Math 114 Spring 2018
Calculus I HW 2
Due Friday, February 2

1. Let $f(x) = 2x + 1$, and let $L = 3$.
   (a) Suppose we have an error margin of $\epsilon = 1/10$, that is, we would like the distance between $f(x)$ and L to be less than $1/10$. What open interval does x need to be in to make this happen?
   (b) Now suppose our error margin is $\epsilon = 1/50$. Give an open interval for x so that the distance between $f(x)$ and L is less than $1/50$ for every x in the interval.

2. Find, with proof, $\lim_{x\to 3} 4x$.

3. Find, with proof, $\lim_{x\to 2}(x+1)^2$.

4. Find, with proof, $\lim_{x\to 1} x^2$.

5. Find, with proof, $\lim_{x\to 3} \dfrac{x^2-9}{x-3}$.

6. $\star$ Find, with proof, $\lim_{x\to 2} \dfrac{1}{x-1}$.

7. ($\star$) Find (with proof) $\lim_{x\to 5} \frac{1}{x-4}$.