

## - Functions and Graphs

Relation | a set of ordered pairs,  $(x, y)$

$$\left( \underset{x}{2}, \underset{y}{4} \right) \quad \left( \underset{x}{-3}, \underset{y}{5} \right)$$

Domain = your  $x$  values

Range = are  $y$  values  
 $\{4, 5\}$

Function ④ An "x" can only have one "y" value OR the same "x" cannot have more than one "y" value.

\* Different "x"s can have the same "y" value.

⑤ A member of the domain only one member of the range.

①  $(4, -3) (6, 2) (7, -1) (5, 2)$

function

②  $(12, 1) (-2, 7) (4, 3) (2, 7)$

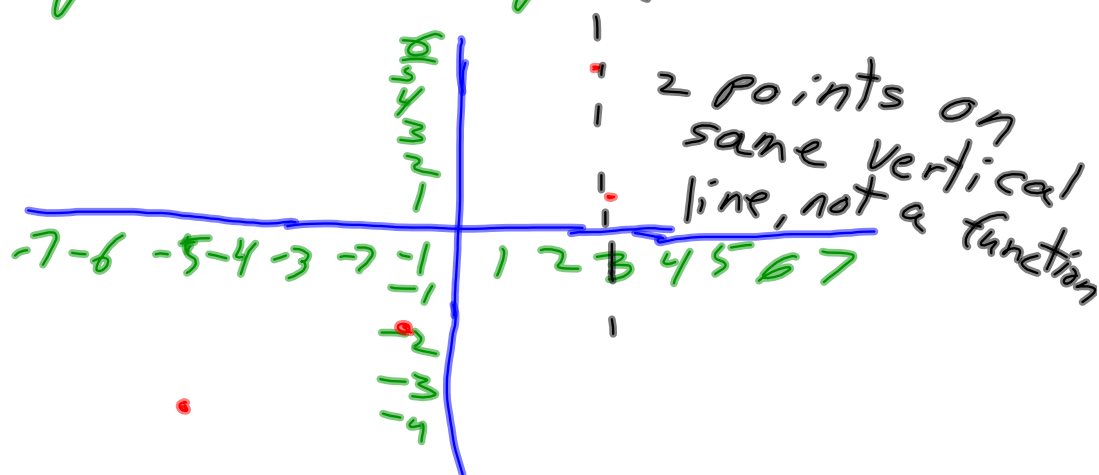
function

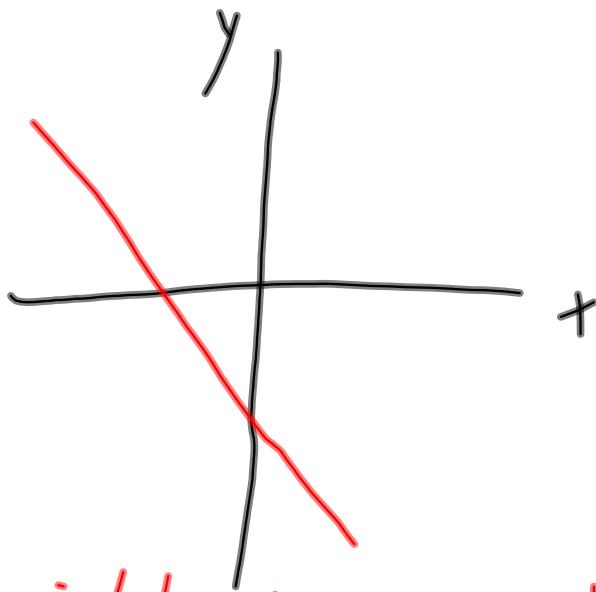
③  $(-5, 3) (6, 2) (-8, -1) (6, 4)$

not a function

$(-1, -2)$   $(3, 6)$   $(-5, -4)$   $(3, 2)$   
Is it a function?

ⓐ Vertical line test  
graph the pairs

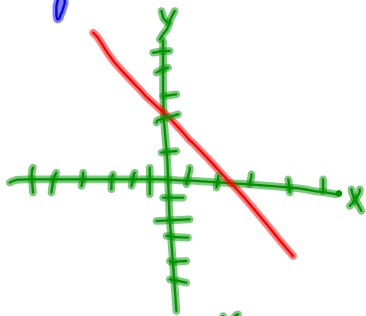




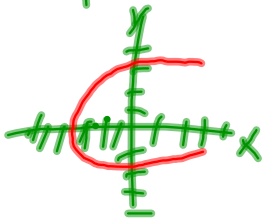
straight line - always a function  
unless vertical

## Vertical Line Test

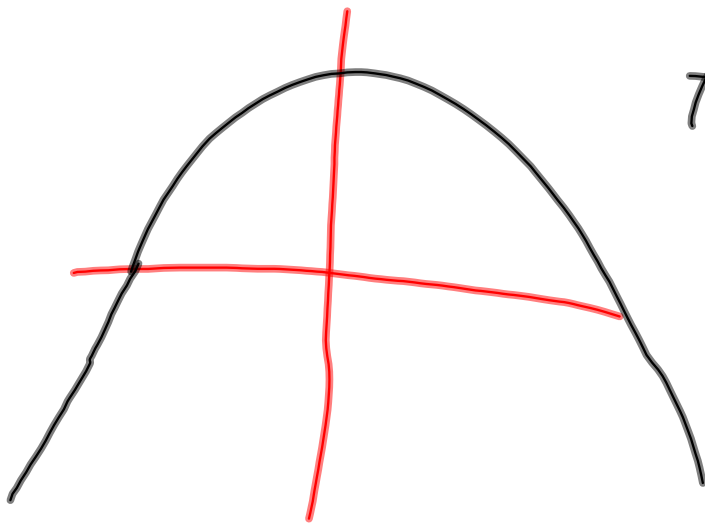
\* Draw a vertical line. If it crosses only 1 point on the graph then it is a function.



vertical lines only pass through 1 point. This is a function.



