Inverse functions

A function f has an inverse f^{-1} if it is bijective because we can find a way of getting from the codomain back to the domain

The formula for converting Celcius to Farenheit is

$F = \frac{9}{5}C + 32$ this is a function

$f(x) = \frac{9}{5}x + 32$

We have output (degrees Farenheit) in terms of input (degrees Celcius)
If we put the eq^n so that it is Celcius in terms of Farenheit we have the inverse

$$F = \frac{9}{5}C + 32$$
$$\frac{9}{5}C = F - 32$$
$$C = \frac{5}{9}(F - 32)$$ This is the inverse

Finding the inverse graphically

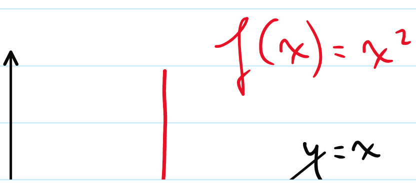
With the restriction that $0 \leq x$
for $f(x) = x^2$, $f(x)$ is bijective.

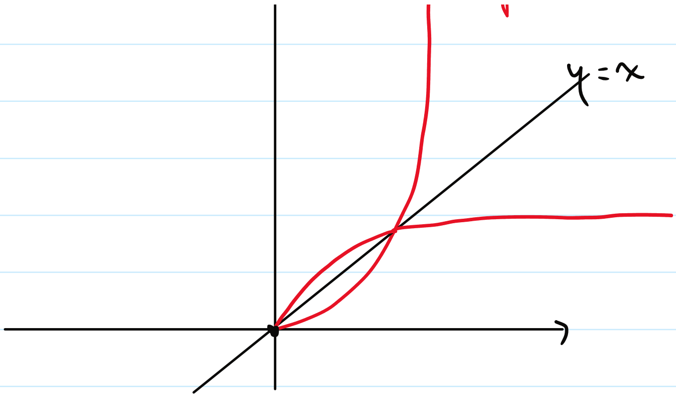
$f(x) = y = x^2$

$\sqrt{y} = x$

x will be the positive square roots of y

The graph of $f(x) = x^2$, $0 \leq x$ looks like this





this is the graph of $\sqrt{x}$

So to find the inverse graphically you reflect your curve in the line $y=x$

Composition of functions

given two functions $f(x), g(x)$

The composition $f(g(x))$ is found by taking $g(x)$ and then $f(x)$

This is written $(f \circ g)(x)$

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

$$f(g(x)) = (f \circ g)(x) = ((x^2)+1)$$

Similarly $(g \circ f)(x) = g(f(x)) =$

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