Math 131 - Quiz 1

Name _____

August 20, 2025

Score _____

Show all work to receive credit. Supply explanations where necessary. Partial credit may be awarded on multiple choice problems for correct work or explanations.

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1. (1 point) Suppose you are asked to use a table of values to estimate the limit of $h(x)$ at $x = -10$. Which x-value would definitely not be useful in your table?

   (a) $x = -10.001$

   (b) $x = -9.9$

   (c) $x = -10$

   (d) All of the x-values above would be useful.

2. (3 points) Use a table of values to estimate $\lim_{x \to 2} f(x)$, 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

3. (1 point) Which of these is NOT a reason that a limit may fail to exist?

   (a) The limit from the left of the limit point is not equal to the limit from the right.

   (b) The function is not defined at the limit point.

   (c) The function's values grow without bound as the limit point is approached.

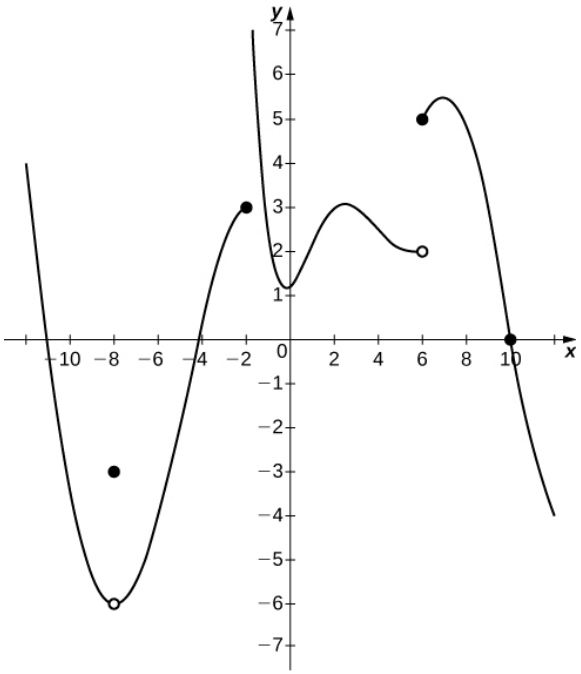
   (d) The function is not defined on the right side of the limit point.

Turn over.

4. (3 points) Use a table of values to estimate the following limit. Your table must show function values at six or more points.

$$\lim_{x \to 1} \frac{|x|}{x^3 + 5x}$$

5. (2 points) For this problem, refer to the graph of $y = f(x)$ shown below.



(a) Carefully explain why $\lim_{x \to 6} f(x)$ does not exist.

(b) Use the graph to estimate $\lim_{x \to 2} f(x)$.