Not a function.

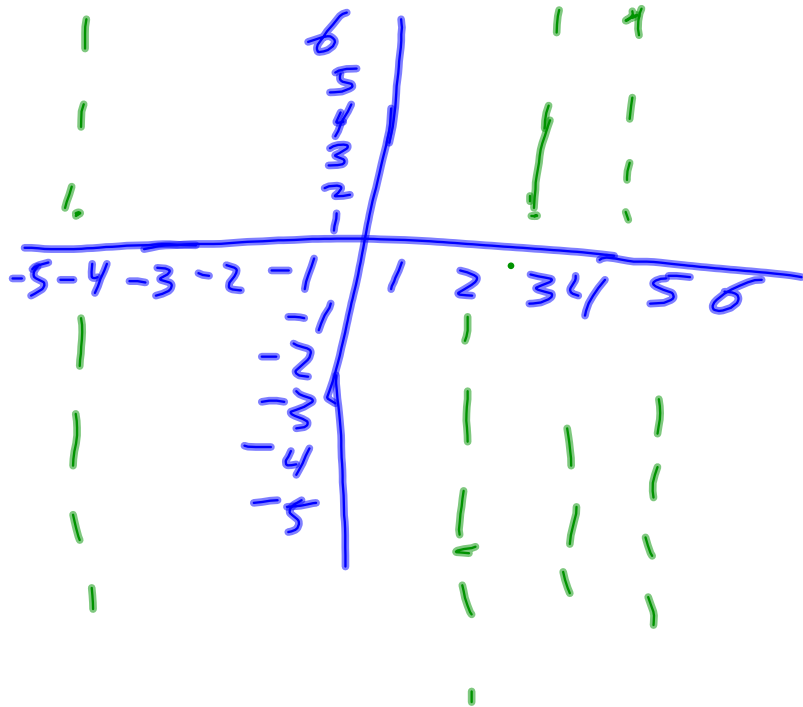


function



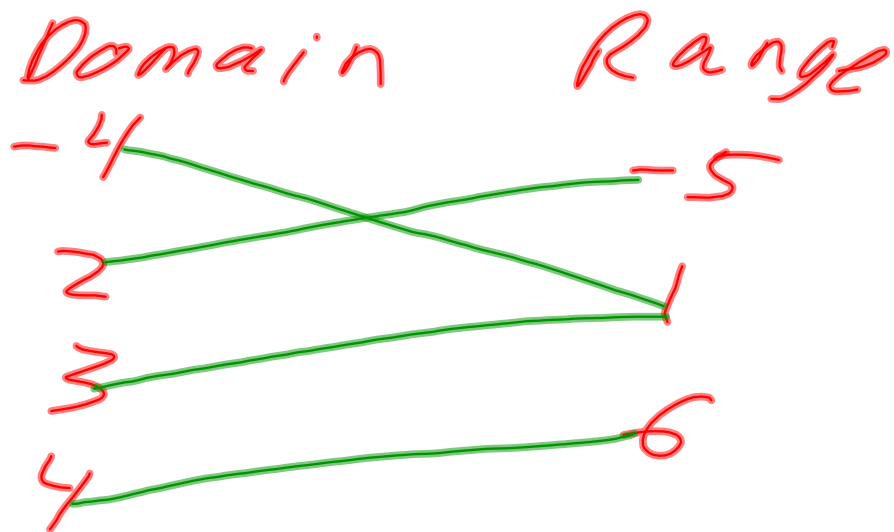


$(4, 6)$   $(2, -5)$   $(3, 1)$   $(-4, 1)$



Mapping Diagram

$(4, 6)$   $(2, -5)$   $(3, 1)$   $(-4, 1)$



Are both of these functions:

$$x^2 = y$$

$$x = y^2$$

Lets do Ex 5 and 6  
on p. 132-135

$$y = 3x + 2$$

$$f(x) = 3x + 2$$

or  
function  
notation

$$y = 3x + 2$$

evaluate  $x = -3$

$$f(-3) = 3x + 2$$

$$f(-3) = 3(-3) + 2$$

$$y = 3x - 2 \text{ same as } f(x) = 3x - 2$$

$$f(5) = 3x - 2$$

↑  
plug in the value of  $x$  into the equation

$$f(5) = 3(5) - 2$$

$$= 15 - 2$$

$$f(5) = 13$$

Lets do Ex 7 on p. 135

Lets do Ex 9 on  
p. 136-137



