

Math 124  
Winter 2002  
Quiz 3: Review

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

**Instructions:**

- You will have 25 minutes.
- Closed book, closed notes.
- You are free to use an ordinary scientific calculator, but no graphing calculators are allowed.
- Unless the problem calls for a simple calculation, you will need to show your work in order to receive credit.
- Give exact answers whenever possible.
- Neatness counts! You will be more likely to receive partial credit if your work is neat and well organized, rather than scribbled haphazardly on the page.
- The point value of each part is shown in parentheses on the left.

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1. A package is dropped from an airplane flying high above the earth. The velocity of the package after  $t$  seconds is given by

$$v(t) = \frac{98t}{t+6} \text{ meters/sec.}$$

- (2) a) Compute  $\lim_{t \rightarrow \infty} v(t)$ .

- (3) b) Find the change in velocity between  $t = 2$  and  $t = 2 + h$  seconds. Simplify your answer.

change =

- (4) c) Find the slope of the secant line to the graph of  $v$  between  $t = 2$  and  $t = 2 + h$ . What are the units?

slope =

- (4) d) The slope of the secant line in part c) depends on  $h$ . Call this slope  $S(h)$ . Now compute  $\lim_{h \rightarrow 0} S(h)$ . What are the units?

$\lim_{h \rightarrow 0} S(h) =$

- (2) e) From your experience in everyday life, you should recognize the quantity you found in part d). What is it called? What does it tell you? Use complete sentences to express your answer.

- (5) 2. Write the equations of all asymptotes (both vertical and horizontal) associated with the function defined by

$$f(x) = \frac{x^2 - 4}{x^2 - 4x - 5}.$$