NAME: _____

MATH 200 Calculus 1 (Bueler) 20 February, 2008

Quiz # 3

20 points total. You have 20 minutes.

1. **(a)** (*2 pts*) What, if anything, is wrong with the following equation:

$$\frac{x^2+x-6}{x-2} = x+3.$$

Hint: domains.

(b) (*3 pts*) In view of part **(a)**, explain why this equation is correct:

$$\lim_{x\to 2} \frac{x^2+x-6}{x-2} = \lim_{x\to 2} x+3.$$

2. (*4 pts*) Evaluate the limit, or write "d.n.e." if it does not exist:

$$\lim_{t\to 0} \left(\frac{1}{t} - \frac{1}{t^2+t} \right)$$

3. (*3 pts*) Use the given graph of $f(x) = \sqrt{x}$ to find a number δ so that

$$\text{if} \quad |x - 9| < \delta \quad \text{then} \quad |\sqrt{x} - 3| < 0.4$$

Answer: $\delta =$ $\boxed{}$

4. (*4 pts*) Find a value of s so that this function is continuous:

$$g(x) = \begin{cases} sx + 2, & x < 1, \\ \frac{1}{x}, & x \geq 1 \end{cases}$$

5. (*4 pts*) Where is this function discontinuous, if at all?:

$$f(x) = \frac{1}{\sin(2x)}$$