Quiz 3 for Mathematics 223
Introductory Analysis I - Fall 2000
Material Covered: Section 3.2 of workbook and text
For: Friday, 6th October

This is a 15 minute quiz, worth 5% and marked out of 5 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an $8\frac{1}{2}$ by 11 inch piece of paper may be used as a reference during this quiz. A calculator may also be used. No other aids are permitted.

Name (please print): ——————————————— . **ID Number:** ——————— .
               last   first

———————————————————————————————————————

1. [1 point] If $f(x) = (4x^3 - 5x^{-2} + 1)^3$

Then $f'(x) = $ ——————————————

———————————————————————————————————————

2. [1 point] If $f(x) = (x-5)^3(x+4)^7$

Then $f'(x) = $ ——————————————

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3. [3 points]
Consider the two functions

$$f(x) = 4x^2 + 1, \quad g(x) = \frac{1}{3x}$$

(a) The function

   $g \circ f(x) = $ ——————————————

(b) The function

   $f \circ g(x) = $ ——————————————

(b) The function

   $\frac{d}{dx}(f \circ g) = $ ——————————————

1. [1 point]

$3(4x^3 - 5x^{-2} + 1)^2(12x^2 + 10x)$

2. [1 point]

$(x-5)^3(7)(x+4)^6 + 3(x-5)^2(x+4)^7$

3. [3 points]

Consider the two functions

$$f(x) = 4x^2 + 1, \quad g(x) = \frac{1}{3x}$$

(a) $\frac{1}{12x^2+3}$; $g(4x^2 + 1) = \frac{1}{3(4x^2+1)}$

(b) $\frac{4}{9x^2} + 1$; $f(1/3x) = 4(1/3x)^2 + 1$

(c) $\frac{-8}{9x^3}$; either use $f'(g)g'$ or just differentiate (b) directly