MATH 151   **QUIZ 1** NAME _____

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       25 points   SECTION _____ Fri 2/10/06

1. Using the given graph, find the following:

a) $\lim\limits_{x \to -3} f(x) = $_____

b) $\lim\limits_{x \to 2^+} f(x) = $_____

c) $\lim\limits_{x \to 2} f(x) = $_____

d) $\lim\limits_{x \to 0} f(x) = $_____

e) $f(-3) = $_____

f) $\lim\limits_{x \to 2^-} f(x) = $_____

g) $f(0) = $_____

h) $\lim\limits_{x \to -3^+} = $_____

i) $\lim\limits_{x \to 1} = $_____
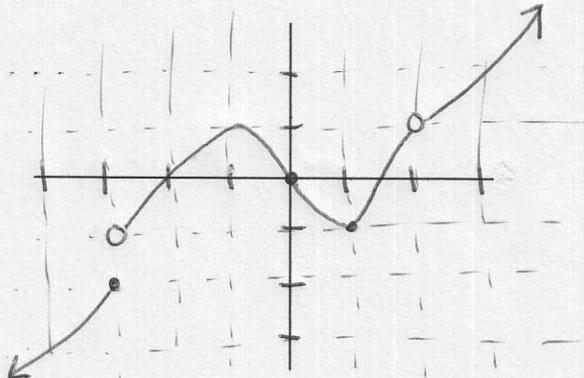
2. Prove the following limit using the precise definition of a limit. $\lim\limits_{x \to 2}(x^2 - 1) = 3$

4. If $\lim\limits_{x \to 2} f(x) = 2$ and $\lim\limits_{x \to 2} g(x) = 3$, find $\lim\limits_{x \to 2}(2\sqrt{fg^2})(x) = $ _____

3. The displacement in meters of a particle moving in s straight line is given by $s(t) = t^2 - 2t + 10$, where t is measured in seconds. a) Find the average velocity of the particle over the time interval $1 \le t \le 2$ and then on the interval $2 \le t \le 3$. b) Estimate the instantaneous velocity of the particle when t=2 sec.

5. Find the following limits:

a) $\lim\limits_{x \to 0} (\sin x - 2\cos 2x) = $ _____

b) $\lim\limits_{x \to 4} \dfrac{x^2 - 16}{4 - x} = $ _____

c) $\lim\limits_{x \to 0} \dfrac{2 - \sqrt{4 - x}}{x} = $ _____

d) $\lim\limits_{h \to 0} \dfrac{(2 + h)^{-1} - 2^{-1}}{h} = $ _____

e) $\lim\limits_{m \to 2} \dfrac{3}{m - 2} = $ _____

f) $\lim\limits_{x \to 1^-} f(x) = $ _____ if $f(x) = \begin{cases} x^2 - 2 & \text{if } x < 1 \\ \sqrt{x} & \text{if } x \ge 1 \end{cases}$