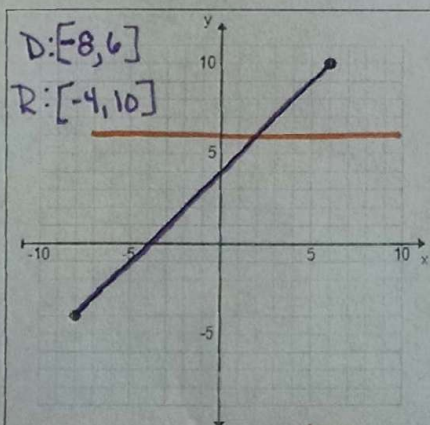


Remember INVERSE FUNCTIONS?

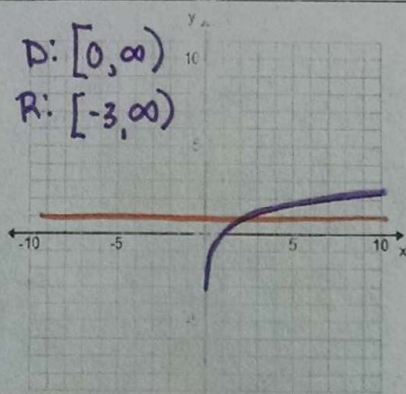
... FROM A TABLE OR SET OF ORDERED PAIRS	... FROM A GRAPH	... FROM AN EQUATION																				
<p>Switch every x and y value</p> <table border="1"> <tr><td>x</td><td>-3</td><td>5</td><td>9</td><td>12</td></tr> <tr><td>y</td><td>-2</td><td>5</td><td>10</td><td>17</td></tr> </table> <p>D: $\{-3, 5, 9, 12\}$ R: $\{-2, 5, 10, 17\}$</p> <p>Inverse Function</p> <table border="1"> <tr><td>x</td><td>-2</td><td>5</td><td>10</td><td>17</td></tr> <tr><td>y</td><td>-3</td><td>5</td><td>9</td><td>12</td></tr> </table> <p>D: $\{-2, 5, 10, 17\}$ R: $\{-3, 5, 9, 12\}$</p>	x	-3	5	9	12	y	-2	5	10	17	x	-2	5	10	17	y	-3	5	9	12	<p>Switch x and y values + graph new points</p> <p>- Reflection across line $y=x$</p> <p>D: \mathbb{R} R: $y \geq 0$</p> <p>D: $x \geq 0$ R: \mathbb{R}</p>	<p>Switch $x + y$ value then solve for y</p> $f(x) = \frac{4x-2}{3}$ $3 \cdot x = \frac{4y-2}{3} \cdot 3$ $3x = 4y - 2$ $\frac{3x+2}{4} = \frac{4y}{4} \rightarrow y = \frac{3x+2}{4}$ $g(x) = \sqrt{x-3} + 5$ $x = \sqrt{y-3} + 5$ $x-5 = \sqrt{y-3}$ $(x-5)^2 = (\sqrt{y-3})^2$ $(x-5)^2 = y-3$ $y = (x-5)^2 + 3$
x	-3	5	9	12																		
y	-2	5	10	17																		
x	-2	5	10	17																		
y	-3	5	9	12																		

Are the inverse of the graphs below functions? Find the domain and range of the inverse function.



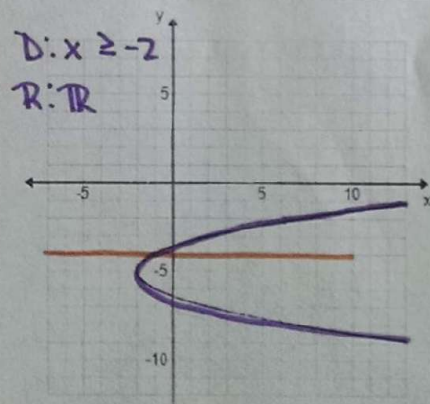
passes horizontal line test \therefore
Inverse is a function

D: $[-4, 10]$
R: $[8, 6]$



Passes HLT
 \rightarrow Inverse is a function

D: $[-3, \infty)$
R: $[0, \infty)$

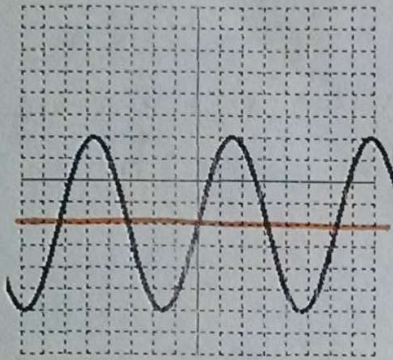


Passes HLT
 \rightarrow Inverse is a function

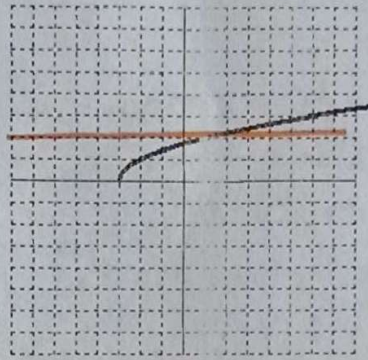
D: \mathbb{R}
R: $y \geq -2$

Use horizontal line test to determine if a graph's inverse is a function.

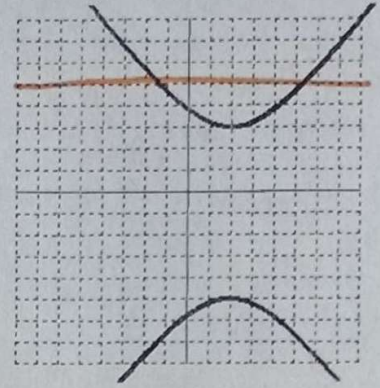
Are the following graphs inverses a function?



FAILS HLT
 → Inverse is not
 a function



PASSES HLT
 → Inverse is a
 function



FAILS HLT
 → Inverse is NOT
 a function.

Find the inverse of the following

$$f(x) = \frac{x+3}{2}$$

$$2 \cdot x = \frac{y+3}{2}$$

$$2x = y+3$$

$$g(x) = y = 2x - 3$$

$$f(x) = (x-4)^2$$

$$\sqrt{x} = \sqrt{(y-4)^2}$$

$$\sqrt{x} = y - 4$$

$$y = \sqrt{x} + 4$$

$$f(g(x))$$

$$\frac{(2x-3)+3}{2}$$

$$\frac{2x}{2}$$

$$x$$

$$g(f(x))$$

$$2 \left(\frac{x+3}{2} \right) - 3$$

$$x+3-3$$

$$x$$