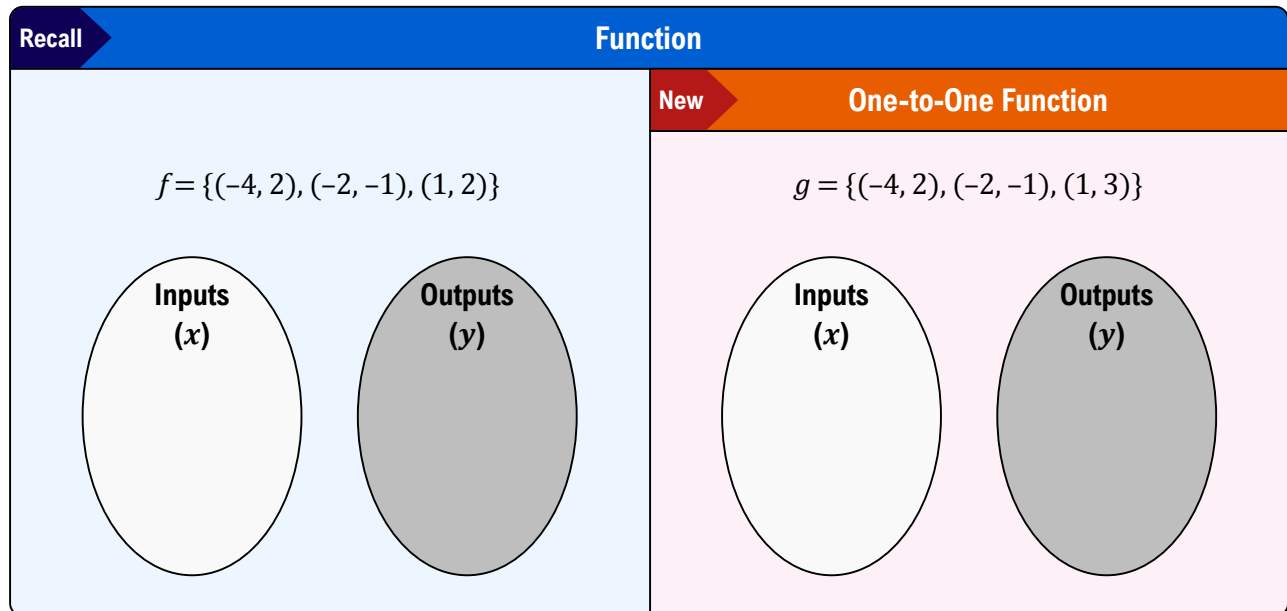


TOPIC: INTRODUCTION TO INVERSE FUNCTIONS

One-to-One Functions

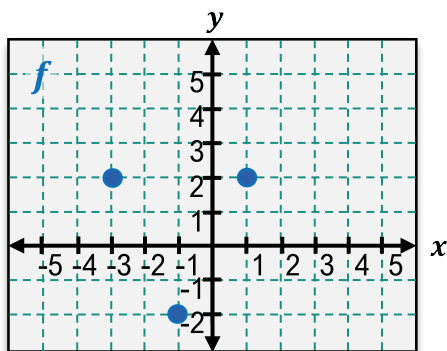
◆ Recall: A **function** is a relation where each input (x) is paired with at most 1 output (y).

► For a **one-to-one function**, each _____ (y) is paired with at most 1 _____ (x).



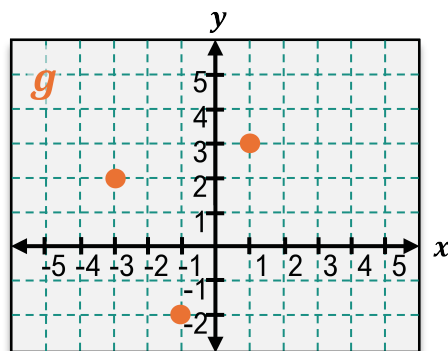
◆ Use the Horizontal Line Test (HLT) to determine if a function is **one-to-one**.

► If you can draw **any** horizontal line that passes through more than 1 point, the function _____ one-to-one.



