MTH 151
Quiz 2 (corrected)
Fall 2011

Show all work in a neat and organized fashion. Clearly indicate your answers.
20 points possible.

1. (5 pts.) On the attached page, the graph of a function f is given. State the value of each quantity, if it exists. If it does not exist, write DNE.

(a) $\lim_{x \to 1^-} f(x)$

(b) $\lim_{x \to 1^+} f(x)$

(c) $\lim_{x \to 1} f(x)$

(d) $f(1)$

(e) $\lim_{x \to 3} f(x)$

2. (5 pts.) Estimate the value of the limit (if it exists) by evaluating the function at the given numbers (correct to six decimal places).

$$\lim_{x \to 2} \frac{3^x - 9}{x - 2}$$

$x = 2.1, 2.01, 2.001,$
$1.9, 1.99, 1.999$

3. (5 pts.) Evaluate this limit symbolically, showing all work.

$$\lim_{x \to 25} \frac{5 - \sqrt{x}}{25x - x^2}$$

4. (2 pts.) Sketch a neat graph of a function f that is continuous except for the stated discontinuity.

Discontinuous, but continuous from the left, at 3

5. (3 pts.) Is f continuous at a? Show the work that leads to your answer, using the mathematical definition of continuous.

$$f(x) = \begin{cases} 3 + x, & \text{if } x < 2 \\ x^2 - 1, & \text{if } x \geq 2 \end{cases} \qquad a = 2$$