Quiz no. 1 (1100-1 Quantitative Analysis,  
Spring 2008)  
January 25, 2008

25 min. No symbolic calculators allowed (TI-89 and similar)!  
(TI-86 or lower are allowed.) Show all work.

1. (8 points) Compute the following limits:

\[
\lim_{x \to 2} \frac{x^2 - 3x + 2}{x - 2} =
\]

\[
\lim_{x \to +\infty} \frac{2x^2 + 3x + 1}{\frac{1}{4}x^2 - 1} =
\]

2. (12 points) Compute the derivatives of the following functions:

\[
f(x) = x^3 + 3x - \frac{2}{x}
\]

\[
f'(x) =
\]

\[
f(x) = \frac{x^2 + 1}{x - 1}
\]

\[
f'(x) =
\]
\[ y = (x^3 + x)(\sqrt{x} + 1) \]

\[ \frac{dy}{dx} = \]

3. (5 points) The function \( f(x) \) is defined by:

\[ f(x) = \begin{cases} 
2x + 1 & \text{if } x \leq 0 \\
x^2 - x + 1 & \text{if } x > 0 
\end{cases} \]

Is \( f(x) \) continuous?