Pledge:

9/27/2011   MATH261 Calculus I   Name:_____
Dr. Lunsford   Quiz 5   (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.** (3 points each – 6 total)

1. $\lim\limits_{x \to -3^{+}} \dfrac{1+x}{x+3}$

2. $\lim\limits_{x \to -\infty} \dfrac{3-x^{5}}{x+2x^{3}+4x^{5}+11x^{4}}$

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, 20 total)

1. $\lim\limits_{t \to 2^{-}} \dfrac{t^{2}-4}{|t-2|}$

2. $\lim\limits_{h \to 0} \dfrac{(x+h)^{3}-x^{3}}{h}$

Yes, this limit is written correctly.
There are no typos.

3. $\lim\limits_{x \to -\infty} \dfrac{3x^{3}-2x^{2}+1000}{\sqrt{16x^{6}-3x^{4}+25}}$

II. Finding limits showing your work, continued

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

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

III. Use the function $f(x)=\dfrac{2x^2-3x-2}{x^2-3x+2}$ to answer the following questions. (14 points total)

(a) What is the domain of f ? (2 points)

(b) Find *the equations* of all horizontal asymptotes of f . You must justify your answers by taking the appropriate limits. Clearly indicate your answers. (6 points)

(c) Find *the equations* of all vertical asymptotes of f . You must justify your answers by taking the appropriate limits. Clearly indicate your answers. (6 points)