

## MthT 430 Notes Chapter 3b More about Functions

If  $f$  is a function, the set

$$\{(x, f(x)) \mid x \in \text{domain } f\}$$

is identified with the *graph* of  $f$ .

A function is *one-to-one* or *bijective* if  $f(x) = f(y)$  implies that  $x = y$ .

If  $f$  is a function, then a function  $g$  is an *extension* of  $f$  if

- $\text{domain}(f) \subset \text{domain}(g)$ .
- For all  $x \in \text{domain}(f)$ ,  $g(x) = f(x)$ .

**Definition.** If  $f$  is a function, then a function  $g$  is an *extension* of  $f$  if

$$\text{graph}(f) \subset \text{graph}(g).$$

A set  $A$  of ordered pairs  $\{(x, y)\}$  is a function (graph of a function) if it passes the *vertical line test*: no vertical line intersects  $A$  in more than one point. If  $A$  is the graph of a function  $f$ , then the function is one-to-one if  $A$  passes the *horizontal line test*: no horizontal line intersects  $A$  in more than one point. Think about what the meaning of *vertical/horizontal line*.