

# Quiz 1

ⓘ This is a preview of the published version of the quiz

Started: Sep 1 at 1:07pm

## Quiz Instructions

Choose the best solution choice each problem. Each problem is worth one (1) point.

### Question 1

1 pts

True or false: Suppose you were to construct a table of numerical values in order to estimate the limit  $\lim_{x \rightarrow 8} f(x)$ . The value of  $f(x)$  at  $x = 8$  should be included in your table.

THE LIMIT AT  $X=8$  HAS NOTHING TO DO WITH THE VALUE OF  $f(8)$ .  
IN FACT,  $f$  NEED NOT EVEN BE DEFINED AT  $X=8$ .

True

False

### Question 2

1 pts

True or false: The limit,  $\lim_{x \rightarrow c} f(x)$ , tells us about the value of  $f(x)$  at  $x = c$ .

True

False

AS ABOVE, THE LIMIT AT  $X=C$  IS NOT  
NECESSARILY RELATED TO  $f(c)$ .

### Question 3

1 pts

True or false: If  $g(x)$  is not defined at  $x = 3$ , then  $\lim_{x \rightarrow 3} g(x)$  cannot possibly exist.

True

False

AS ABOVE, THE LIMIT AND THE FUNCTION VALUE  
ARE NOT NECESSARILY RELATED.

**Question 4**

1 pts

Use a table of numerical values to estimate the limit:  $\lim_{x \rightarrow 0} \frac{\sin 2x}{3x}$

- The limit does not exist.
- 0.66223
- 0
- 0.66666

$x$	$\frac{\sin 2x}{3x}$
0.1	0.66223
0.01	0.66662
0.001	0.66667
-0.1	0.66223
-0.01	0.66662
-0.001	0.66667

**Question 5**

1 pts

Use a table of values to estimate  $\lim_{x \rightarrow 1} f(x)$ , where  $f(x) = \begin{cases} 7 + \cos(\pi x), & x < 1 \\ 2x + 4, & x > 1 \end{cases}$

- 6.00000
- 7.00000
- 0
- The limit does not exist.

$x$	$f(x)$
0.9	6.04894
0.99	6.00049
0.999	6.00000
1.1	6.2
1.01	6.02
1.001	6.002

**Question 6**

1 pts

Suppose you are asked to use a table of values to estimate the limit of  $h(x)$  at  $x = -10$ . Which  $x$ -value would NOT be useful in your table?

- All of these would be useful.
- $x = -10.001$
- $x = -9.99$
- $x = -10$

THE VALUE OF  $h(-10)$  IS NOT NECESSARILY RELATED TO THE LIMIT AT  $x = -10$ .  
SEE PROBLEM 1, 2, 3.

**Question 7**

1 pts

Explain why this limit fails to exist:  $\lim_{x \rightarrow 2} \frac{x+2}{|x-2|}$

X	$\frac{x+2}{ x-2 }$
2.1	41
2.01	401
2.001	4001
1.9	39
1.99	399
1.999	3999

- The function values grow without bound as the limit point is approached.
- The limit from the left does not equal the limit from the right.
- The function values oscillate as the limit point is approached.
- The function is not defined on an open interval containing the limit point.

**Question 8**

1 pts

Explain why this limit fails to exist:  $\lim_{x \rightarrow 6} \sqrt{x-6}$

$\sqrt{x-6}$  IS NOT  
DEFINED WHEN  
 $x < 6$

- The function is not defined on an open interval containing the limit point.
- The function values oscillate as the limit point is approached.
- The limit from the left does not equal the limit from the right.
- The function values grow without bound as the limit point is approached.

**Question 9**

1 pts

Determine  $\lim_{x \rightarrow 4} f(x)$  if  $\lim_{x \rightarrow 4} \left( \frac{x^2 - f(x)}{x+3} \right) = 1$ .

$$\frac{16 - \lim_{x \rightarrow 4} f(x)}{7} = 1$$

- 9
- 0
- The limit does not exist.
- 9

$$16 - \lim_{x \rightarrow 4} f(x) = 7$$

⇓

$$\lim_{x \rightarrow 4} f(x) = 9$$

**Question 10**

1 pts

Evaluate the limit:  $\lim_{y \rightarrow \pi} \frac{\sin y}{y}$

The limit does not exist.

$\pi$

0

1

$$\lim_{y \rightarrow \pi} \frac{\sin y}{y} = \frac{\sin \pi}{\pi} = \frac{0}{\pi}$$

$$= 0$$

USE DIRECT SUBSTITUTION.

Quiz saved at 1:07pm

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