AP Calculus – Day 1

Limitation Notation Practice Name: _____

Q1: What is the correct notation that describes the following statement?

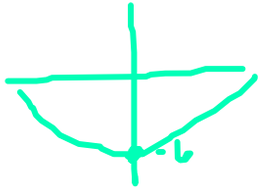
As x approaches 0, $f(x)$ approaches -6.

A $\lim_{x \to -6} f(x) = 0$

B $f(-6) = 0$

C $f(0) = -6$

D $\lim_{x \to 0} f(x) = -6$



Q2: Which of the following statements is **not** the same as saying that $\lim_{x \to 8} f(x) = 3$?

A $f(3)$ is equal to $f(8)$.

B $f(x)$ approaches 3 as x approaches 8.

C We can make $f(x)$ as close as we like to 3 by taking x sufficiently close to 8.

D As x gets closer and closer to 8, $f(x)$ gets closer and closer to 3.

Q3: True or False: $\lim_{x \to a} f(x) = l$ means that as x gets closer to a, $f(x)$ gets closer to l.

A True

B False

Q4: Given that $\lim_{x \to 2} f(x) = 6$, which of the following statements must be false?

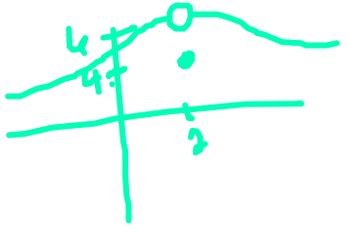
A $f(2)$ is undefined.

B $\lim_{x \to 3} f(x) = 6$

C $f(2) = 6$

D $\lim_{x \to 2} f(x) = 4$

E $f(2) = 4$



Q5: If $f(6) = -6$, what can we say about $\lim_{x \to 6} f(x)$?

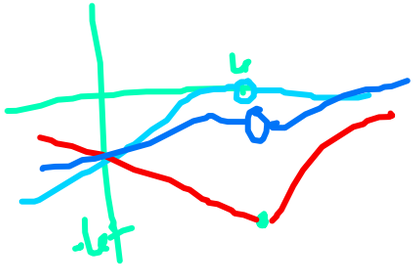
A $\lim_{x \to 6} f(x) \neq -6$

B $\lim_{x \to 6} f(x) = 0$

C $\lim_{x \to 6} f(x) = -6$

D ✓ We cannot draw any conclusions about $\lim_{x \to 6} f(x)$.

E $\lim_{x \to 6} f(x) = -1$



Q6: Given that $\lim_{x \to 1} f(x) = 4$, which of the following statements must be true?

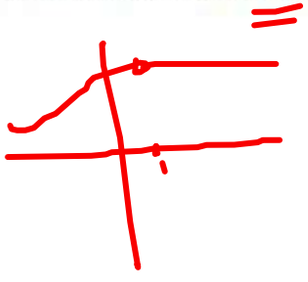
A $f(4) = 1$

B $f(1) = 4$

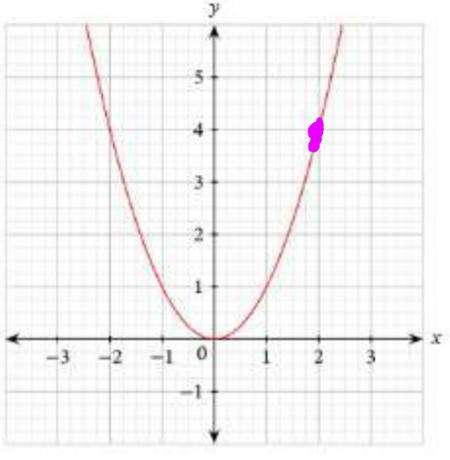
C $f(1) \neq 4$

D $f(4) \neq 1$

E ✓ None of the above



Q7: The following figure represents the graph of the function $f(x) = x^2$.



What does the graph suggest about the value of $\lim_{x \to 2} f(x)$?

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

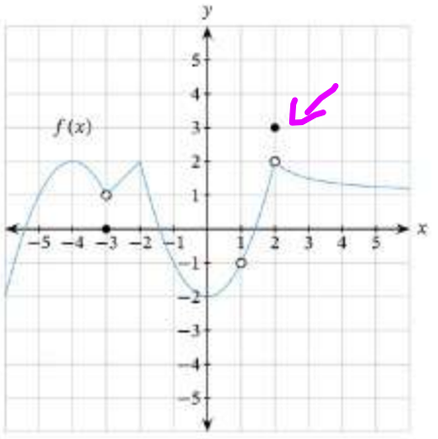
B $\lim_{x \to 2} f(x) = 2$

C ✓ $\lim_{x \to 2} f(x) = 4$

D $\lim_{x \to 2} f(x)$ does not exist.

E $\lim_{x \to 2} f(x) = 0$

Q8: Consider the given figure.



Find $f(2)$.

A The function is undefined.

B 0

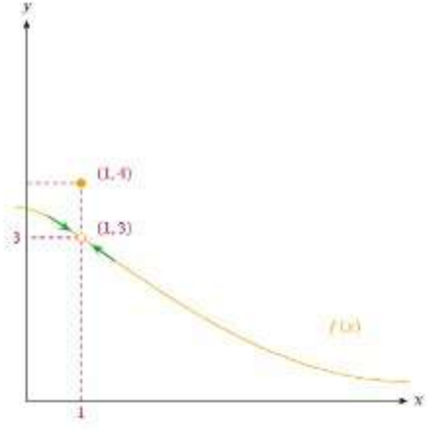
C 1

D 3

E 2

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

Q9: True or False: In the given figure, $\lim_{x \to 1} f(x) = f(1)$.



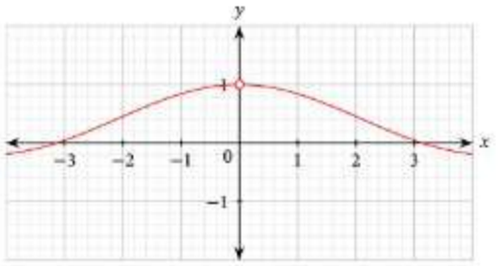
$\lim_{x \to 1} f(x) = 3$

$f(1) = 4$

A True

B False

Q10: The following figure is the graph of the function f, where $f(x) = \dfrac{\sin x}{x}$.



What is the value of $f(0)$?

A $f(0)$ is undefined.

B $f(0) = -3.1$

C $f(0) = 1$

D $f(0) = 0$

E $f(0) = 3.1$

What does the graph suggest about the value of $\lim_{x \to 0} f(x)$?

A $\lim_{x \to 0} f(x)$ does not exist.

B $\lim_{x \to 0} f(x) = 3.1$

C $\lim_{x \to 0} f(x) = -3.1$

D $\lim_{x \to 0} f(x) = 1$

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