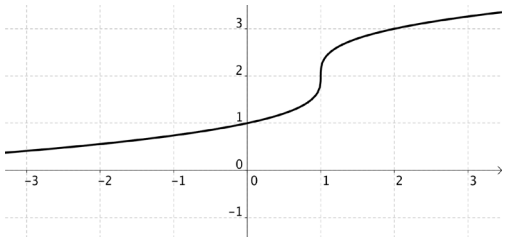
Chapter 4: Applications of Derivatives
Review Assignment

Name: **Date:**

Your Target Grade For This Chapter: (MUST Indicate)
Please CIRCLE One Of: A+ A B C
(This helps the marker give you feedback.)

This assignment...	
Is Good To Go!	**Needs More Work On Question(s):**

1. For the following graph of f, find where f



a) is increasing:

b) is concave down:

c) has inflection points:

2. Find the critical points and key values of $f(x) = \frac{x^2-2}{x-3}$, if any.

3. For a continuous function f, defined on $x > 2$, its derivative is given by: $f'(x) = 2 - \frac{3}{2}\sqrt{x-2}$. Find:

a) any critical point(s)

b) any relative extrema

c) any inflection points

- **This assignment is to help YOU. It will identify 3 things for you:**
  1. **How much of this chapter you really understand,**
  2. **What you need more practice on before the test,**

Chapter 4:
Applications of Derivatives
Review Assignment

Name:

(Please put your name on each page.)

3. **And whether you're doing each step correctly.**

- **Some of the answers are on the last page – what *we* want to see is your *work*. So show *all* necessary work, or you'll see stuff written down *right around here*…** ↑ ☺

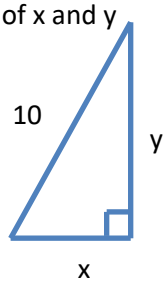
4. Find the absolute extrema (abs. max and min) of $f(x) = x^2 - 8x - 1$ on the interval [1, 10].	6. If $z^2 = x^2y^2$ (**where x, y, and z are positive**), and then what is $\frac{dz}{dt}$ when x = 2 and y = 3 , given that $\frac{dx}{dt} = -2$, and $\frac{dy}{dt} = 3$?

Chapter 4:
Applications of Derivatives
Review Assignment

Name:

(Please put your name on each page.)

5. For the following triangle, what values of x and y will give the maximum area?



7. A stone is dropped into some water and a circle of radius r is formed and slowly expands. The perimeter of the circle is increasing at 3 m/ s. At the moment the radius is exactly 2m, what rate is the radius of the circle increasing?

Chapter 4:
Applications of Derivatives
Review Assignment

Name:

(Please put your name on each page.)

8. Find the point "c" that satisfied the Mean Value Theorem For Derivatives for the function

$f(x) = \frac{x-1}{x+1}$ on the interval [4,5].

9. Find $\lim_{x\to 0} \frac{2x^2e^x}{\sin 2x}$ algebraically.

10. In your own words, *using full sentences*, describe how l'Hopital's rule works! ☺

For Example: *"l'Hopital's Rule: When you're taking the derivative of … … "*

Chapter 4:
Applications of Derivatives
Review Assignment

Name:

(Please put your name on each page.)

(No need to upload this page)

CHECK WITH THESE *BEFORE* SUBMITTING

Answers for some of the questions:

(Remember: Show all your work.)

1. ------

2. x = 0.35, 3, 5.65

3. a) x = 3.78 b) Local Max at 3.78 c) None

4. ------

5. $x = \sqrt{50}, y = \sqrt{50}$

6. $\frac{dz}{dt} = 0$

7. $\frac{dr}{dt} = 0.48\ m/s$

8. c = 4.48

9. 0 (zero)

10. ------