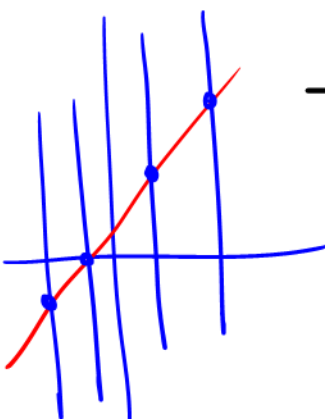
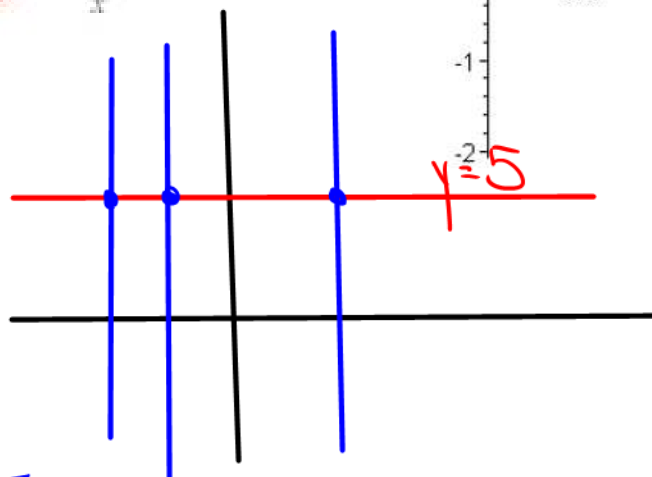
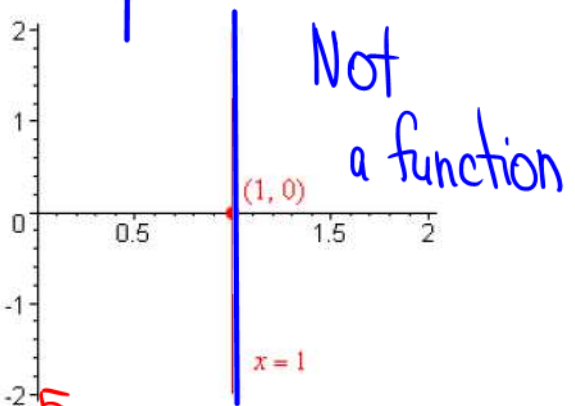
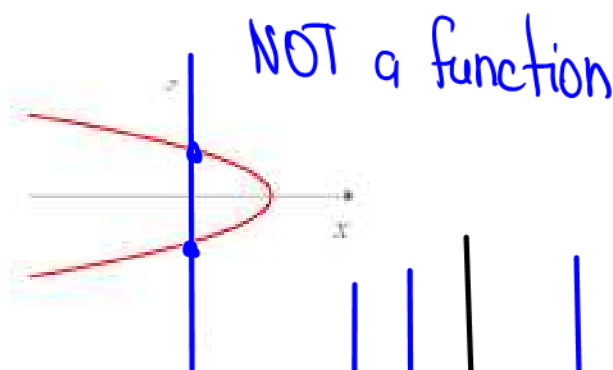
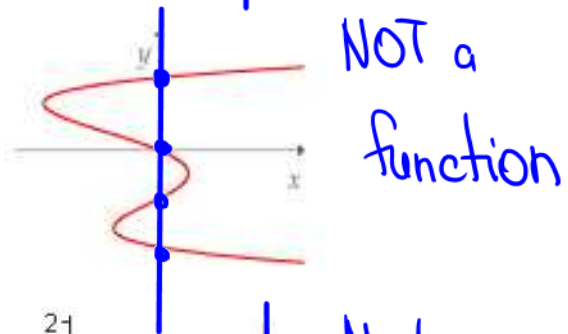
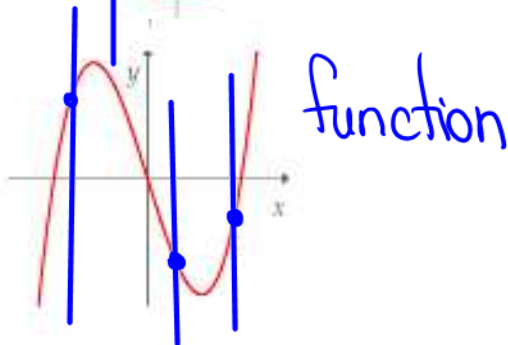
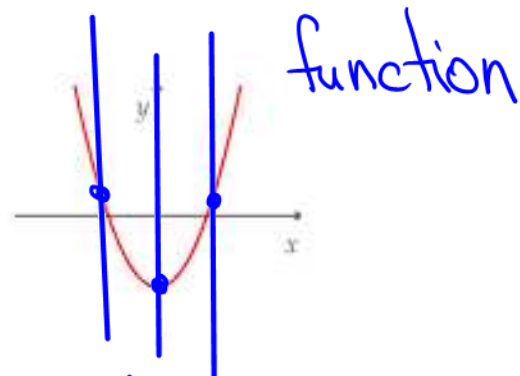
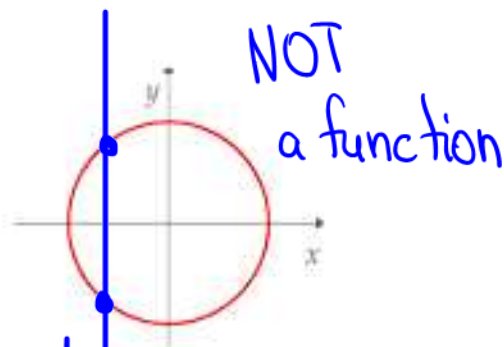


