Math 131 - Quiz 4

Name _____

September 17, 2025

Score _____

Show all work to receive credit. Supply explanations where necessary.

1. (2 points) What does it mean for the function f to be continuous at $x = 1$?

2. (2.5 points) Sketch the graph of a function that has a limit at $x = 3$, but is not continuous at $x = 3$. Then say why your function is not continuous.

3. (2.5 points) Discuss the continuity of $g(x) = \dfrac{4\cos x + 9\sin x}{x^2 - 9}$.

4. (3 points) Find the number k that makes f continuous everywhere. For full credit, you work must show how you are using limits and the definition of continuity.

$$f(x) = \begin{cases} x + 6\cos(\pi x), & x \leq 2 \\ kx^2 - 2x + 5, & x > 2 \end{cases}$$