

Math 114 Spring 2018  
Calculus I Practice Homework 3.5  
Do not turn in

1. Prove that  $\lim_{x \rightarrow 5} \frac{x-2}{x-5} = \pm\infty$ .
2. Prove that  $\lim_{x \rightarrow -3} \frac{-1}{(x+3)^4} = -\infty$ .
3. Prove that  $\lim_{x \rightarrow 4} \frac{3}{(x-4)^2} = +\infty$ .
4. Explicitly naming the rule used in each step, calculate  $\lim_{x \rightarrow 0} x^2 - 3x + 5$
5. Explicitly naming the rule used in each step, calculate  $\lim_{x \rightarrow 4} \sqrt{x} + \sqrt[3]{4+x}$
6. Explicitly naming the rule used in each step, calculate  $\lim_{x \rightarrow 2} f(x)$  where

$$f(x) = \begin{cases} x + 1 & x < 2 \\ x^2 - 1 & x > 2 \end{cases}$$