Math 131 - Quiz 1

Name _____

August 24, 2023

Score _____

Show all work to receive full credit. Supply explanations when necessary. This quiz is due August 29.

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1. (5 points) For each part of this problem, use a table of numerical values to estimate the limit. Your tables must show function values at six or more points. (Be sure your calculator is in radian mode.)

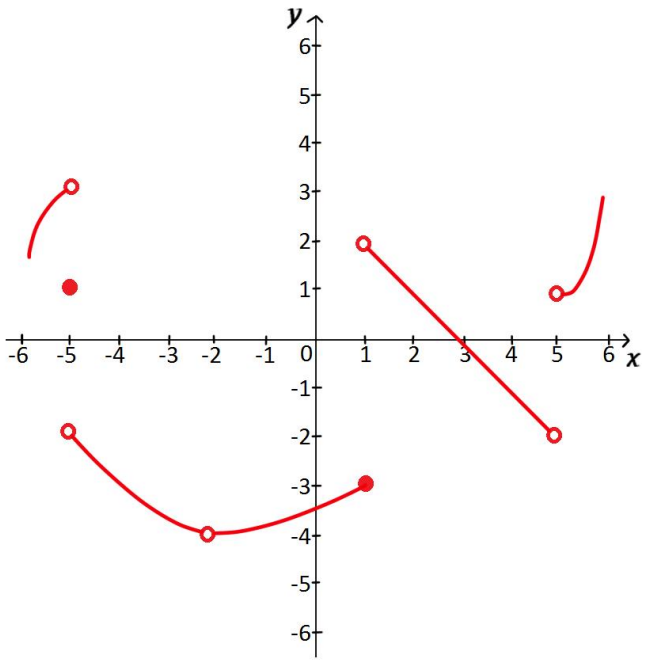
   (a) $\lim_{x \to 0} \left(\dfrac{1}{\sin x} - \dfrac{1}{x} \right)$

   (b) $\lim_{t \to -2} \dfrac{\sqrt{t+6} - 2}{t+2}$

Turn over.

2. (1 point) The graph of $y = f(x)$ is shown below. Use the graph to estimate each limit.

(a) $\lim_{x \to -2} f(x)$ (b) $\lim_{x \to 4} f(x)$



3. (4 points) Refer to the four ways in which a limit may fail to exist. Say why each of the following limits does not exist. Show work or supply a brief explanation.

(a) $\lim_{x \to 5} \dfrac{x^2 - 5}{|x - 5|}$

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

(c) $\lim_{x \to 3} \sqrt{x - 3}$

(d) $\lim_{x \to 0} \dfrac{\sqrt{x^2}}{x}$