Function (VLT)? ☐

One-to-one (HLT)? ☐



Function (VLT)? ☐

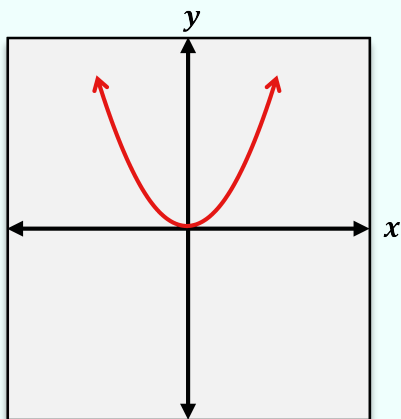
One-to-one (HLT)? ☐

TOPIC: INTRODUCTION TO INVERSE FUNCTIONS

EXAMPLE

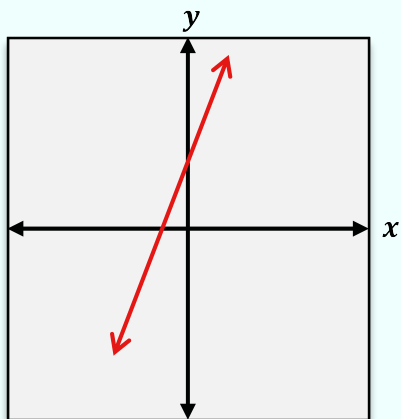
Determine if each of the following graphs is a one-to-one function.

(A)



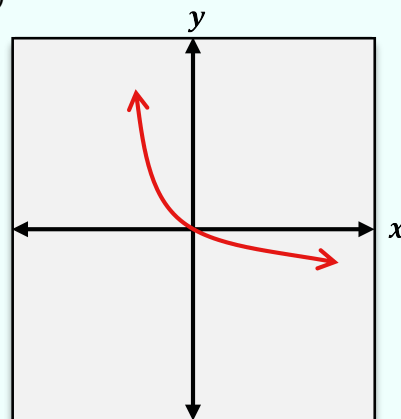
Function (VLT)? ☐
One-to-one (HLT)? ☐

(B)



Function (VLT)? ☐
One-to-one (HLT)? ☐

(C)

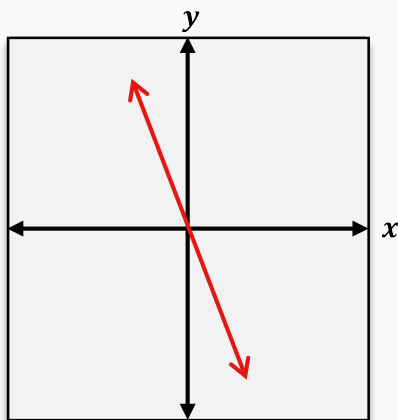


Function (VLT)? ☐
One-to-one (HLT)? ☐

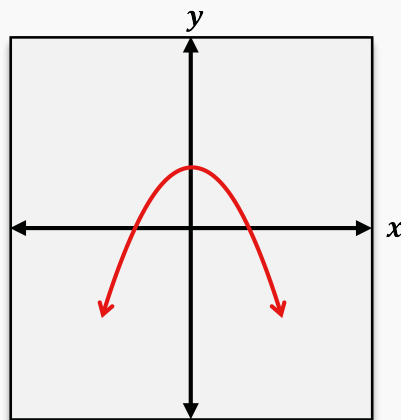
PRACTICE

Which of the following is the graph of a one-to-one function?

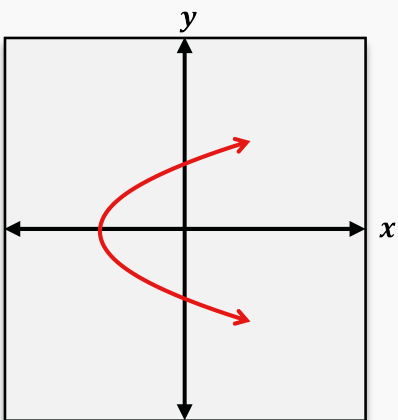
(A)



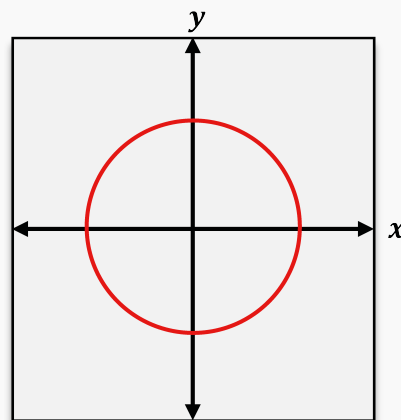
(B)



(C)



(D)

