

HW Worksheet 6.4

Inverse Functions - Algebra 2

Find the inverse of the relation. Is the inverse a function?

1.

x	-2	-1	0	1	2
y	3	5	7	9	11

Inverse:

x	3	5	7	9	11
y	-2	-1	0	1	2

Is the inverse a function?

Yes, no repeats in domain

2.

x	-2	-1	0	1	2
y	-1	-4	-5	-4	-1

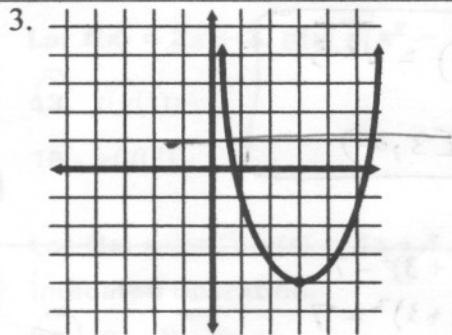
Inverse:

x	-1	-4	-5	-4	-1
y	-2	-1	0	1	2

Is the inverse a function?

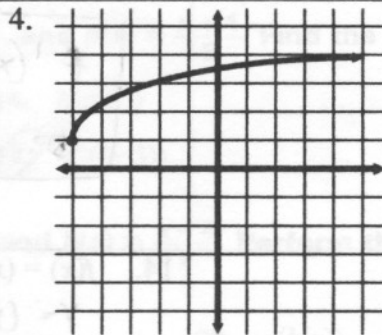
No, -4 repeats in the domain

Use the horizontal line test to determine whether the inverse of $f(x)$ is a function.



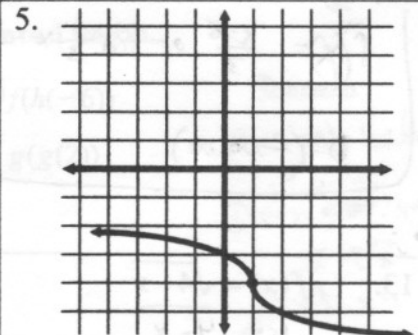
Is inverse of $f(x)$ a function?

No, does not pass horizontal line test



Is inverse of $f(x)$ a function?

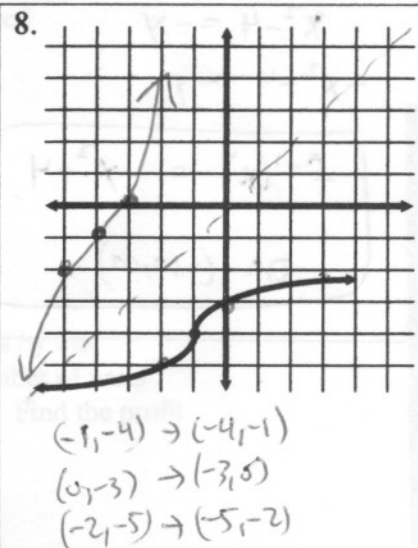
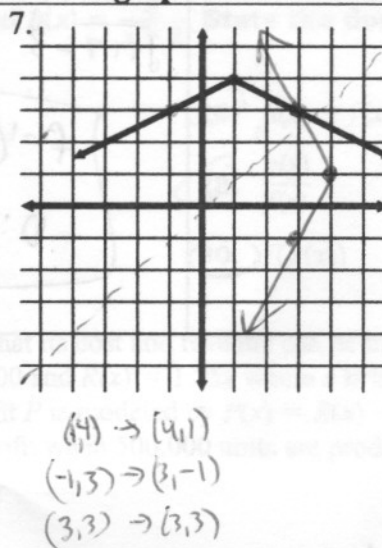
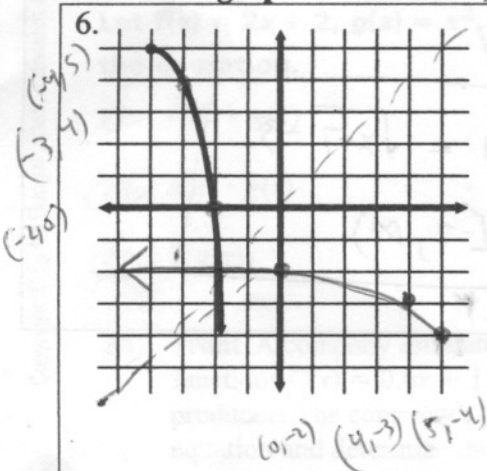
Yes, passes the horizontal line test



Is inverse of $f(x)$ a function?

Yes, $f(x)$ passes the horizontal line test

Given the graph of a function, create the graph of the inverse function.



Find the inverse function and state the domain of each function in interval notation.

9. $y = \frac{3}{8}x + 5$
 $x = \frac{3}{8}y + 5$
 $x - 5 = \frac{3}{8}y$
 $\frac{8}{3}(x - 5) = y$

$y = \frac{8}{3}(x - 5)$
 $D: (-\infty, \infty)$

10. $y = 3 - 2x$
 $x = \frac{3 - y}{2}$
 $x - 3 = \frac{-y}{2}$
 $\frac{x - 3}{-2} = y$

$y = \frac{x - 3}{-2}$ or $y = -\frac{1}{2}x + \frac{3}{2}$
 $D: (-\infty, \infty)$

11. $f(x) = 3x + 8$
 $x = 3y + 8$
 $x - 8 = 3y$
 $\frac{x - 8}{3} = y$

$f^{-1}(x) = \frac{x - 8}{3}$ or $f^{-1}(x) = \frac{1}{3}x - \frac{8}{3}$
 $D: (-\infty, \infty)$

12. $f(x) = x^2 + 3$
 $y = x^2 + 3$
 $x = y^2 + 3$
 $x - 3 = y^2$
 $\sqrt{x - 3} = y$

$f^{-1}(x) = \sqrt{x - 3}$
 $D: [3, \infty)$

13. $f(x) = \sqrt{4 - x}$
 $y = \sqrt{4 - x}$
 $x = 4 - y^2$
 $x^2 = 4 - y$
 $x^2 - 4 = -y$
 $-x^2 + 4 = y$

$f^{-1}(x) = -x^2 + 4$
 $D: (-\infty, \infty)$

14. $f(x) = (x + 3)^2 - 7$
 $y = (x + 3)^2 - 7$
 $x = (y + 7)^2 - 7$
 $x + 7 = (y + 3)^2$
 $\sqrt{x + 7} = y + 3$
 $\sqrt{x + 7} - 3 = y$

$f^{-1}(x) = \sqrt{x + 7} - 3$
 $D: [-7, \infty)$

* Connect new domain with old range