Name_____

MATH-110: Calculus I
Fall 2016
Siena College

Quiz 1

For each question I would like you to show all the steps you took. When using rules we learned in class, state the rule used. If you can't remember the name of the rule then at the top of the page give it a name and write the definition next to the name you created. An answer with no work will not be given any credit.

I'd recommend looking at all the questions first so you can think about them while solving other problems.

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1. Using the definition of the derivative calculate f_1'

   Hint: The answer is $2x$

$$f_1(x) = x^2$$

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2. Using any method calculate f_2'

Hint: The answer is $21x^6 + 6x^2 - \frac{1}{2x^2}$

$$f_2(x) = 3x^7 + 2x^3 + \frac{1}{2x}$$

3. Using any method calculate f_3'
   (Hint: The answer is $2e^{\sin^2(x)}\sin(x)\cos(x)$)

$$f_3(x) = e^{\sin^2(x)}$$

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4. Using any method calculate f_4'

Hint: The answer is

$(20x(x^2 + 2)^9(x^2 + 2)^{10} - 20x(x^2 + 2)^9(x^2 - 2)^{10})/(x^2 + 2)^{20}$

$$f_4(x) = \frac{(x^2 - 2)^{10}}{(x^2 + 2)^{10}}$$

5. Bonus: Using any method calculate $\frac{d^5}{dx^5} f_5(x)$

$$f_5(x) = x^5 e^{x/2}$$