Math 114 Fall 2018
Calculus I HW 2
Due Wednesday, September 12

1. Find, with proof, $\lim_{x\to 3} 4x$.
2. Find, with proof, $\lim_{x\to 2}(x+1)^2$.
3. Find, with proof, $\lim_{x\to 1} x^2$.
4. Find, with proof, $\lim_{x\to 3} \dfrac{x^2-9}{x-3}$.
5. $\star$ Find, with proof, $\lim_{x\to 2} \dfrac{1}{x-1}$.
6. ($\star$) Find (with proof) $\lim_{x\to 5} \frac{1}{x-4}$.
7. Let
$$f(x) = \begin{cases} 1 & x < 2 \\ 2 & x = 2 \\ 3 & x > 2 \end{cases}$$
What is $f(2)$? Prove that $\lim_{x\to 2} f(x)$ does not exist.