Functions and Graphs:

Definition: The graph of a function f is the set of all points (x, y) in the coordinate plane where the x -coordinates are the elements of the domain of f and where the y -coordinates are given by $y = f(x)$.

A function can have exactly (only) one y -value, called $f(x)$, per x -value. One way to test a relation to see if it is a function is by using the vertical line test. That is, a vertical line can intersect a graph of a function at most once.

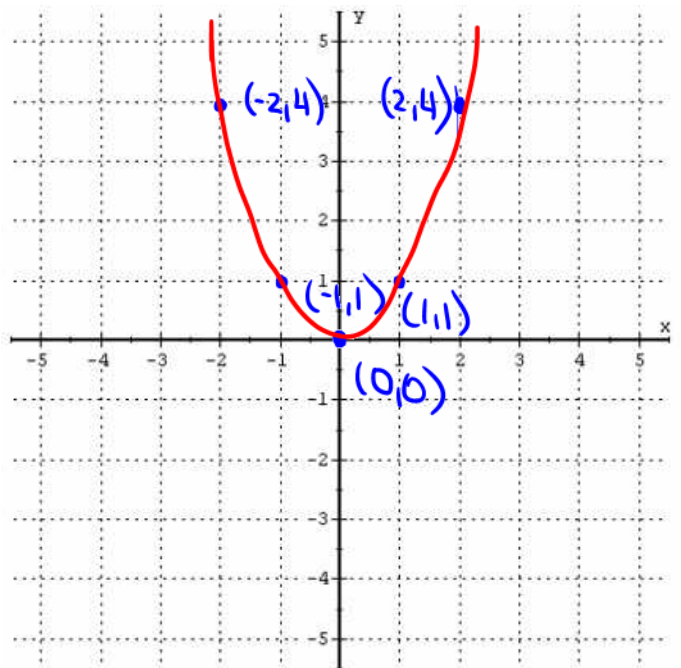
1. State whether the given graph is a function.



