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

QUIZ 2 (B13)

Thursday, February 14, 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!

Exercise 1. *Calculate the following limits:*

3 (a) $\lim_{x\to-\infty} \dfrac{13x^{13}-x^8-7}{-x^{13}+x^7+8}$

3 (b) $\lim_{x\to 3} \dfrac{x^2+9}{(x-3)^2}$

4 (c) $\lim_{x\to 3} \dfrac{\sqrt{x+3}}{x^2+6}$

Exercise 2. *Let* $f(x) = \begin{cases} 3\sqrt{x} & 0 \le x < k \\ \dfrac{x^2-k^2}{\sqrt{x}-\sqrt{k}} & k < x \end{cases}$.

8 (a) *Find* $k > 0$ *such that* $\lim_{x\to k} f(x)$ *exists.*

2 (b) *For* k *that you found in* (a)*, what should* $f(k)$ *be in order for* $f(x)$ *to be continuous at* $x = k$*?*

Exercise 3. *Let* $f(x) = \dfrac{5}{13-x}$.

8 (a) *Find* $f'(x)$ *using the definition of the derivative (i.e., as in Section 3.4).*

2 (b) *Find the tangent line to the graph of* $y = f(x)$ *at* $x = 9$.

GOOD LUCK!!!!