MATH 1520 Calculus for Management and Social Sciences (Winter 2008)

QUIZ 3 (B13)

Thursday, March 6, 2008

Duration: 25 minutes.

Supporting material:

Using **any** supporting material (e.g. notes, books, calculators, cellphones) is **strictly forbidden**, and will be dealt with to the fullest extent by the relevant University policies. To clarify, you are allowed to have only writing tools and food with you during the examination.

Instructions:

- Write your name and student number on each page that you submit, including this sheet, which you are expected to return.
- The maximum mark on this quiz is 25.
- Show and explain your work!

5 **Exercise 1.** *Find the equation of the tangent line to* $y = -x^4 - 2x^3 + 6x - 1$ *at* $x = -2$.

7 **Exercise 2.** *Let* $f(x) = \sqrt{3 - 4x}$. *Use the definition of the derivative to find* $f'(x)$. [**Hint:** You may use Chain Rule to verify your calculations, but it will not help you to earn marks.]

Exercise 3. *Find the derivative of the following functions (do not simply your answer!):*

5 (a) $\dfrac{\sqrt[3]{x} + 12\pi}{-3x^3 + 6x^2}$;

8 (b) $(\pi - 4x^2)^2 \sqrt[3]{x^3 + 1}$.

Exercise 4. *Let* $f(x) = \begin{cases} x^3 - 1 & x < 2 \\ -1 & x = 2 \\ x^2 + 3 & 2 < x \end{cases}$.

3 (a) *Find* $\lim_{x \to 2} f(x)$. [**Hint:** It exists.]

2 (b) *Show, using the definition of continuity, that* $f(x)$ *is not continuous at* $x = 2$.

GOOD LUCK!!!!