2. Sketch the graph of $y = x^2$. What is the domain?

x	y
-2	$(-2)^2 = 4$
-1	$(-1)^2 = 1$
0	$(0)^2 = 0$
1	$(1)^2 = 1$
2	$(2)^2 = 4$

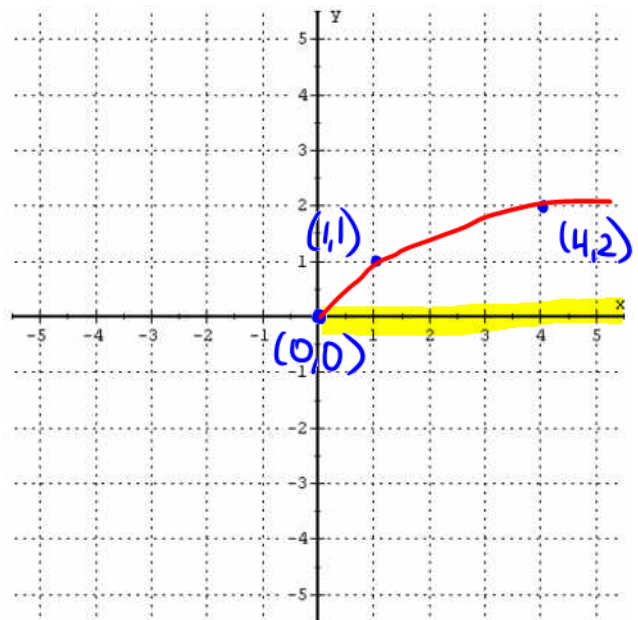
Domain:
 $(-\infty, \infty)$
 or
 \mathbb{R}



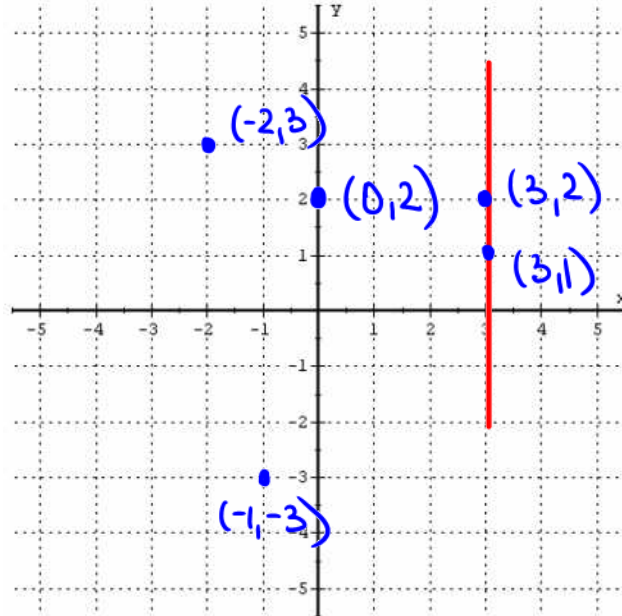
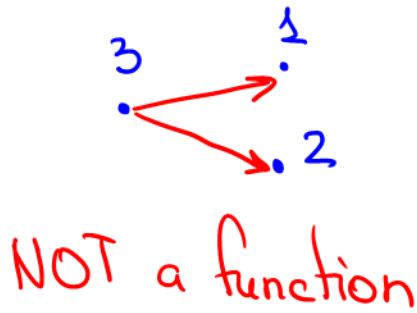
3. Sketch the graph of $y = \sqrt{x}$. What is the domain?

x	y
0	$\sqrt{0} = 0$
1	$\sqrt{1} = 1$
4	$\sqrt{4} = 2$

Domain: $x \geq 0$
 $[0, \infty)$



4. Graph the set of points $\{(-1, -3), (-2, 3), (3, 1), (3, 2), (0, 2)\}$. Determine whether the set of points represents a function.



