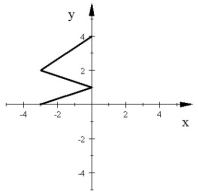
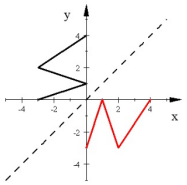
Will the inverse relation be a function?

A

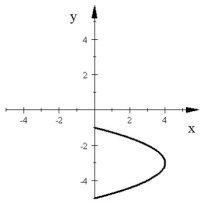


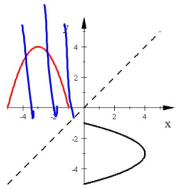


YES

Will the inverse relation be a function?

B

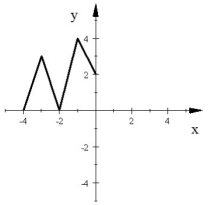


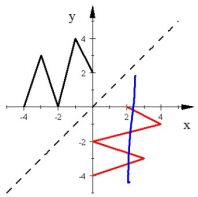


YES

Will the inverse relation be a function?

C

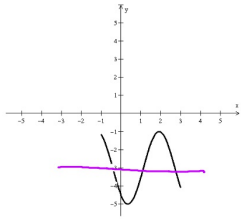


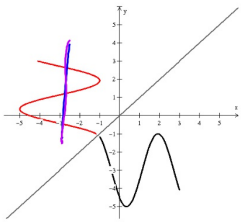


NO

Will the inverse relation be a function?

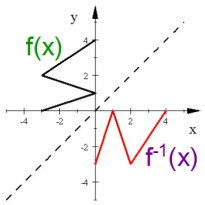
D





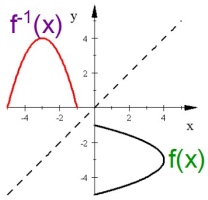
NO

A

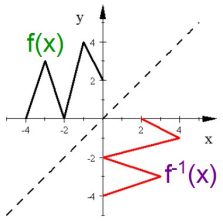


Given the graph of an orginal relation, how do you tell if the inverse relation is a function?

B

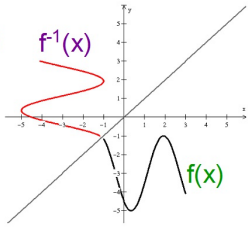


C



If a horizontal line intersects the orginal graph more than once then a vertical line will intersect the inverse more than once.

D



Horizontal Line Test: a visual test to determine if the inverse relation will be a function.

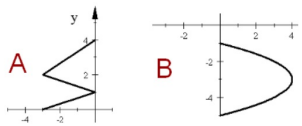
If any horizontal line can intersect a graph more than once then the graph of the inverse is NOT a function

One-to-One Functions:

Each y value is produced from exactly one x value.

If horizontal lines can touch a graph at most one time.

Inverses ARE functions

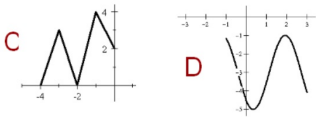


Many-to-One Functions:

Each y value may be produced from more than one x value.

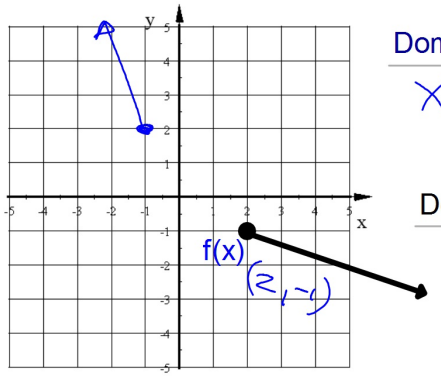
If a horizontal line can touch a graph "many" times (more than once)

Inverses are NOT functions



Original Relation		Inverse Relation
$f(x)$	Becomes	$f^{-1}(x)$
The point (a,b)	Becomes	The point (b,a)
Domain of $f(x)$	Becomes	Range of $f^{-1}(x)$
Range of $f(x)$	Becomes	Domain of $f^{-1}(x)$
Graph of $f(x)$	Reflect over $y=x$ / Becomes	Graph of $f^{-1}(x)$

Given the graph of $f(x)$, find the domain and range of $f^{-1}(x)$



Domain of $f^{-1}(x)$: $x \leq -1$

Range of $f^{-1}(x)$: $y \geq 2$

Domain of $f(x)$: $x \geq 2$

Range of $f(x)$: $y \leq -1$