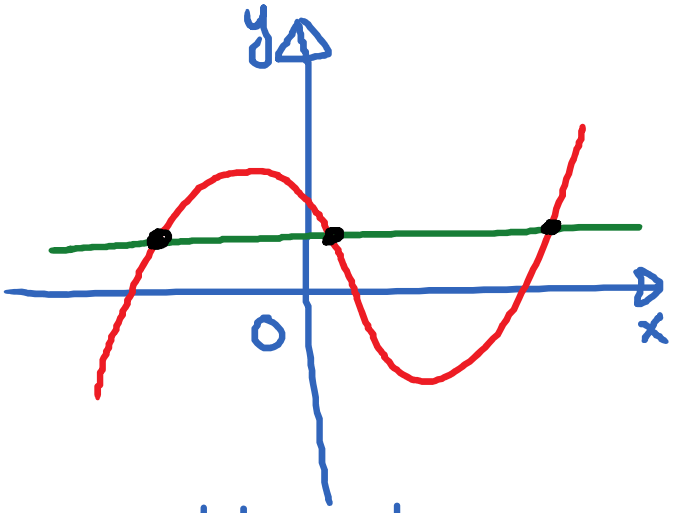
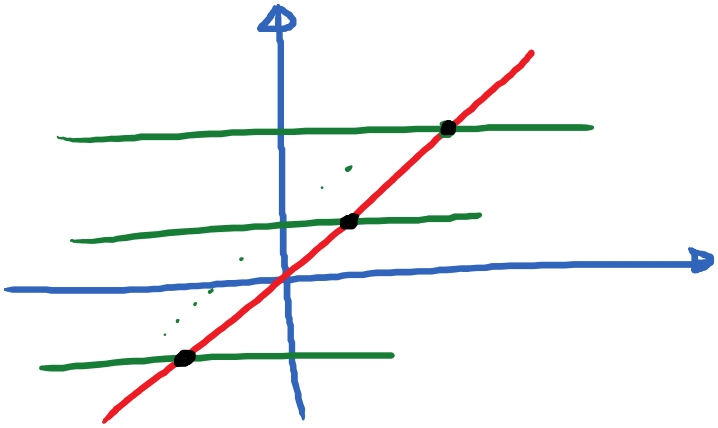
A function f has an inverse if it is one-to-one.

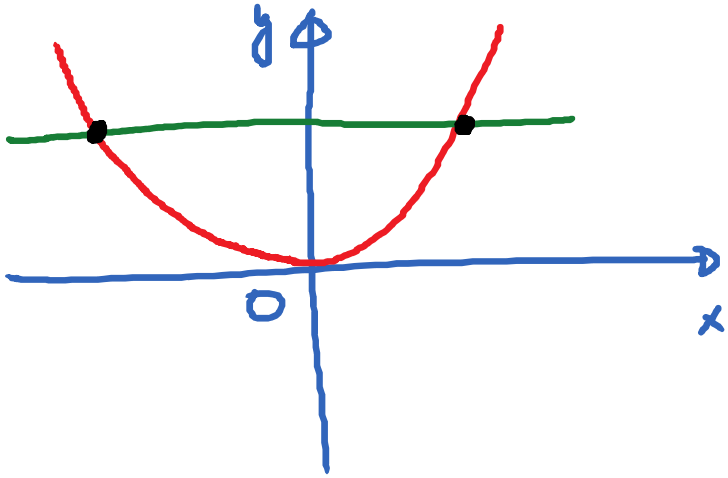
To determine whether a graph is the graph of a one-to-one function, we use the horizontal line test.



