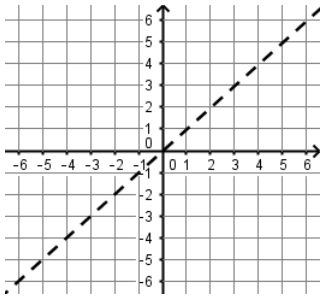
Name: Period: Date:

Practice Worksheet: Inverse Functions and One-to-One

Determine if each pair of functions are inverses by NEATLY sketching the graphs of $f(x)$ and $g(x)$ on the same plane.

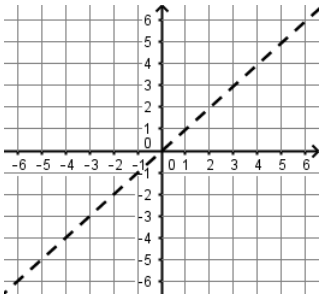
1] $\begin{cases} f(x) = 4 - \frac{3}{2}x \\ g(x) = \frac{1}{2}x + \frac{3}{2} \end{cases}$



Inverses – yes or no (circle one)

Explain:

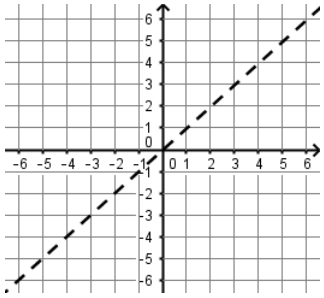
2] $\begin{cases} f(x) = 2\lvert x + 2\rvert \\ g(x) = \frac{1}{2}x - 2 \end{cases}$



Inverses – yes or no (circle one)

Explain:

3] $\begin{cases} f(x) = -\frac{1}{27}(x+2)^3 \\ g(x) = -3\sqrt[3]{x} - 2 \end{cases}$



Inverses – yes or no (circle one)

Explain:

Find the inverse of each function algebraically. Show all work. Give a restricted domain if needed.

4] $f(x) = \frac{3}{4}x - 6$

5] $f(x) = -\sqrt{3x} + 6$

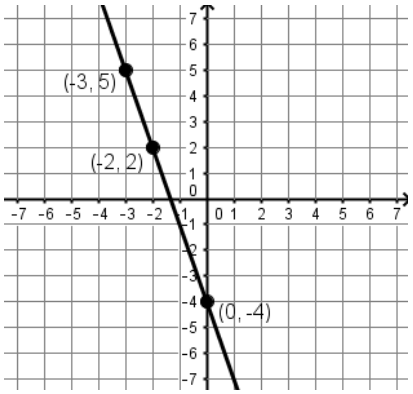
6] $f(x) = \frac{(x+4)^3}{3}$

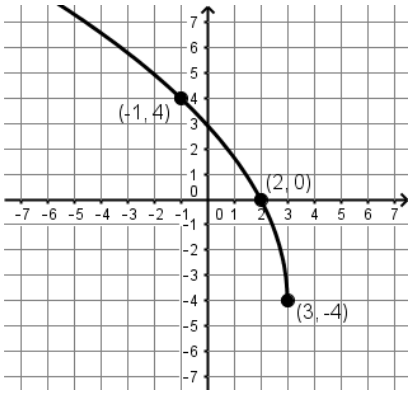
Neatly sketch the graph of the inverse function. Label the coordinates of the three anchor points on the inverse.

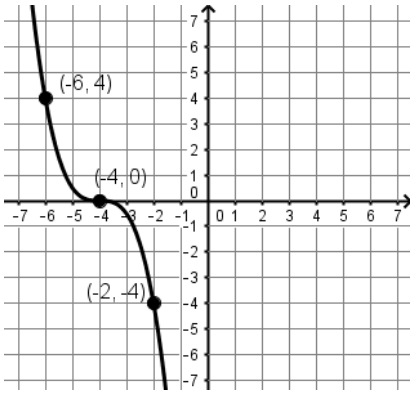
7]

8]

9]







Determine if Y_1 and Y_2 are inverses of each other by analyzing the table of ordered pairs.

10]

X	Y1	Y2
-10	121	11/12
121	-1451	-10
0	1	1/12
1	-11	0
5	-59	-1/3
-59	709	5

X=

Inverses – yes or no (circle one)

Explain:

11]

X	Y1	Y2
-5	-6	-9/2
-6	-8	-5
0	4	-2
4	8	0
5	6	1/2
8	4	1

X=

Inverses – yes or no (circle one)

Explain:

12]

X	Y1	Y2
-10	-1/11	9/10
-.0909	-.9167	-10
0	-1	ERROR
-1	-1/2	0
7	1/6	8/7
.16667	-1.2	7

X=

Inverses – yes or no (circle one)

Explain:

Use the horizontal line test to determine if the function is one-to-one. Make a quick sketch and state "YES" or "NO."

13] $f(x) = x^4 - 2x^2 - 1$

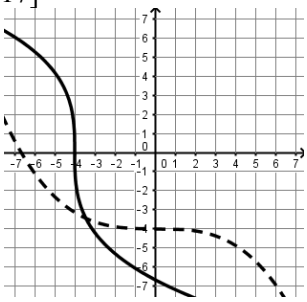
14] $f(x) = \frac{1}{6}(x-2)^3 + 1$

15] $f(x) = \sqrt{36 - x^2}$

16] $f(x) = -\frac{x^3}{\sqrt{3}} + 3$

f(x) is solid and g(x) is dashed in each graph. State the type of symmetry f(x) has with g(x) and state if they are inverses.

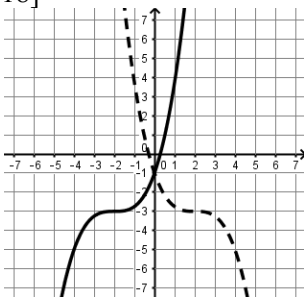
17]



Symmetry:

Inverses – yes or no (circle one)

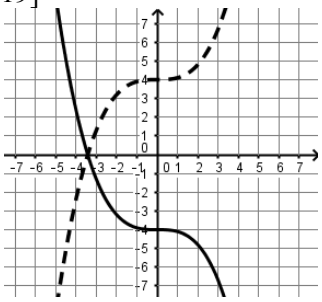
18]



Symmetry:

Inverses – yes or no (circle one)

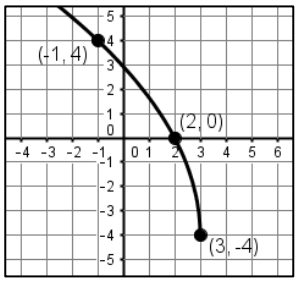
19]



Symmetry:

Inverses – yes or no (circle one)

BONUS 20] f(x) is shown. Write the equation of its inverse and give the restricted domain.



BONUS 21] Find the equation of the inverse of the function algebraically and give the restricted domain.

Show all work! $f(x) = \frac{5x+2}{x-5}$

What is awesome about the inverse?