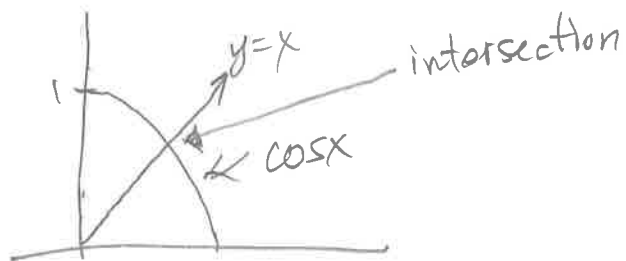# Chapter 2 Solutions of Equations of one variable

A solution to an equation sometimes cannot be solved explicitly. In these cases, we can find an approximation to the exact solutions (to many decimal places)

For example, suppose $\boxed{f(x) = \cos x - x}$
   We want to find where $f(x) = 0$.
Note: That is where $\cos x = x$

intersection

We are developing methods to solve these!

Solving $f(x) = 0$ is equivalent to

$$g(x) = x.$$

For example,

$$f(x) = \cos x - x = 0 \quad \Longleftrightarrow \quad g(x) = \cos x = x$$

$$f(x) = x^2 - 2x + 3 = 0 \quad \Longleftrightarrow \quad g(x) = \frac{x^2 + 3}{2}$$

To find the equivalent, start with $f(x) = 0$ and solve for x in algebraic or sneaky/smart methods. The selection is an art! Now, lets start with Bisection Method.