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Study Guide and Intervention

Verifying Inverses of Functions

Example **Determine whether or not the tables represent functions that are inverses. Justify your answer.**

x	y
– 2	– 5
0	1
2	7
4	13
6	19

x	y
1	0
4	1
7	2
10	3
13	4

Solution

Step 1 Compare the domain of one table with the range of the other and vice versa.

x	y
– 2	– 5
0	1
2	7
4	13
6	19

x	y
1	0
4	1
7	2
10	3
13	4

Step 2 Evaluate the similar portions of the domain and range of the left hand table and the range and domain of the right hand table.

x	y
– 2	– 5
0	1
2	7
4	13
6	19

x	y
1	0
4	1
7	2
10	3
13	4

Exercises

Indicate if the data in each pair of tables represent inverse functions or not.

1.

x	$f(x)$
-3	5
-1	3
2	-2
-2	-6

x	$f(x)$
5	-3
3	-1
-2	2
-6	-2

2.

x	$f(x)$
-6	5
0	1
2	-8
10	-15

x	$f(x)$
6	-5
0	-1
-2	8
-10	15

3.

x	$f(x)$
2	10
4	12
6	14
8	16

x	$f(x)$
-2	10
-4	12
-6	14
-8	16

4.

x	$f(x)$
-7	-1
0	0
2	1
4	2

x	$f(x)$
-1	-7
0	0
1	2
2	4

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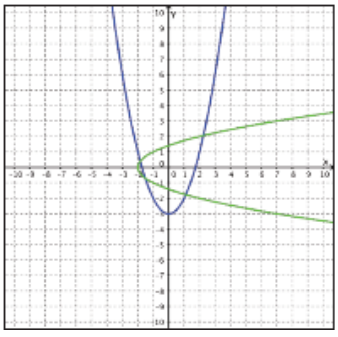
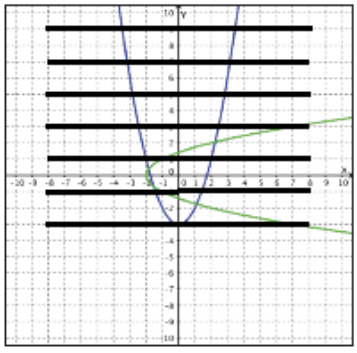
Study Guide and Intervention

Verifying Inverses of Functions (cont.)

Example **Each graph shows a function and its inverse. Determine how the domain of f(x) should be restricted so the inverse is also a function.**



Step 1 Draw perpendicular lines on one of the graphs to see where the line stops intersecting the graph in two places.



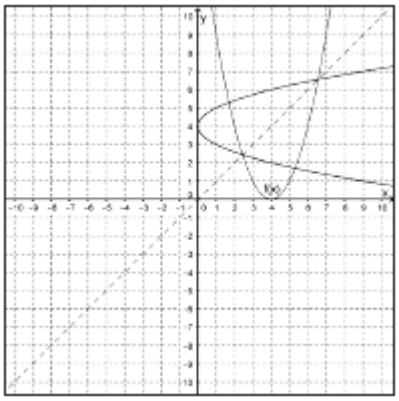
Step 2 The last line should pass through the vertex. The vertex will help determine the domain restrictions to insure that the inverse will be a function.

The vertex is at (0,-3).
Therefore, the domain restrictions will occur at -3.
$x \geq -3$ or $x \leq -3$

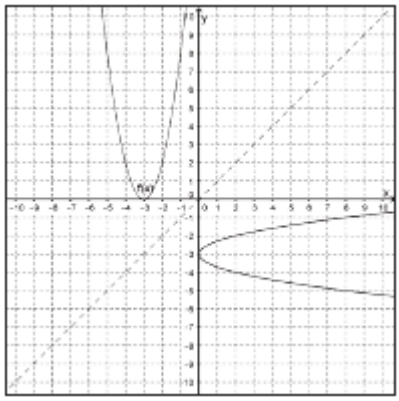
Exercises

Each graph shows a function and its inverse. Determine how the domain of f(x) should be restricted so the inverse is also a function.

5.



6.



