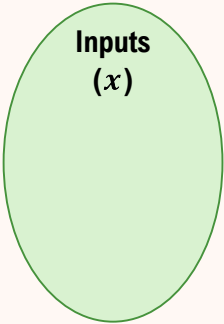
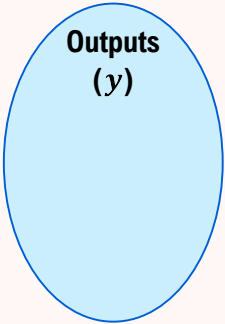
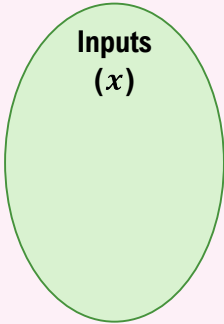
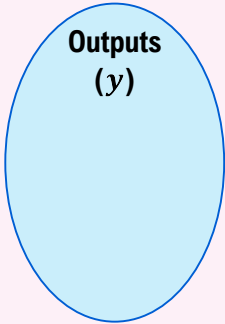


TOPIC: INTRO TO RELATIONS AND FUNCTIONS

Intro to Relations and Functions

- ◆ A **relation** is a connection between **inputs** (x) & **outputs** (y) often represented as a set of ordered pairs (x,y).
- ▶ A **function** is a relation where each input (x) is paired with at most ____ output (y).

EXAMPLE For each relation, list the inputs & outputs and draw arrows showing how the values correspond.

Relations		Functions	
$\{(-2,2), (1,1), (3,-2), (1,4)\}$		$\{(-4,2), (-2,-1), (1,2), (3,4)\}$	
			

- ◆ Relations can be represented as a set of ordered pairs, a correspondence, table, graph, or equation.

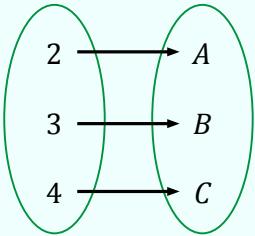
EXAMPLE Determine if each relation is a function.

(A)

x	y
$\frac{1}{2}$	4
1	$\frac{3}{2}$
2	$\frac{3}{2}$
$\frac{1}{2}$	5

[FUNCTION | NOT A FUNCTION]

(B)



[FUNCTION | NOT A FUNCTION]

TOPIC: INTRO TO RELATIONS AND FUNCTIONS

Vertical Line Test

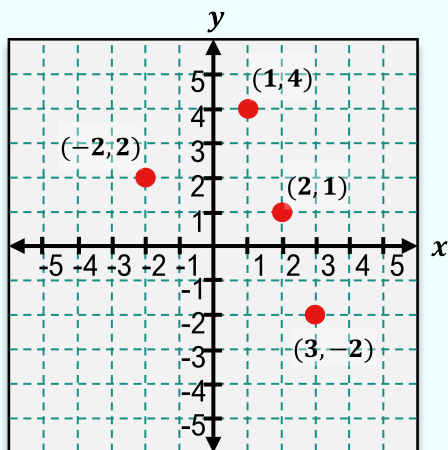
◆ When a relation is represented on a graph, you can determine if it is a function using the **vertical line test**.

► If you can draw **any** vertical line that passes through more than 1 point, the graph _____ a function.

EXAMPLE

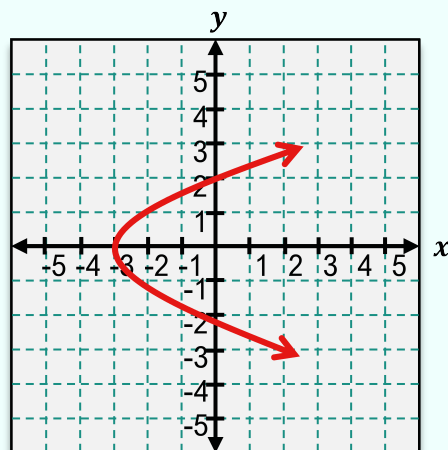
Use the vertical line test to determine if each graph is a function.

(A)



[FUNCTION | NOT A FUNCTION]

(B)

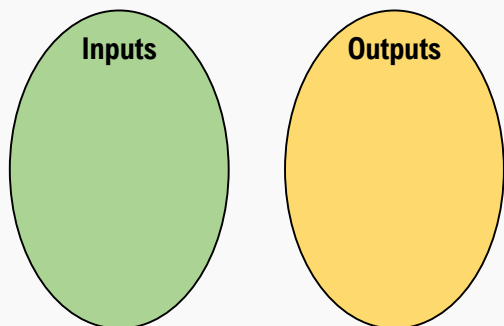


[FUNCTION | NOT A FUNCTION]

TOPIC: INTRO TO RELATIONS AND FUNCTIONS

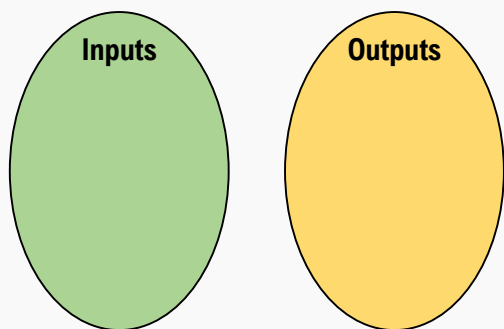
PRACTICE

State the inputs and outputs of the following relation. Is it a function? $\{(-3, 5), (0, 2), (3, 5)\}$



