5.1 Relation

A pairing of 2 sets of numbers

Any set of ordered pairs.

$\{(1,5)(2,6)(3,9)(1,8)\}$

(x,y)

Domain x

Range y

Function: pairing of 2 sets numbers in which each element of the first set is paired with exactly one element of the second set.

$\{(1,5)(2,6)(3,6)(4,6)\}$

Function

Domain $1 \to 5$, $2 \to 6$, $3 \to 6$, $4 \to 6$ Range

$\{(3,8)(4,-1)(6,-2)\}$

Function

$3 \to 8$

$4 \to -1$

$6 \to -2$

$\{(-6,4)(8,5)(-2,4)(9,5)\}$

$-6 \to 4$

$8 \to 5$

$-2 \to 4$

$9 \to 5$

$\{(8,2)(7,5)(8,10)(6,3)\}$

$8 \to 2, 10$ Not a function

$7 \to 5$

$6 \to 3$

Domain $\{8,7,6\}$

$\{6,7,8\}$

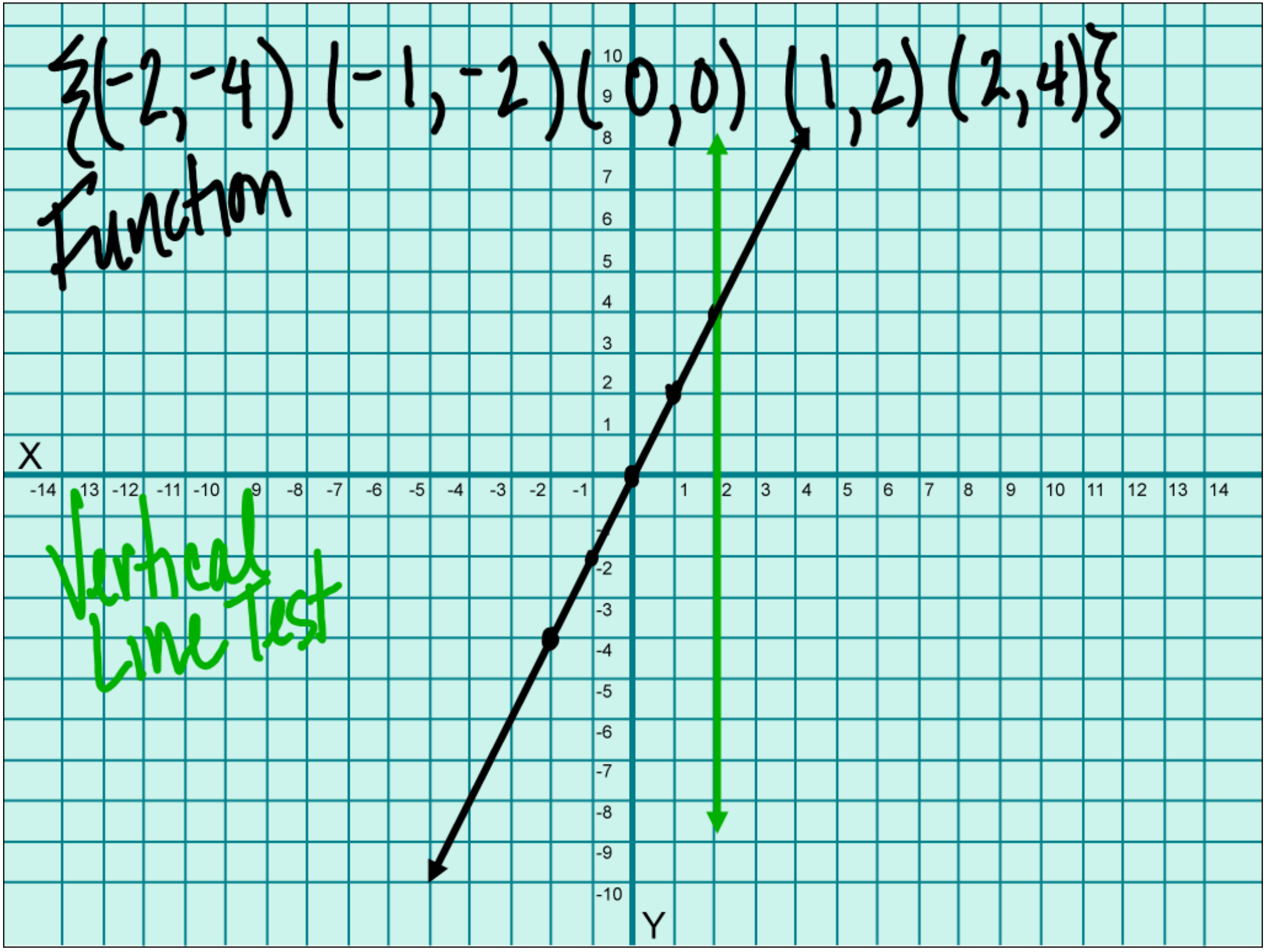
Range $\{2,3,5,10\}$

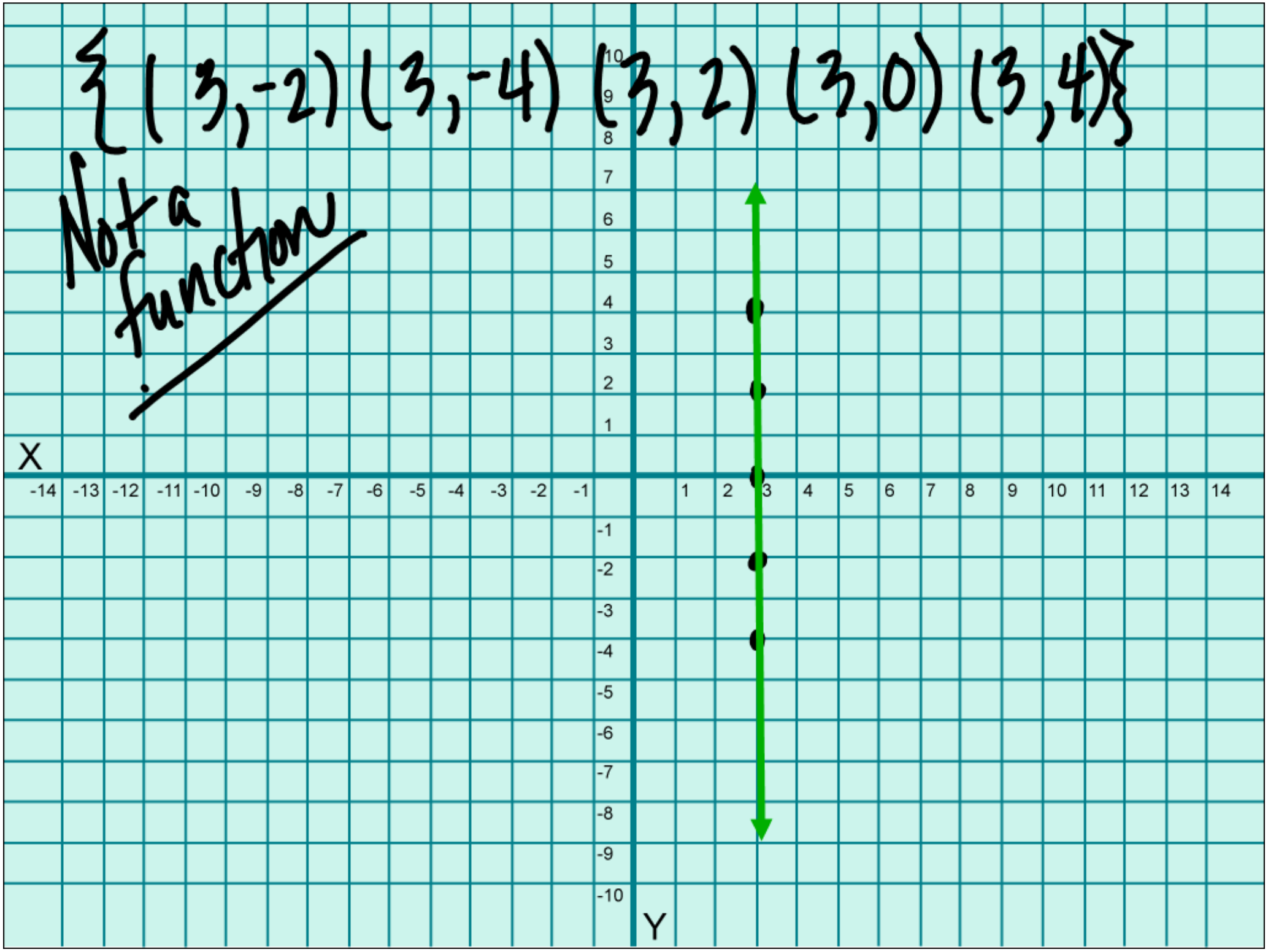
$\{(2,1)(3,1)(4,1)(5,1)\}$

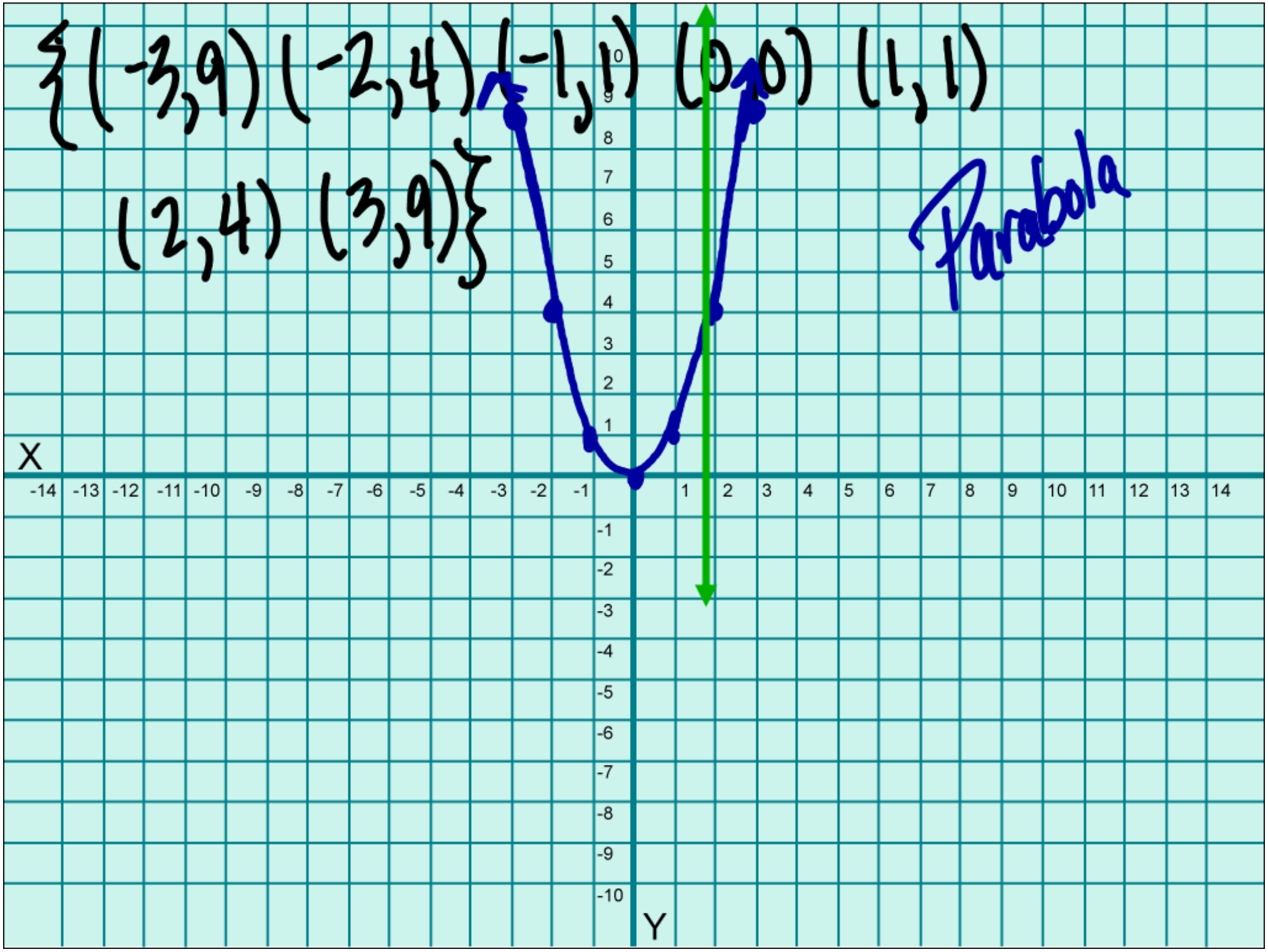