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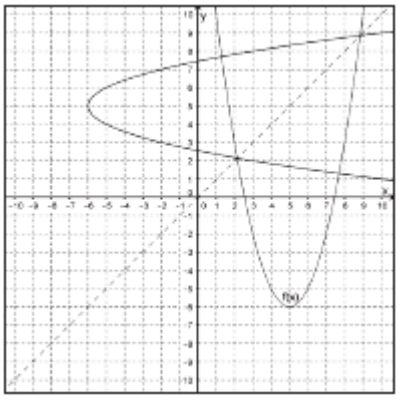
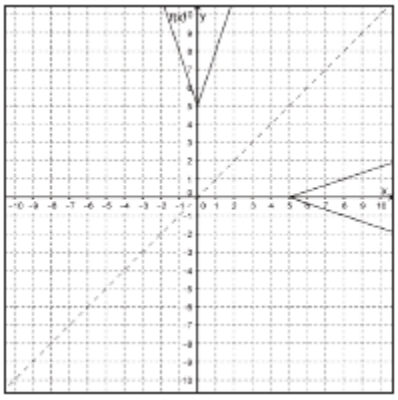
Verifying Inverses of Functions (cont.)

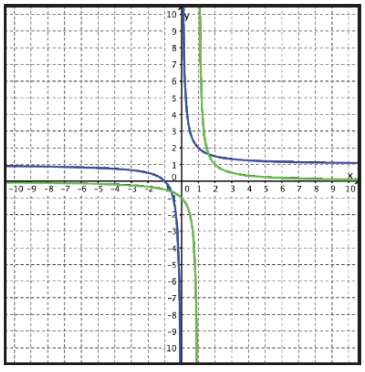
7.



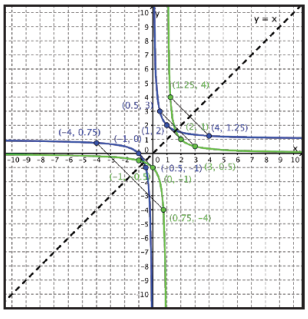
8.



Example **Indicate if each graph represents an inverse relationship or not. Justify your answer.**



Step 1 Graph the line ***y*** = ***x*** on the coordinate plane. Choose ordered pairs that appear to be (***x***, ***y***) and (***y***, ***x***). Draw line segments to connect the related points.



Step 2 Evaluate whether the line ***y*** = ***x*** is a line of symmetry between the two graphs.

The graphs appear to be inverses because they are reflections of one another over the line y = x.

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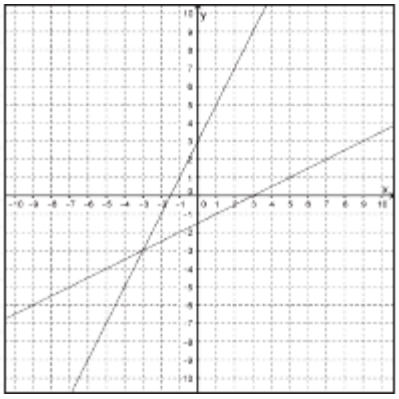
Verifying Inverses of Functions (cont.)

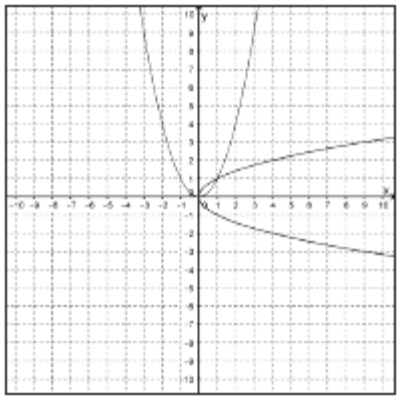
Exercises

Indicate if each graph represents an inverse relationship or not.

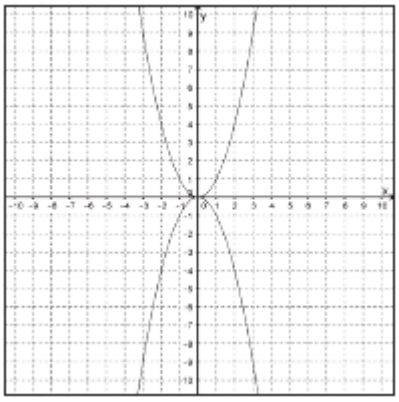
9.



10.



11.



12.