

Assignment

Write

Describe how to create the inverse of a function graphically.

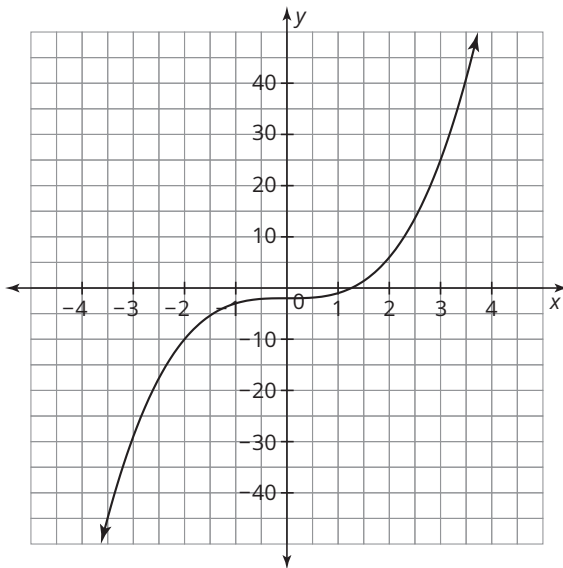
Remember

The inverse of a function is the set of all ordered pairs (y, x) , or $(f(x), x)$. If the inverse of a function is also a function, the function is said to be an invertible function, and its inverse is written as $f^{-1}(x)$. To apply the Horizontal Line Test, consider all the horizontal lines that could be drawn on the graph of the function. If any of the horizontal lines intersect the graph of the function at more than one point, then the inverse of the function is not a function.

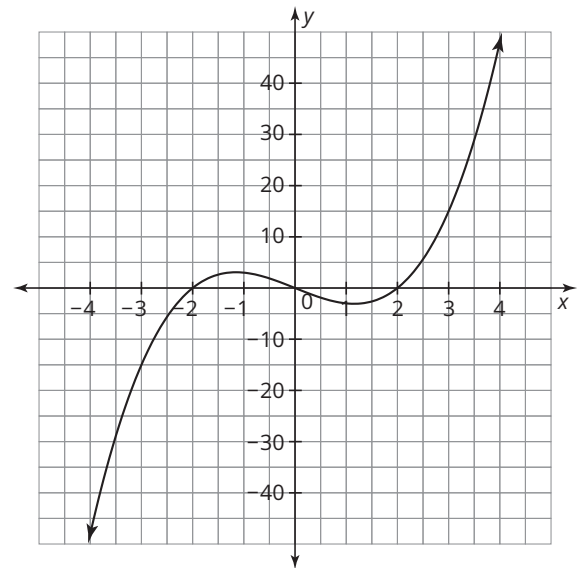
Practice

1. Consider the power function, $f(x) = x^7$.
 - a. Sketch the graph of $f(x)$.
 - b. Is $f(x)$ invertible? Explain your reasoning.
 - c. If $f(x)$ is invertible, sketch the graph of $f^{-1}(x)$.
2. Consider the power function, $g(x) = x^8$.
 - a. Sketch the graph of $g(x)$.
 - b. Is $g(x)$ invertible? Explain your reasoning.
 - c. If $g(x)$ is invertible, sketch the graph of $g^{-1}(x)$.
3. Determine whether the inverse of each graphed function is a function. Explain your reasoning.

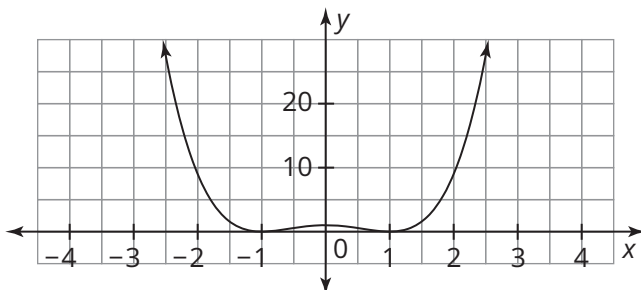
a.



b.



c.



Stretch

1. Consider the function $f(x) = (x - 1)^5 + 2$.
 - a. Sketch the graph of $f(x)$.
 - b. Is $f(x)$ invertible? Explain your reasoning.
 - c. If $f(x)$ is invertible, sketch the graph of $f^{-1}(x)$.

Review

1. Yolanda and Mahika are refinishing the hardwood floors in an old estate property. Mahika can refinish the floors in 100 hours by herself. Working together, it takes Yolanda and Mahika 60 hours to refinish all the floors. Write and solve an equation to determine how long it would take Yolanda to refinish the floors by herself. Show your work.
2. Eliza is catering a children's party. She made 130 ounces of an organic apple juice blend that is 70% juice. Her client tells her she wants the juice blend to be 80% juice. Write and solve an equation to determine how much juice Eliza must add to the blend she made to have the correct percent of juice for the client. Show your work.
3. Consider the function $f(x) = -\frac{3}{x}$.
 - a. Complete the table.
 - b. Use the table to graph the function.
 - c. Describe the domain, range, and end behavior of the function. Determine all of the asymptotes of the function. Explain your reasoning.
4. Use long division to determine the quotient of $(x^3 - 4x^2 + 2x + 5) \div (x - 2)$.

x	$f(x)$
-9	
-6	
-3	
-1	
$-\frac{1}{3}$	
0	
$\frac{1}{3}$	
1	
3	
6	
9	