Name: _____   Date: _____

QUIZ

Calculus: Limits

Review Concepts

Problem Solving

<u>Directions:</u>

You have Twenty Minutes to:

o Find the Limit of a function f(x) as the variable x approaches ,
   gets closer and closer to zero (or to a determined point P).
   Clearly indicate the necessary steps to the solution.

Grade: _____

Teacher's Signature: _____

1. Evaluate the following Limit and justify each step.

$$\lim_{x \to 2} \left(\frac{x^3 + x^2 - 6x}{x(x-2)} \right)$$

Hint: Both terms in the denominator approach 0.
The difference is undefined. "Rationalize" the numerator/denominator.
Use an arbitrary function f (x), try to make it as close as possible to a real f (x).

2. Evaluate the following Limit and justify each step.

$$\lim_{x \to 25} \left[\frac{(x - 5)}{x^2 - 25} \right]$$

3. find $\displaystyle \lim_{x \to 2} \left(\frac{1}{x-2} - \frac{4}{x^2-4} \right)$

Hint: Both terms in the denominator approach 0.
The difference is undefined. "Rationalize" the
denominator. Use an arbitrary function f (x), try to
make it as close as possible to a real f (x).

4. find $\displaystyle \lim_{x \to 25} \frac{\sqrt{x} - 5}{x - 25}$ ∎

Hint: Both numerator and denominator approach 0.
"Rationalize" the numerator. Use an arbitrary
function f (x), try to make it as close as possible to
a real f (x).

5. Find the limit of

$$\lim_{h \to 0} \frac{(1 + h)^2 - 1}{h}$$

Hint: h, in the denominator, approaches 0.
      Use Algebra 1 to simplify the algebraic terms
      ("Factorization").
      Apply direct substitution.

6. find

$$\lim_{t \to 0} \left(\frac{\sqrt{t^2 + 9} - 3}{t^2} \right)$$

Hint: t, in the denominator, approaches 0.
       Use Algebra 1 to simplify the algebraic terms
       ("Factorization").
       Apply direct substitution.