5. Given the following graph, find:

Domain: $[-3, 4]$

Range: $[-2, 2)$

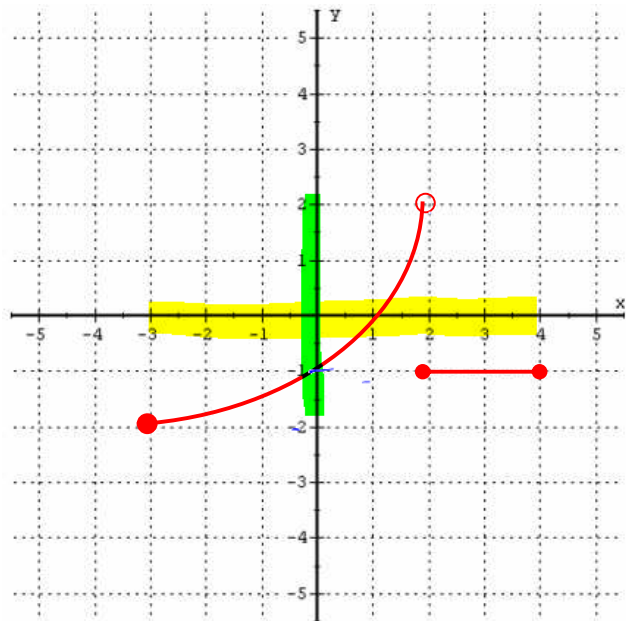
$f(-3) = -2$

$f(0) = -1$

$f(1) = 0$

$f(2) = -1$

$f(3) = -1$



6. Given the following graph, find:

Domain: $[-4, 4]$

Range: $[-2, 3]$

$f(-4) = -2$

$f(-3) = 3$

$f(-1) = 1$

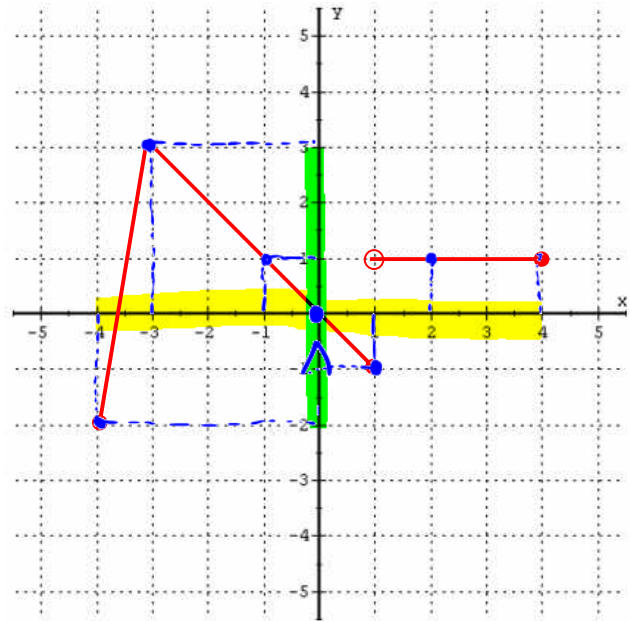
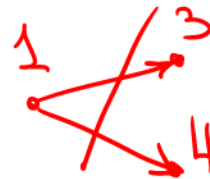
$f(0) = 0$

$f(1) = -1$

$f(2) = 1$

$f(4) = 1$

~~$f(1) = 3$~~
 ~~$f(1) = 4$~~



7. Solve for y and determine if the given equation defines y as a function of x .

$2y + 4x = 6$

$-4x -4x$

$\frac{2y}{2} = \frac{-4x+6}{2}$

~~$y = \frac{-4x+6}{2}$~~

$y = -2x + 3$

$y = mx + b$

Yes, function

8. Solve for y and determine if the given equation defines y as a function of x .

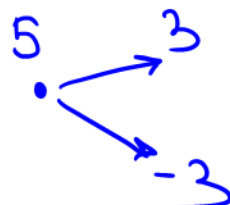
$\sqrt{y^2} = \sqrt{x+4}$

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

$x = 5 \quad y = \pm \sqrt{5+4}$

$= \pm \sqrt{9}$

$= \pm 3$



Not a function