

Pledge:

Messed up – was quiz 4

9/27/2011

Dr. Lunsford

MATH261 Calculus I

Quiz 5

Name: _____

(40 Points Total)

I. Find the exact value of the following limits (i.e. not a calculator approximation) provided the limit exists. If the limit does not exist as a number, then determine if it exists in the infinite sense (i.e. equals plus or minus infinity). You do not need to show any work for these problems.

1. $\lim_{\theta \rightarrow \frac{3\pi}{2}} \sin\left(2\theta - \frac{\pi}{4}\right)$

2. $\lim_{w \rightarrow 3} (aw^2 + bw + c)$

3. $\lim_{x \rightarrow -2^+} \frac{x-1}{x+2}$

4. $\lim_{x \rightarrow -\infty} \frac{3 - x^5}{x + 2x^3 + 4x^5 + 11x^4}$

II. Find the exact value of the following limits (i.e. not a calculator approximation) provided the limit exists. If the limit does not exist as a number, then determine if it exists in the infinite sense (i.e. equals plus or minus infinity). For each limit you must neatly show at least one intermediate step for full credit. (5 points each)

1. $\lim_{t \rightarrow 2} \frac{t^2 - 4}{|t - 2|}$

2. $\lim_{h \rightarrow 0} \frac{(x-h)^3 - x^3}{h}$

$$3. \lim_{w \rightarrow 3} \frac{x^4 - 30x + 9}{x - 3}$$

$$4. \lim_{h \rightarrow -\infty} \frac{\sin(4h)}{h}$$

Hint: What is that cute little theorem you love to hug?

$$5. \lim_{\theta \rightarrow \pi/4} \frac{\cos^2 x - 2 \cos x \sin x + \sin^2 x}{\sin^2 x - \cos^2 x}$$

III. Use the function given below to find the indicated limits. You must show one intermediate step for each limit.

$$f(x) = \begin{cases} -3x & , x \leq -1 \\ x^2 + 2 & , -1 < x \leq 1 \\ x - 2 & , 1 < x \end{cases}$$

$$1. \lim_{x \rightarrow 0} f(x)$$

$$2. \lim_{x \rightarrow -1} f(x)$$

$$3. \lim_{x \rightarrow 1^-} f(x)$$