

# Math 131 - Quiz 1

January 18, 2023

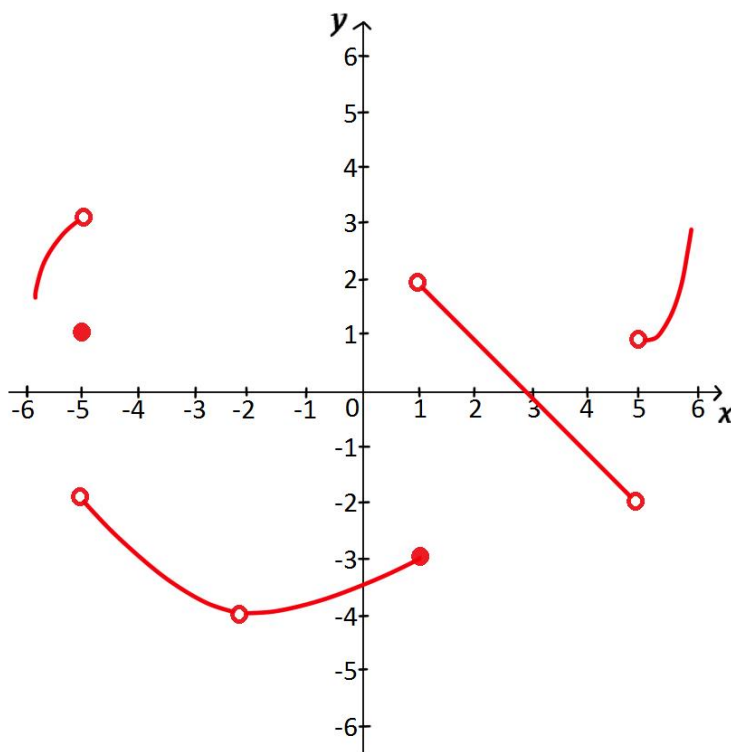
Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. This quiz is due January 23.

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1. (4 points) The graph of  $y = f(x)$  is shown below. Use the graph to solve each part of this problem.



- (a) Estimate  $\lim_{x \rightarrow 0} f(x)$ .
- (b) Estimate  $\lim_{x \rightarrow -2} f(x)$ .
- (c) Explain why  $\lim_{x \rightarrow -6} f(x)$  does not exist.
- (d) Explain why  $\lim_{x \rightarrow 5} f(x)$  does not exist.

*Turn over.*

2. (3 points) Use a table of numerical values to approximate the following limit. Your table must show function values at six or more points.

$$\lim_{x \rightarrow 2} \left( \frac{8}{x^2 - 4} - \frac{x}{x - 2} \right)$$

3. (2 points) Explain why each limit fails to exist.

(a)  $\lim_{x \rightarrow 5} \frac{2x - 8}{|x - 5|}$

(b)  $\lim_{x \rightarrow 1} \sin\left(\frac{1}{1-x}\right)$

4. (1 point) Use direct substitution to determine the limit.

$$\lim_{x \rightarrow 3} \left( \frac{x^2 - 3x + 7}{x - 5} \right)$$