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

QUIZ 4 (B13)

Thursday, March 20, 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. *Let* $f(x) = x^3 - \frac{5}{2}x^2 - 2x + 13$.

[2] (a) *Find the critical point(s) of* $f(x)$.

[3] (b) *Find the domain(s) of increase and decrease of* $f(x)$.

[2] (c) *Find the local minimum and maximum point(s) of* $f(x)$.

[2] (d) *Find the inflection point(s) of* $f(x)$.

[2] (e) *Find the intervals where* $f(x)$ *is concave up and concave down.*

Exercise 2. *Let* $f(x) = e^{-\frac{x^2}{8}}$.

[3] (a) *Find* $f''(x)$.

[2] (b) *Find the critical point(s) of* $f(x)$.

[2] (c) *Find the domain(s) of increase and decrease of* $f(x)$.

[2] (d) *Find the local minimum and maximum point(s) of* $f(x)$.

[2] (e) *Find the inflection point(s) of* $f(x)$.

[3] (f) *Find the intervals where* $f(x)$ *is concave up and concave down.*

[5] **Exercise 3.** *Pick the function from Exercise 1* **or** *Exercise 2, and sketch its graph based on the information that you obtained about* $f(x)$. *Make sure to mark the points that you found earlier.*

GOOD LUCK!!!!