

# Math 131 - Quiz 1

January 20, 2021

Name \_\_\_\_\_

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary. This quiz is due on January 27.

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1. (2 points) Use a table of values to estimate the following limit. Your table must show function values at six or more points.

$$\lim_{x \rightarrow 3} \frac{5x - 15}{4 \ln(x - 2)}$$

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

$$\lim_{x \rightarrow 1} \frac{\sqrt{x} - \sqrt[3]{x}}{x - 1}$$

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

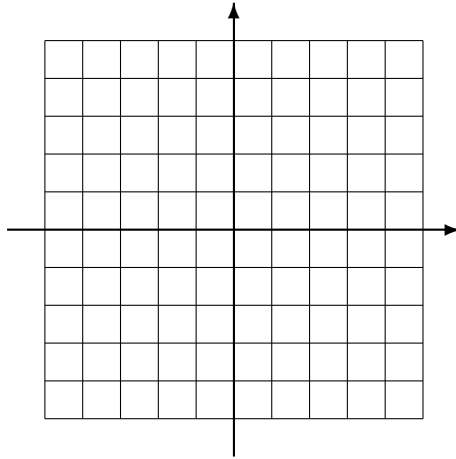
$$\lim_{x \rightarrow 0} \frac{\sin x - \tan x}{x^3}$$

4. (2 points) There are four common ways a limit can fail to exist. In which of the four ways does the following limit fail to exist? Briefly explain your reasoning.

$$\lim_{x \rightarrow 0} \frac{7x^3 - 3x}{|x|}$$

5. (2 points) Carefully sketch the graph of the following piecewise-defined function. Then **use your graph** to find each limit. Provide a short explanation for each answer.

$$f(x) = \begin{cases} \sqrt{x+4} & -4 \leq x < 0 \\ 2-x, & x > 0 \end{cases}$$



(a)  $\lim_{x \rightarrow 0} f(x)$

(b)  $\lim_{x \rightarrow -4} f(x)$