Quiz Limits 2014 version 1.doc **Name____________________**

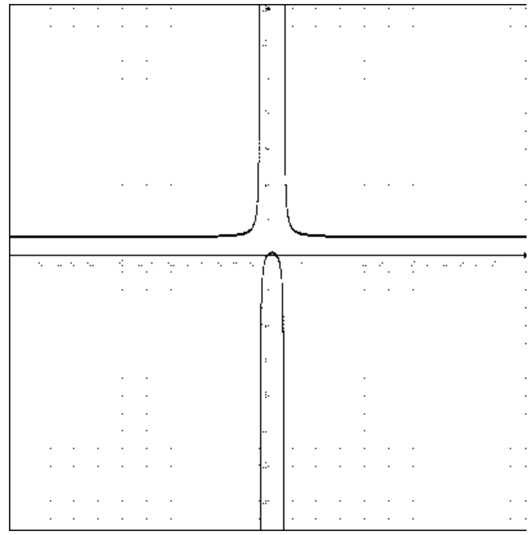
1) Find the following limits. If the limit *Does Not Exist* state D.N.E. and why ($+\infty, -\infty, left \neq right$).

a) $\lim\limits_{x \to -1^-} f(x) =$

b) $\lim\limits_{x \to -1^+} f(x) =$

c) $\lim\limits_{x \to 0} f(x) =$

d) $\lim\limits_{x \to -\infty} f(x) =$



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e) $\lim\limits_{x \to -5} f(x) =$

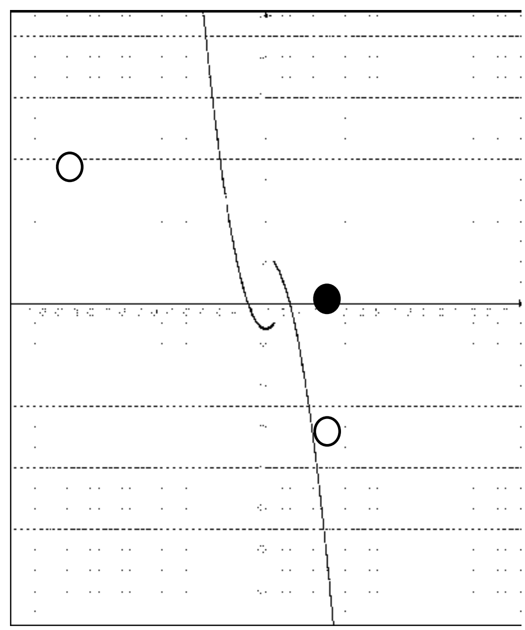
f) $\lim\limits_{x \to 1^+} f(x) =$

g) $\lim\limits_{x \to 1^-} f(x) =$

h) $\lim\limits_{x \to 1} f(x) =$

i) $\lim\limits_{x \to -3} f(x) =$

j) $\lim\limits_{x \to \infty} f(x) =$



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2) Find the following limits.

a) $\lim\limits_{x \to -\infty} \dfrac{-8x^2 + 3x + 9}{x^3 + x - 7}$

b) $\lim\limits_{x \to \infty} \dfrac{4x^2 - 2x}{4 - x}$

3) Find the following limits algebraically. (SHOW YOUR WORK.)

a) $$\lim_{x \to 0} \frac{x-1}{x^3+5x^2}$$

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

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c) $$\lim_{x \to -2} \frac{x^3-1}{x^2-2x+1}$$

Bonus Question: Fill in the blanks with the correct **number** of discontinuities.
The piecewise function shown has:

_____ jump

_____ removable (point)

_____ infinite (asymptotic) discontinuities.

$$f(x) = \begin{cases} \dfrac{x^2}{x^2+1} & (x < 0) \\[2ex] \dfrac{x^2}{x^2-1} & (x \geq 0) \end{cases}$$