1:1 FUNCTION

FOR EVERY X THERE IS ONLY ONE y AND FOR EVERY y THERE IS ONLY ONE X

EASIER (95%)

IF YOU HAVE ANY OF THE FOLLOWING IT IS NOT A 1:1 FUNCTION

$x^2, x^4, x^{\text{EVEN}\#}$

$y^2, y^4, y^{\text{EVEN}\#}$

$|x|, |y|, \pm\sqrt{x}, \pm\sqrt{y}$

$x = \#, y = \#$

→ UNLESS THERE IS A CONDITION PUT ON X

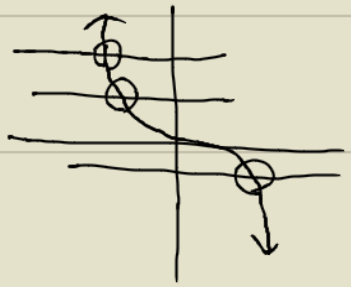
ex: $y = x^2, x \geq 0$

NOTE: IF A FUNCTION IS 1:1 THEN IT HAS AN INVERSE

HORIZONTAL LINE TEST

IF ANY HORIZ. LINE INTERSECTS THE GRAPH AT 2 OR MORE PLACES, IT IS NOT 1:1

#1

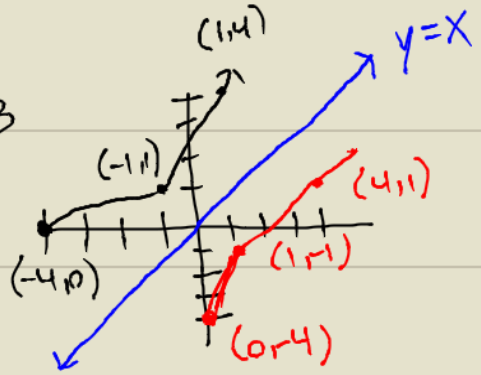


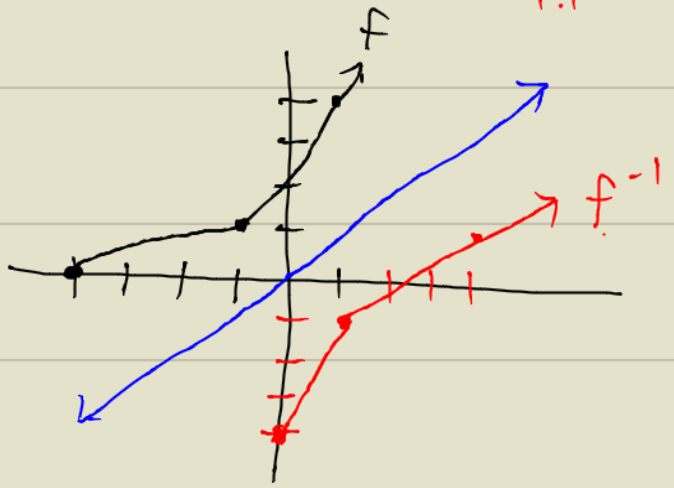
#2

1:1 ⇒ YES, INVERSE

NOT 1:1 ⇒ NO INVERSE

#3





DEF. OF INVERSE

f AND g are inverses if

$f \circ g = g \circ f = x$

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

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

4. $f(x) = 9x - 1$

$g(x) = \frac{x+1}{9}$

$f \circ g = f(g)$

$= 9(g) - 1$

$= 9\left(\frac{x+1}{9}\right) - 1$

$= x + 1 - 1$

$= x$

$g \circ f = g(f)$

$= \frac{(f)+1}{9}$

$= \frac{9x - 1 + 1}{9}$

$= \frac{9x}{9} = x$

YES