

# Math 131 - Quiz 1

January 19, 2022

Name \_\_\_\_\_

Score \_\_\_\_\_

This quiz is available in Canvas. It is due January 24. Each problem is worth one (1) point.

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1. True or false: A limit tells us the value of a function at a particular point.

- (a) True
- (b) False

2. Use a table of values to estimate the limit:  $\lim_{x \rightarrow 0} \frac{\tan 3x}{5x}$

- (a) 0.600180
- (b) 0.618672
- (c) 0.600000
- (d) The limit does not exist.

3. Use a table to estimate  $\lim_{x \rightarrow 2} f(x)$ , where  $f(x) = \begin{cases} 6x + \sin(\pi x), & x < 2 \\ 5x + 2, & x > 2 \end{cases}$ .

- (a) The limit does not exist.
- (b) 12
- (c) 2
- (d) -12

4. Use a graph or table of values to estimate the limit:  $\lim_{x \rightarrow -3} \frac{x^2 + 8x + 15}{x + 3}$

- (a) The limit does not exist.
- (b) 3
- (c) -17
- (d) 2

5. Suppose you are asked to use a table of values to estimate the limit of  $f(x)$  at  $x = 5$ . Which  $x$ -value would not be useful in your table?

- (a)  $x = 5$
- (b)  $x = 4.99$
- (c)  $x = 5.0001$
- (d) All of these would be useful.

6. True or false: If  $f(1) = 37$ , then  $\lim_{x \rightarrow 1} f(x) = 37$ .
- (a) True
  - (b) False
7. True or false: If  $\lim_{x \rightarrow 1} f(x) = 37$ , then  $f(1) = 37$ .
- (a) True
  - (b) False
8. Explain why this limit fails to exist:  $\lim_{x \rightarrow -2} \sqrt{4 - x^2}$
- (a) The limit from the left does not equal the limit from the right.
  - (b) The function values grow without bound as the limit point is approached.
  - (c) The function values oscillate as the limit point is approached.
  - (d) The function is not defined on an open interval containing the limit point.
9. Explain why this limit fails to exist:  $\lim_{x \rightarrow 5} \frac{x - 5}{|x - 5|}$
- (a) The limit from the left does not equal the limit from the right.
  - (b) The function values grow without bound as the limit point is approached.
  - (c) The function values oscillate as the limit point is approached.
  - (d) The function is not defined on an open interval containing the limit point.
10. Explain why this limit fails to exist:  $\lim_{x \rightarrow 5} \frac{x - 10}{|x - 5|}$
- (a) The limit from the left does not equal the limit from the right.
  - (b) The function values grow without bound as the limit point is approached.
  - (c) The function values oscillate as the limit point is approached.
  - (d) The function is not defined on an open interval containing the limit point.