Name: ____ Date:________________

Unit 1-HW 1 AP Calculus BC

Show all work. Unless stated otherwise, no calculator permitted.

1) Explain in your own words what is meant by the equation $\lim_{x\to 2} f(x) = 4$. Is it possible for this statement to be true and $f(2) = 5$ also be true? Explain. What graphical manifestation would $f(x)$ have at $x = 2$? Sketch a possible graph of $f(x)$.

2) Explain what it means to say that $\lim_{x\to 1^-} f(x) = 3$ and $\lim_{x\to 1^+} f(x) = 6$. What graphical manifestation would $f(x)$ have at $x = 1$? Sketch a possible graph of $f(x)$.

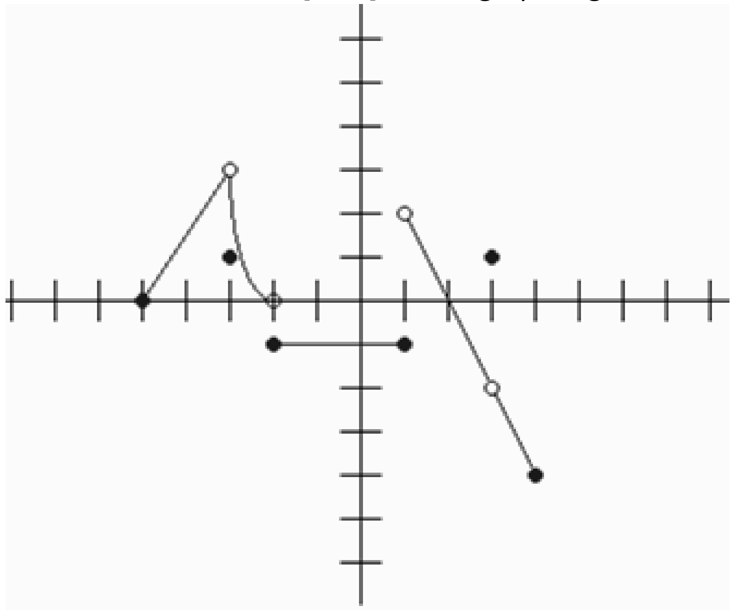
3) Using your calculator (in radian mode), fill in the table for the following function, then use the numerical evidence (to 4 decimal places) to evaluate the indicated limit.

$$f(x) = \frac{\sin(3x)}{x}$$

x	-0.1	-0.01	-0.001	0	0.001	0.01	0.1
$f(x)$							

Based on the numeric evidence above, $\lim_{x\to 0} f(x) =$

4) Let g be a function defined on the interval [-5, 4] whose graph is given as:



Use the graph to evaluate the limits, or explain why the limit does not exist.

a) $\lim_{x \to 3^-} f(x) =$

b) $\lim_{x \to 3^+} f(x) =$

c) $\lim_{x \to 3} f(x) =$

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

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

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

g) $\lim_{x \to -3^-} f(x) =$

h) $\lim_{x \to -3^+} f(x) =$

i) $\lim_{x \to -3} f(x) =$

j) $\lim_{x \to -2} f(x) =$

k) $\lim_{x \to 0} f(x) =$

l) $f(1) =$

m) $f(3) =$

n) $\lim_{x \to 4^-} f(x) =$

o) $\lim_{x \to 4} f(x) =$