Quiz #4, 9/19
Math 156 (Calculus I), Fall 2023

Problem 1 is worth 5 points (1.25 pts each part), and Problem 2 is worth 5 points (1.25 pts each part), for a total of 10 points. Remember to *show your work* on all problems!

1. For each of the following limits: compute the limit, or if it does not exist explain why.

   (a) $\lim_{x\to 3} \dfrac{x^2+6}{x}$

   (b) $\lim_{x\to 1} \dfrac{x^2+x-2}{x-1}$

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

   (d) $\lim_{x\to 0} f(x)$, where $f(x) = \begin{cases} x+1 & \text{if } x \geq 0 \\ x-1 & \text{if } x < 0 \end{cases}$

2. For each of the following limits: compute the limit, or if it does not exist explain why.

   (a) $\lim_{x\to\infty} \dfrac{5x^2+2x-1}{3x^2-x+4}$

   (b) $\lim_{x\to\infty} \dfrac{x^3+1}{10x^2}$

   (c) $\lim_{x\to 1} \ln(\sin(\dfrac{\pi}{2}\cdot x))$

   (d) $\lim_{x\to 0} e^{(\frac{x^2+x}{x})}$