

x	-6	-1	0	2	5	9
$f(x)$	-1	2	6	9	11	15
x	-1	2	6	9	11	15
$g(x)$	-6	-1	0	2	5	9

Let f be a continuous function with selected values in the table above. Let g be the inverse of f , such that $g(x) = f^{-1}(x)$. Find the following values if possible.

1) $f(f(2)) = f(9) = 15$

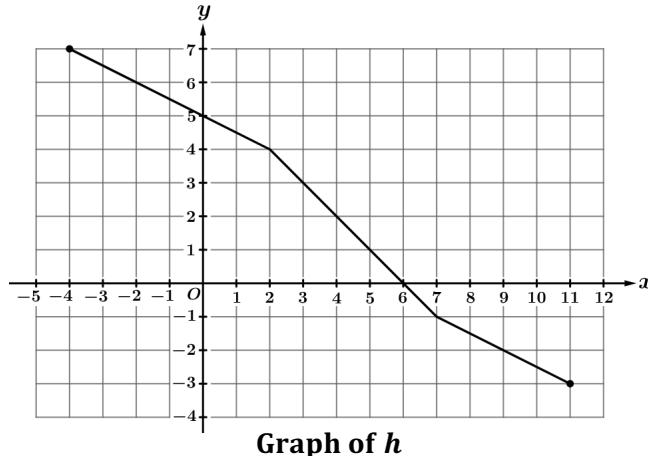
2) $g(11) = 5$

3) $g(9) = 2$

4) $g(g(9)) = g(2) = -1$

5) $(f^{-1} \circ f)(5) = f^{-1}(11)$
 $= g(11) = 5$

6) $f^{-1}(2) = g(2) = -1$



The function h is defined over the interval $-4 \leq x \leq 11$ as shown above. Let h^{-1} represent the inverse of h .

7) What is the maximum value of $h(x)$? **7**

8) What is the maximum value of $h^{-1}(x)$?

11 because this is the maximum x -value of h

9) Find $h^{-1}(5)$

$h^{-1}(5) = 0$ because $h(0) = 5$

10) Find $h^{-1}(-2)$

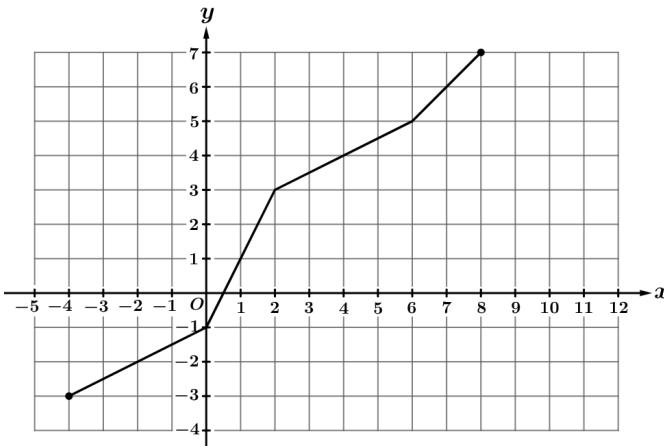
$h^{-1}(-2) = 9$ because $h(9) = -2$

11) Find $h^{-1}(h^{-1}(-1)) = h^{-1}(7)$

$= -4$

$h^{-1}(-1) = 7$ because $h(7) = -1$

$h^{-1}(7) = -4$ because $h(-4) = 7$



Graph of f

The function f is defined over the interval $-4 \leq x \leq 8$ as shown above. Let f^{-1} represent the inverse of f .

12) What is the minimum value of $f^{-1}(x)$?

-4 because this is the least x -value of f

13) What is the maximum value of $f^{-1}(x)$?

8 because this is the maximum x -value of f

14) Find $f^{-1}(4)$

$f^{-1}(4) = 4$ because $f(4) = 4$

15) Find $f^{-1}(7)$

$f^{-1}(7) = 8$ because $f(8) = 7$

16) Find $f^{-1}(6)$

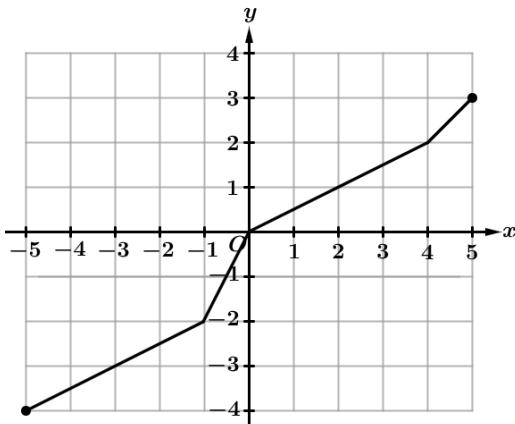
$f^{-1}(6) = 7$ because $f(7) = 6$

17) What is the domain of f^{-1} ?

$[-3, 7]$ because the domain of f^{-1} is the range of f .

18) What is the range of f^{-1} ?

$[-4, 8]$ because the range of f^{-1} is the domain of f .



Graph of g

Example 4: The function g is defined over the interval $-5 \leq x \leq 5$ as shown above. Let g^{-1} represent the inverse of g . Values of the decreasing function h are given in the table above for selected values of x . Find the following, if possible.

19) $g(h(-2)) = g(4) = 2$

20) $h^{-1}(4) = -2$

21) $g^{-1}(h(-1))$ Not possible because $h(-1)$ is not defined.

22) $g(h^{-1}(2))$ Not possible because $h^{-1}(2)$ is not defined.

x	-5	-2	0	1	3	4
$h(x)$	5	4	1	0	-2	-3
x	5	4	1	0	-2	-3
$h^{-1}(x)$	-5	-2	0	1	3	4