 \\ k^2-2, & x = 7 \end{cases}$$

find  $k$  such that  $\lim_{x \rightarrow 7} f(x) = f(7)$

$$28) \lim_{x \rightarrow \infty} 6$$

$$29) \lim_{x \rightarrow \infty} (-2x+11)$$

$$30) \lim_{x \rightarrow -\infty} (3x^4-3x^3+5x^2+8x-3)$$

$$31) \lim_{x \rightarrow \infty} \frac{2x-3}{4x+5}$$

$$32) \lim_{x \rightarrow -\infty} \frac{7-3x^3}{2x^3+1}$$

$$33) \lim_{x \rightarrow \infty} \frac{2}{5x-3}$$

$$34) \lim_{x \rightarrow -\infty} \frac{2x+30}{6x^{12}-5}$$

$$35) \lim_{x \rightarrow \infty} \frac{4x^4}{6x^3-19}$$

$$36) \lim_{x \rightarrow -\infty} \frac{4x^2-3x-2-5x^3}{9x^2+9x+7}$$

$$37) \lim_{x \rightarrow \infty} \frac{x}{\sqrt{x^2+4}}$$

$$38) \lim_{x \rightarrow -\infty} \frac{x}{\sqrt{x^2+4}}$$

$$39) \lim_{x \rightarrow -\infty} \frac{\sqrt{3x^2+x}}{x^2-1}$$

# AP Calc – Exit Slip – 9/20/10

Name: \_\_\_\_\_

Period: \_\_\_\_\_

1) Find the following limits.

a.  $\lim_{x \rightarrow \infty} \frac{1}{x} =$

b.  $\lim_{x \rightarrow \infty} \frac{3x^3 - x + 5}{x^2 + 5x + 7} =$

c.  $\lim_{x \rightarrow \infty} \frac{2x^4 + 4x^2 + 3x - 1}{x^4 + 5x^3 + 3x - 10} =$

d.  $\lim_{x \rightarrow \infty} \sin x =$