Math 131 - Quiz 1

January 21, 2026

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary. This assignment is due January 26.

1. (2 points) Use a table of numerical values to estimate $\lim_{x \to 4} f(x)$. Your table must show function values at six or more points.

$$f(x) = \begin{cases} 2x^2 - \cos(\pi x), & x < 4 \\ 6(x + 1) + e^{x-4}, & x > 4 \end{cases}$$

2. (2 points) Use a table of numerical values to estimate the limit. Your table must show function values at six or more points.
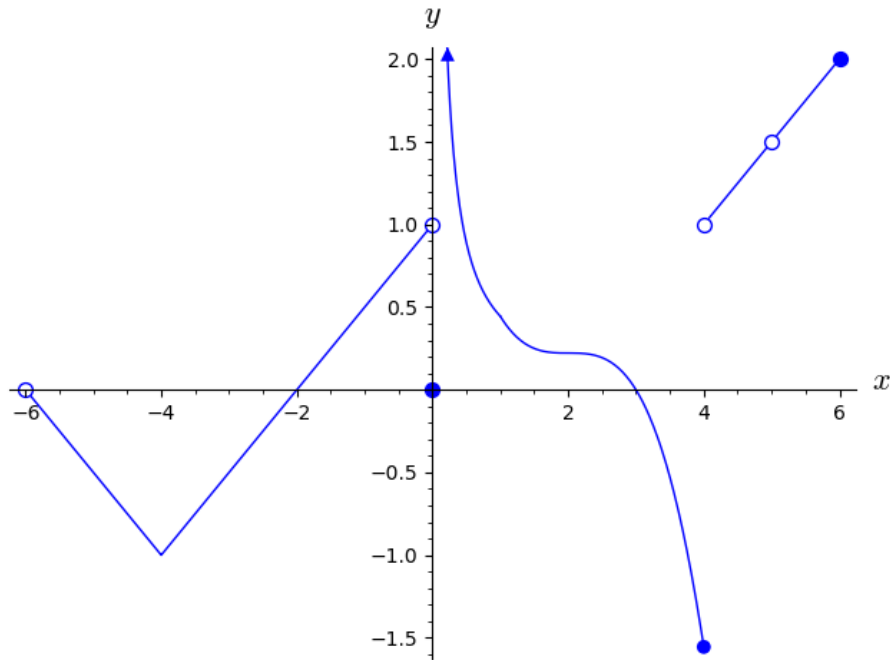
$$\lim_{x \to 3} \frac{\tan(x - 3)}{5x - 15}$$

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

$$\lim_{x \to -1} \frac{|x^2 - 1|}{x + 1}$$

4. (2 points) Referring to the graph of $y = f(x)$ shown below, determine each of the following or explain why it does not exist. (To explain why a limit DNE, use one of the reasons from the Lecture 3 notes.)

(a) $\lim\limits_{x \to -2} f(x)$

(b) $\lim\limits_{x \to 6} f(x)$

(c) $\lim\limits_{x \to 5} f(x)$

(d) $\lim\limits_{x \to 4} f(x)$

5. (2 points) Find the limit analytically by using limit laws. Show how you use the limit laws.
$$\lim\limits_{x \to 3} (x^2 - 6x)$$