

Main topic: Functions

math class functions

$$f: \mathbb{R} \rightarrow \mathbb{R}$$

"f is a func. from
reals to reals"

$$x \mapsto x^2$$

$$f(x) = x^2$$

"f maps x to x^2 "

C++

`double f(double);`
(output) (input)

```
double f(double x) {  
    return x*x;  
}
```

Differences from math functions:

- might be "multi-valued"

$f(3) = 9$ the first time, and later,
 $f(3) = 10 \dots$

- might have side-effects (e.g. printing
a message)

```
void printhello(int n) {  
    for (i = 0; i < n; i++)  
        cout << "hello\n";  
}
```

then if we do this:

`print_hello(100);` // would print "hello\n"
100x.