Function

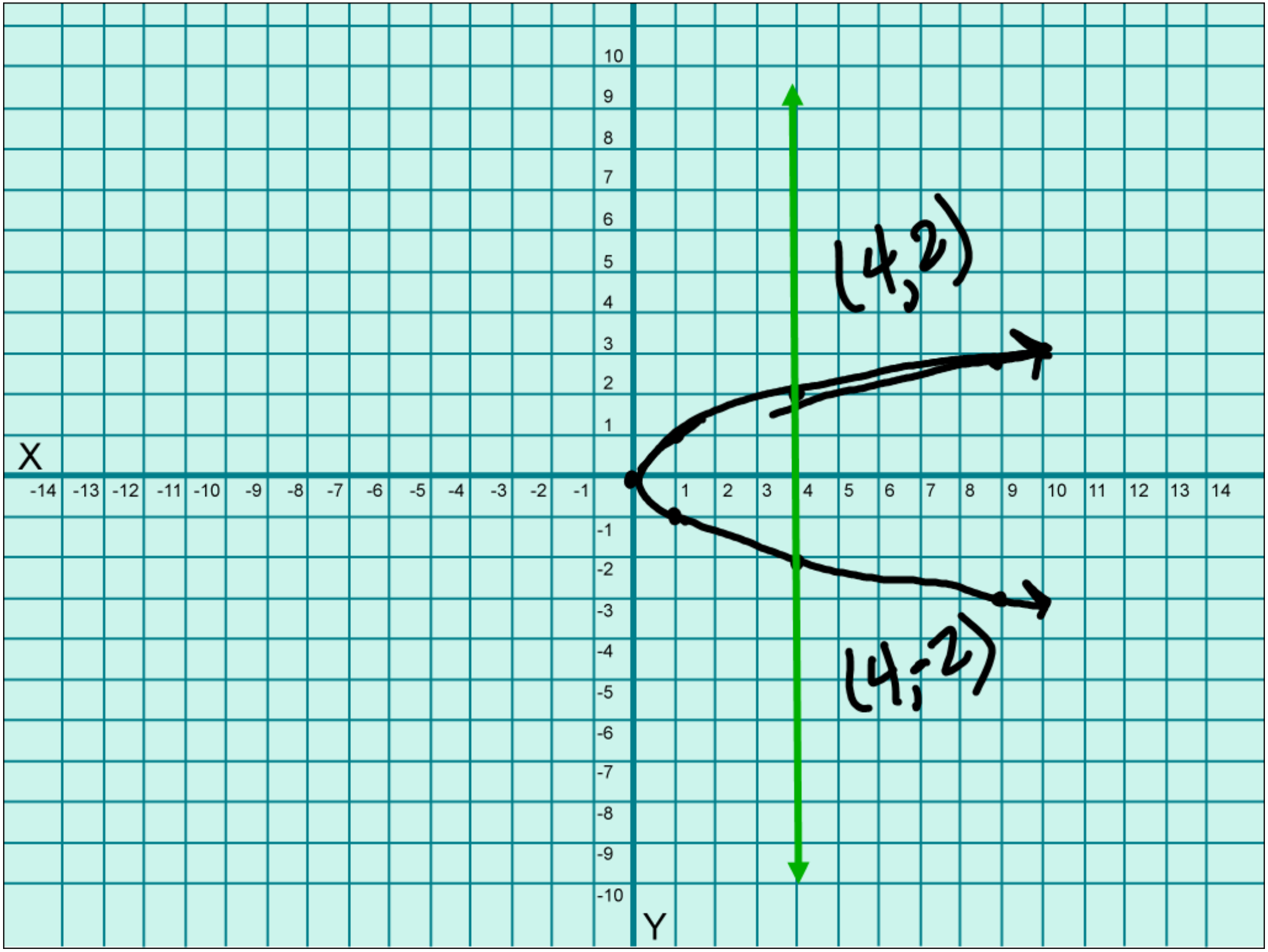
Domain $\{2,3,4,5\}$

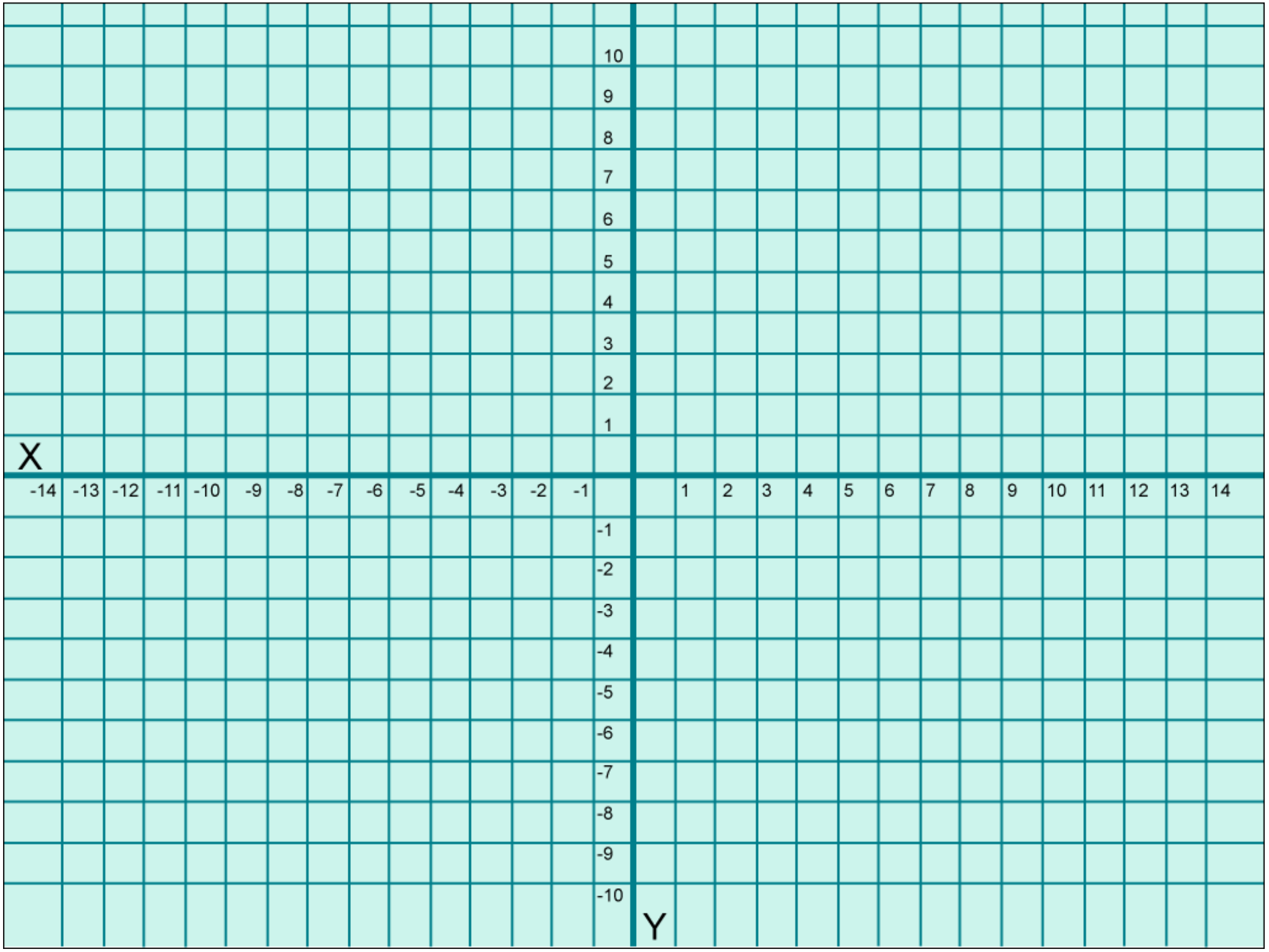
Range $\{1\}$


{(-2,-4) (-1,-2) (0,0) (1,2) (2,4)}
Function
Vertical Line Test
X
Y


{(3,-2)(3,-4)(3,2)(3,0)(3,4)}
Not a function
X
Y


{(-3,9) (-2,4) (-1,1) (0,0) (1,1)
(2,4) (3,9)}
Parabola
X
Y


(4,2)
(4,-2)
X
Y


10
9
8
7
6
5
4
3
2
1
X
-14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1
1 2 3 4 5 6 7 8 9 10 11 12 13 14
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
Y

