State the inverse of each relation

1. Given the ordered pairs: \{(3, -2) (-1, 5) (4, 0)\}

   the inverse points are: _______________________________

   Graph the inverse.

   Is this an example of an inverse function? _______

2. Given the table:

   \[
   \begin{array}{c|cccc}
   x & 0 & 1 & 2 & 3 \\
   \hline
   y & 3 & 1 & 2 & 4 \\
   \end{array}
   \]

   the inverse is:

   \[
   \begin{array}{c|cccc}
   x &  &  &  &  \\
   \hline
   y &  &  &  &  \\
   \end{array}
   \]

   Is this an example of an inverse function? _______

3. Given the graph:

   the inverse is:

   (it may help to list the ordered pairs….)

   Is this an example of an inverse function? _______

Verify that \( f \) and \( g \) are inverse functions. Find \( f(g(x)) \) and \( g(f(x)) \).

4. \( f(x) = x + 2; \ g(x) = x - 2 \)

5. \( f(x) = 4x - 1; \ g(x) = \frac{1}{4}x + \frac{1}{4} \)
Given the following graph, determine if it is a function using the vertical line test, if the inverse is a function using the horizontal line test, and then graph the inverse by choosing points from the graph and flipping the x and y.

6.  
Function: _______                    Function: _______
Original ordered pairs: _____________________
Inverse ordered pairs: _____________________

7.  
Function: _______                    Function: _______
Original ordered pairs: _____________________
Inverse ordered pairs: _____________________

8. How does the graph of the original function compare to the graph of the inverse?
   It is a reflection over the line ________________ (fill in the equation of the line)

Given the equation of the function, write the equation of the inverse, \( g(x) \).

9.  \( f(x) = 3x - 1 \)

10. \( f(x) = \frac{1}{2}x + 4 \)

11. \( f(x) = \frac{x - 2}{3} \)

12. \( f(x) = x^2; x \geq 0 \)

13. \( f(x) = x^3 + 3 \)

14. \( f(x) = 2x^2 - 1; x \geq 0 \)
Find the inverse of each function and then graph the equation and its inverse on the same coordinate plane.

15. \( f(x) = x + 2 \)

\[ g(x) = \frac{1}{x-2} \]

Graph of \( f(x) \) and \( g(x) \) (label each)

16. \( f(x) = 2x + 1 \)

\[ g(x) = \frac{1}{2x-1} \]

Graph of \( f(x) \) and \( g(x) \) (label each)

17. \( f(x) = x^2 - 1; x \geq 0 \)

<table>
<thead>
<tr>
<th>x</th>
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Review composite functions: If \( f(x) = x^2 \) and \( g(x) = 3x - 2 \), find

18. \( g(f(5)) \)

19. \( f(g(5)) \)

20. \( g(f(2)) \)