# Worksheet 4

## MATH 1A Fall 2015

### for 29 September 2015

**Exercise 4.1.** Prove that there is a real number $x$ for which $\cos x = x$. (You may assume that cos is continuous).

Derivatives! We're interested in understanding functions, and the idea of a derivative is a very powerful tool for this. When a function is differentiable, understanding the derivative gives us lots of information about the function; or maybe we're just interested in understanding the derivative to begin with. As we learn more about derivatives I'll try to give more of an indication why they're awesome.

**Exercise 4.2.** State the definition of the derivative.

**Exercise 4.3.** For $c \in \mathbb{R}$, prove that the derivative of $f(x) = cx$ is the constant function $f'(x) = c$.