Worksheet 2
MATH 1A Fall 2015

for 15 September 2015

Exercise 2.1. Suppose $\lim_{x \to a} f(x) = L$, and let $c \in \mathbb{R}$. Prove that

$$\lim_{x \to a} cf(x) = cL.$$

Exercise 2.2. Evaluate, with proof, the limit

$$\lim_{x \to 2} \frac{x^2 + 3x - 10}{x - 2}.$$

[Hint: remember that the limit doesn't care what happens *at* $x = 2$, just what happens *near* $x = 2$. So we can assume $x \neq 2$, and the expression simplifies. After that it should be more familiar.]

Exercise 2.3. Let $f : \mathbb{R} \to \mathbb{R}$ and $g : \mathbb{R} \to \mathbb{R}$ be functions. Suppose that f and g are continuous (i.e. continuous at a for every $a \in \mathbb{R}$). Prove that $f + g$ is continuous. In case it's not familiar, $f + g$ is the function that takes a real number x to the value $f(x) + g(x)$. [Hint: I'm not sure how hard this looks, but the proof is *very short*. Know your definitions and limit laws.]