Math 131 - Quiz 1

Name _____

August 25, 2021

Score _____

Show all work to receive full credit. Supply explanations when necessary. This quiz is due August 30 for section 001 and September 1 for section 950.

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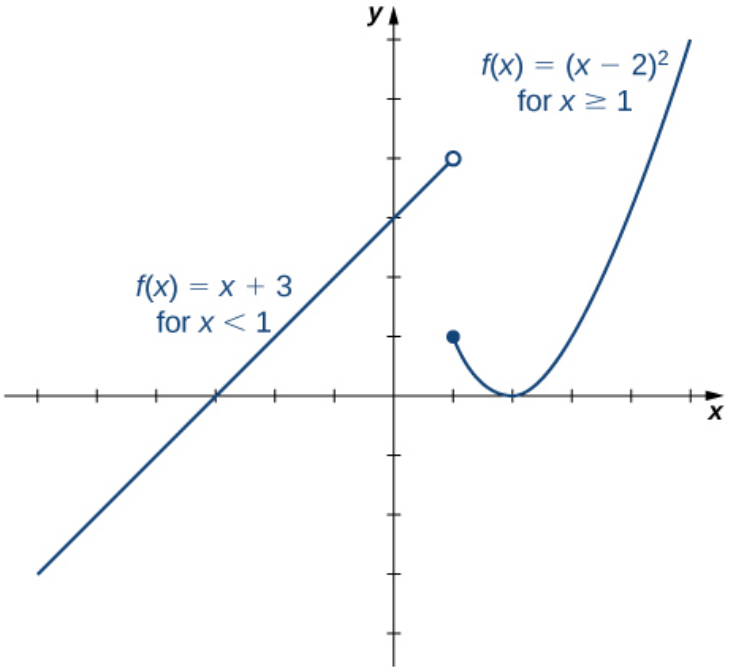
1. (3 points) The graph of the function f is shown below. Use the graph to estimate each limit. If the limit does not exist, explain why.



(a) $\lim_{x \to 2} f(x)$

(b) $\lim_{x \to 1} f(x)$

(c) $\lim_{x \to -1} f(x)$

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

$$\lim_{x \to 0} \left(\frac{5x}{1 - e^{3x}} \right)$$

3. (4 points) There are four common ways that limits can fail to exist. Each limit below does not exist. For each limit, describe the way in which it fails to exist.

   (a) $\lim_{x \to 10} \dfrac{x - 10}{|x - 10|}$

   (b) $\lim_{x \to 0} \dfrac{5x}{\ln x}$

   (c) $\lim_{x \to 7} \dfrac{3x^2 + 5}{(x - 7)^2}$

   (d) $\lim_{x \to 1} f(x)$ where $f(x) = \begin{cases} \cos \pi x, & x < 1 \\ x^2 - 1, & x > 1 \end{cases}$