Quick note: contrast of C++ functions w/ math class.

Math class:

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

$f(x) = x^2 + 1$

```
double f(double);
```

```
double f(double)
{
    return x*x+1;
}
```

$g: \mathbb{Z} \times \mathbb{R} \to \mathbb{R}$

↑ integers

```
double g(int, double);
```

Differences

C++ functions might not give the same answer every time!

```
int z = 0;
```

← "Global variable" (defined outside all functions)

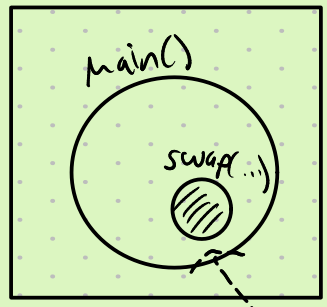
```
int f(int x)
{
    z++;
    return x+z;
}
```

might not return any value (e.g. swap(...))

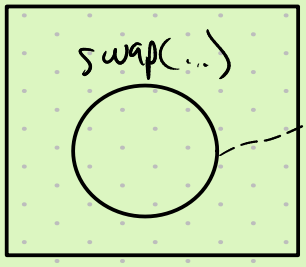
void swap (int &a, int &b);

Compile vs link:

g++ -c main.cpp ⟶



g++ -c swap.cpp ⟶



g++ *.o

a.out

(runnable program)

Remember: can use nm

to examine object files.

$f: \mathbb{Z} \longrightarrow \mathbb{Z} \times \mathbb{Z}$

void f(int x, int& y, int& z);

input

output

usage: int x, y, z; cin >> x;...

```
f(x,y,z);
// (y,z) is the output.
```

(we give f space to write its answer...)