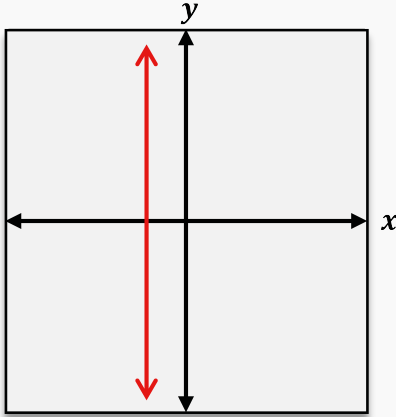


TOPIC: INTRODUCTION TO INVERSE FUNCTIONS

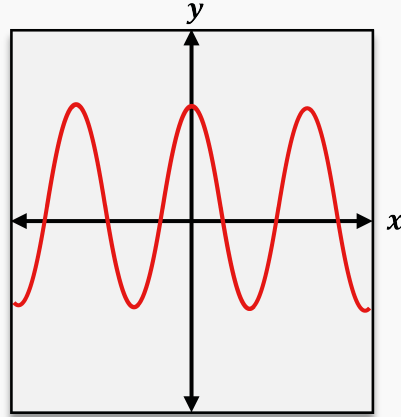
PRACTICE

Which of the following is the graph of a one-to-one function?

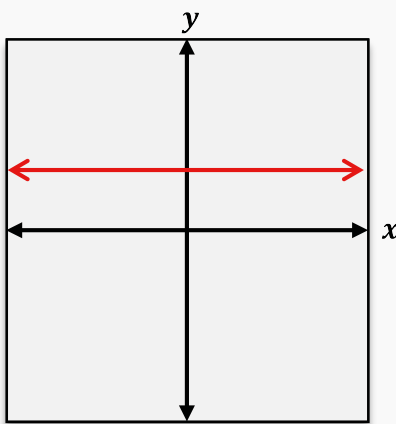
(A)



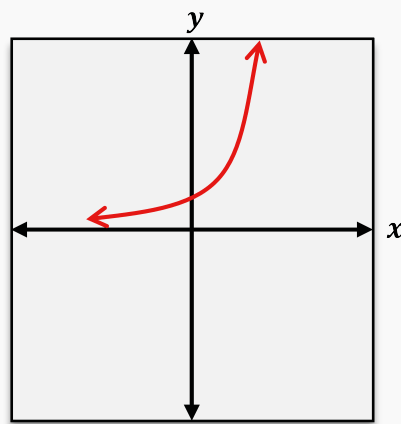
(B)



(C)



(D)



PRACTICE

Consider the following relations. Which is a one-to-one function?

(A) $\{(1, 4), (2, 5), (3, 6), (4, 7)\}$

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

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

(D) $\{(1, 1), (2, 2), (3, 1), (9, 9)\}$

TOPIC: INTRODUCTION TO INVERSE FUNCTIONS

Intro to Inverse Functions

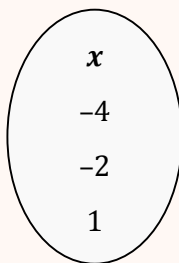
◆ If a **function** f is one-to-one with ordered pairs (x, y) , it has an **inverse function** _____ with ordered pairs $(_, _)$.

► Note: The -1 in f^{-1} is _____ an exponent. f^{-1} $\frac{1}{f}$.

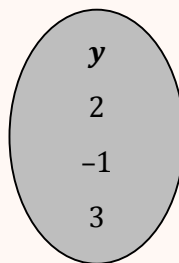
New

Inverse Function

[DOMAIN | RANGE] of f



[DOMAIN | RANGE] of f



$$f = \{(-4, 2), (-2, -1), (1, 3)\}$$

$$f^{-1} = \underline{\hspace{2cm}}$$

[DOMAIN | RANGE] of f^{-1}

[DOMAIN | RANGE] of f^{-1}

TOPIC: INTRODUCTION TO INVERSE FUNCTIONS

EXAMPLE

Consider the table of values. Answer the questions that follow.

(A)

x	$f(x)$
1	4
2	7
3	9
4	12

(A) Is it a function?

(B) Is it one-to-one?

(C) Find its inverse.

(B)

x	$g(x)$
1	8
2	10
3	10
4	15

(A) Is it a function?

(B) Is it one-to-one?

(C) Find its inverse.

PRACTICE

Consider the set of ordered pairs. Verify if it is one-to-one. If so, find its inverse.

(A)

$$f = \{(2, 9), (4, 11), (6, 15), (8, 20)\}$$

(B)

$$g = \left\{ \left(1, \frac{3}{2} \right), \left(4, \frac{5}{3} \right), \left(7, \frac{9}{4} \right), \left(10, \frac{11}{6} \right) \right\}$$