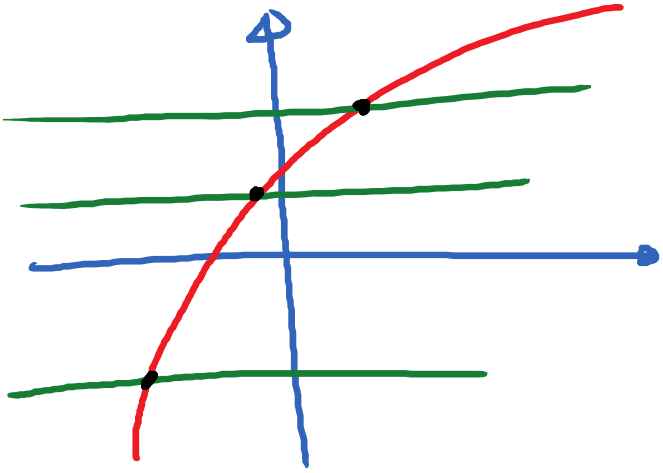
Not one-to-one



One-to-one



Not one-to-one



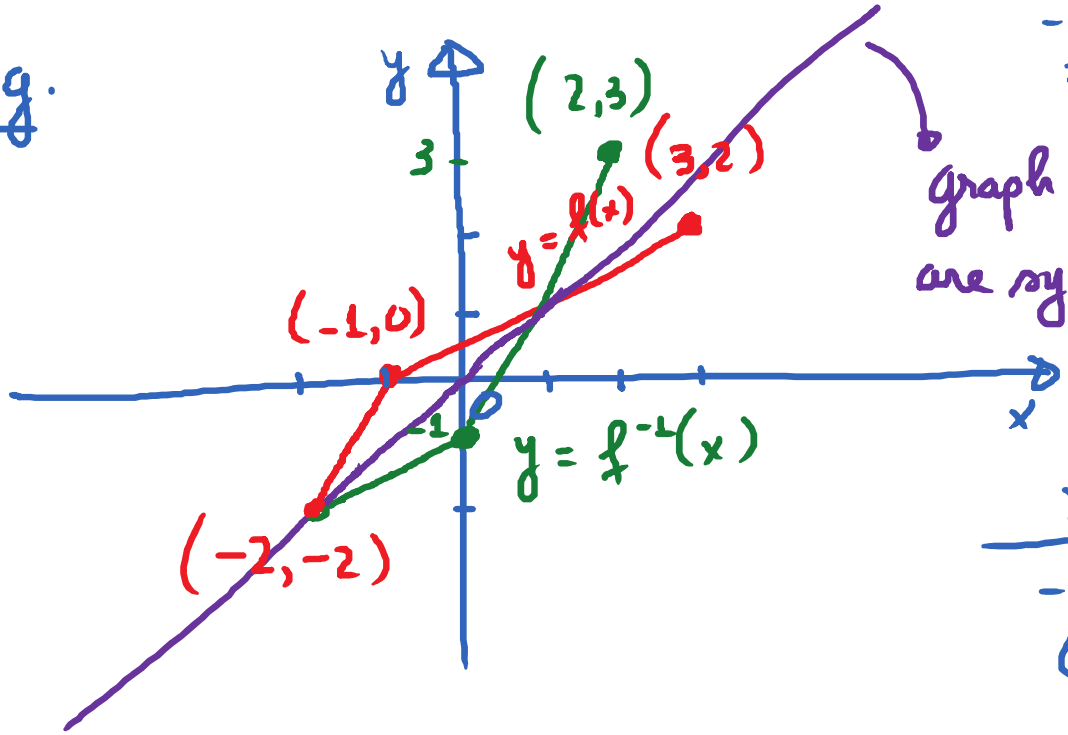
One-to-one.

one-to-one

Tuesday, October 17, 2017 10:53 AM

Obj 4: Use the graph of a 1-1 function to find the graph of its inverse.

E.g.



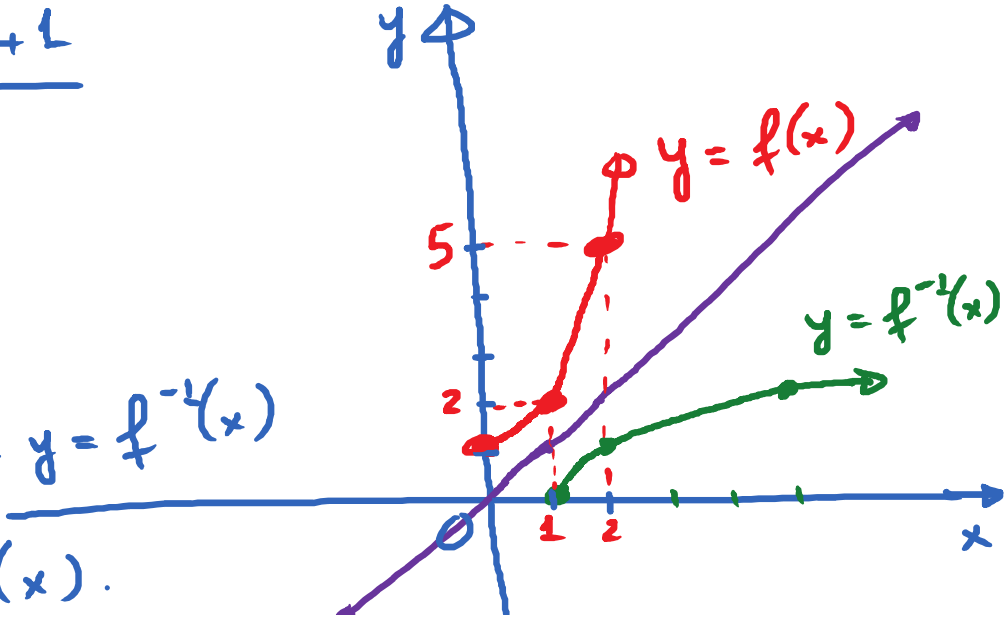
x	y = f(x)
-2	-2
-1	0
3	2

graph of f and f^{-1} are symmetric with respect to y = x

x	$y = f^{-1}(x)$
-2	-2
0	-1
2	3

E.g. $f(x) = x^2 + 1$; on $x \geq 0$

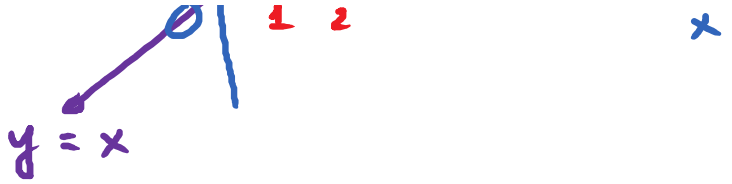
x	$y = f(x) = x^2 + 1$
0	1
1	2
2	5



(1) Find formula for $y = f^{-1}(x)$

(2) Graph $y = f^{-1}(x)$.

② Graph $y = f^{-1}(x)$.



(1) Formula for $y = f^{-1}(x)$

$y = x^2 + 1$ | $x = \sqrt{y - 1}$

$y - 1 = x^2$

$y = \sqrt{x - 1}$. $f^{-1}(x) = \sqrt{x - 1}$.