Independent Variable
x

Dependent Variable
y

$y = 3x$

x	y
-1	-3
0	0
1	3

Function Notation

$f(x) = 3x$

$f(-1) = 3(-1)$

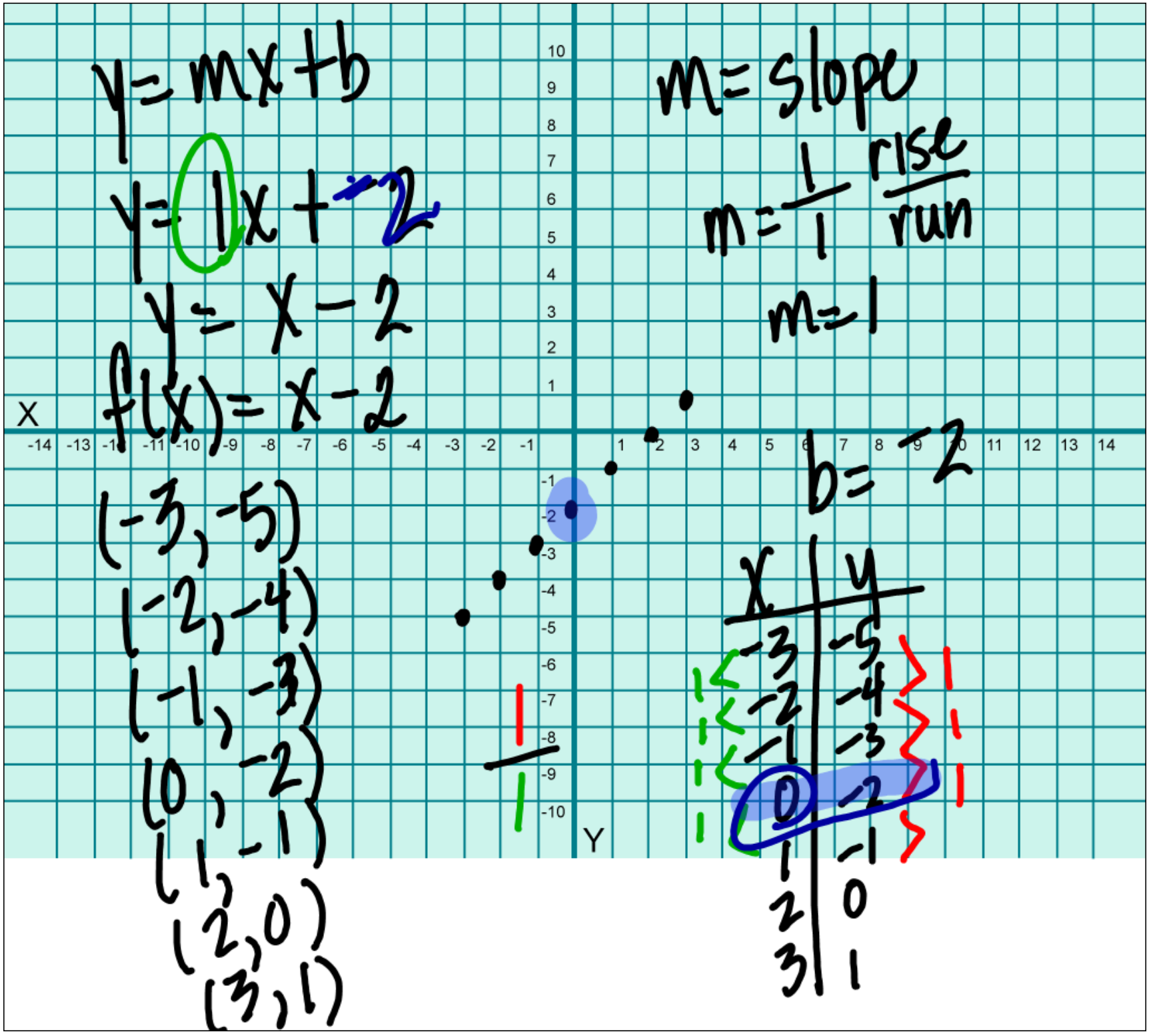
$f(-1) = -3$ $\quad (-1, -3)$

$f(0) = 0$ $\quad (0, 0)$

x	y
-3	-5
-2	-4
-1	-3
0	-2
1	-1
2	0
3	1

$y = mx + b$

$f(x) = mx + b$


y = mx + b
y = 1x + -2
y = x - 2
f(x) = x - 2
m = slope
m = 1/1 rise/run
m = 1
b = -2
X
Y
(-3, -5)
(-2, -4)
(-1, -3)
(0, -2)
(1, -1)
(2, 0)
(3, 1)
x | y
-3 | -5
-2 | -4
-1 | -3
0 | -2
1 | -1
2 | 0
3 | 1

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