

Math 131 - Quiz 2

August 27, 2026

Name _____

Score _____

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

1. (4 points) Suppose that you are given the following information:

$$f(2) = 6, \quad \lim_{x \rightarrow 2} f(x) = 3, \quad g(2) = 9, \quad \lim_{x \rightarrow 2} g(x) = -5.$$

Find each limit. Carefully show how you are using the limit laws.

(a) $\lim_{x \rightarrow 2} \sqrt[3]{g(x) - f(x)}$

(b) $\lim_{x \rightarrow 2} \left(\frac{x^2 f(x)}{x + g(x)} \right)$

2. (4 points) Evaluate each limit analytically.

(a) $\lim_{x \rightarrow 0} \left(\frac{x^3 + 2x^2 + 5x}{x^2 + 2x} \right)$

(b) $\lim_{x \rightarrow 2} \left(\frac{x^2 + x - 6}{x^3 - x^2 - 2x} \right)$

3. (2 points) Explain why neither the limit laws nor direct substitution can be used to evaluate each limit.

(a) $\lim_{x \rightarrow \pi/2} \left(\frac{\tan x}{\sin x} \right)$

(b) $\lim_{x \rightarrow 1} \sqrt{1 - x}$