

Math 131 - Quiz 1

August 23, 2023

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary. This quiz is due August 28.

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.

(a) $\lim_{x \rightarrow 1} \left(\frac{1}{\ln x} - \frac{1}{x-1} \right)$

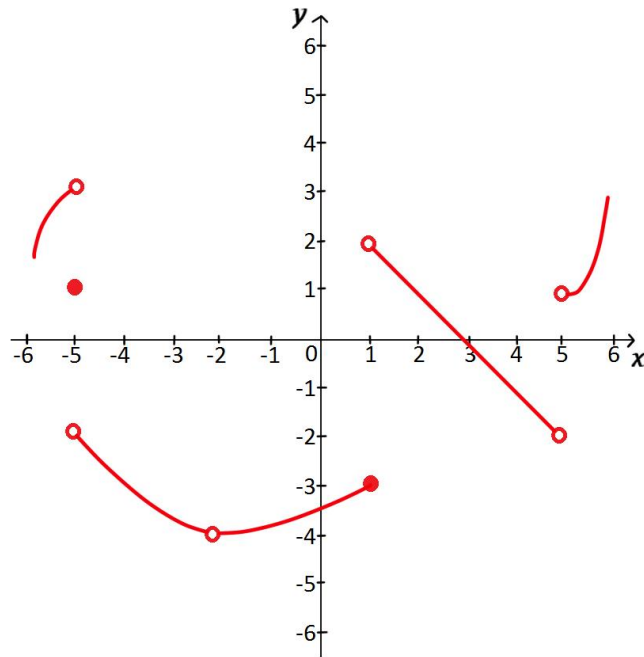
(b) $\lim_{t \rightarrow 0} \frac{t - \tan t}{t^3}$

Turn over.

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

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

(b) $\lim_{x \rightarrow -2} f(x)$



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) $\lim_{x \rightarrow 0} x^2 \ln x$

(b) $\lim_{x \rightarrow 3} \frac{x^2 - 3}{|x - 3|}$

(c) $\lim_{x \rightarrow 0} \frac{\sqrt{x^2}}{x}$

(d) $\lim_{x \rightarrow 0} \sqrt{x^3}$