PRACTICE

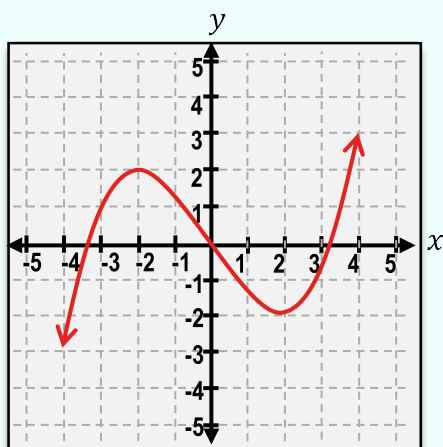
State the inputs and outputs of the following relation. Is it a function? $\{(2, 5), (0, 2), (2, 9)\}$



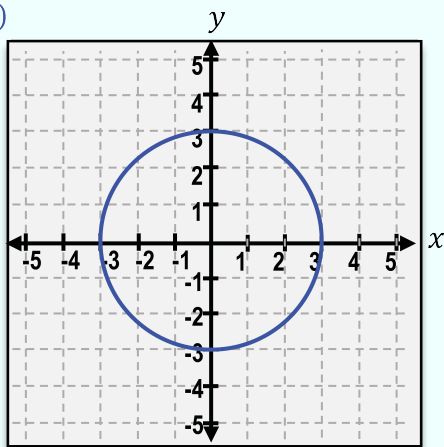
EXAMPLE

Determine below which of the graphs are functions (select all that apply).

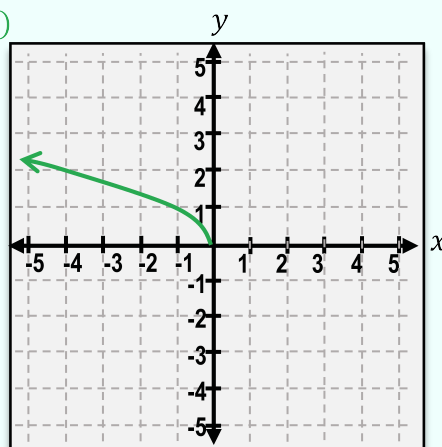
(A)



(B)



(C)



TOPIC: INTRO TO RELATIONS AND FUNCTIONS

Domain and Range

◆ For a relation or function, the **domain** is the set of inputs (x -values) and the **range** is the set of outputs (y -values).

EXAMPLE

Write a list of ordered pairs for the relation, then find the domain and range.

New

Domain and Range

x	y
-2	2
1	1
3	-2
4	4

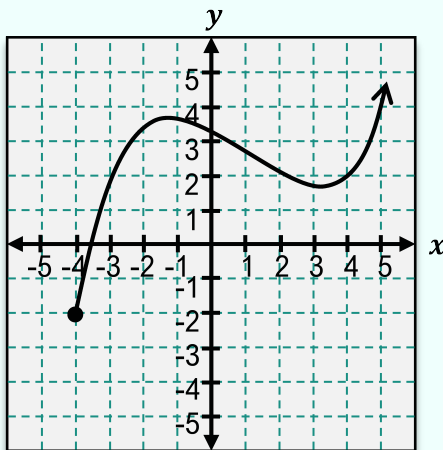
Domain:

Range:

◆ **Domain** of a _____ graph is the *interval* of all x -values, **range** is the *interval* of all y -values.

EXAMPLE

Find the domain and range of the function. Write using interval notation.



Domain:

Range:

Recall

- → Include with []
- → Exclude with ()

(Interval Notation)

TOPIC: INTRO TO RELATIONS AND FUNCTIONS

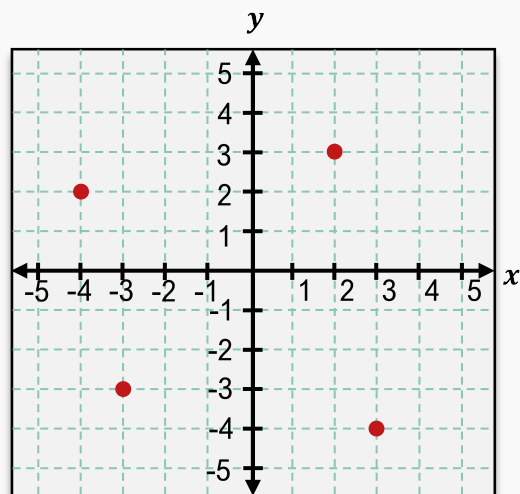
PRACTICE

Find the domain and range for each relation.

(A)

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

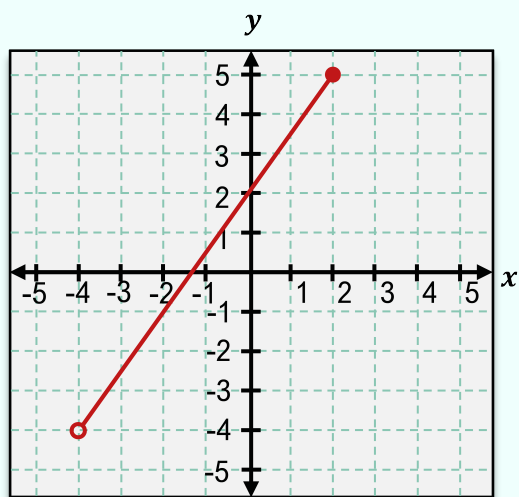
(B)



EXAMPLE

Find the domain and range of the following function given its graph. Write in interval notation.

(A)



(B)

