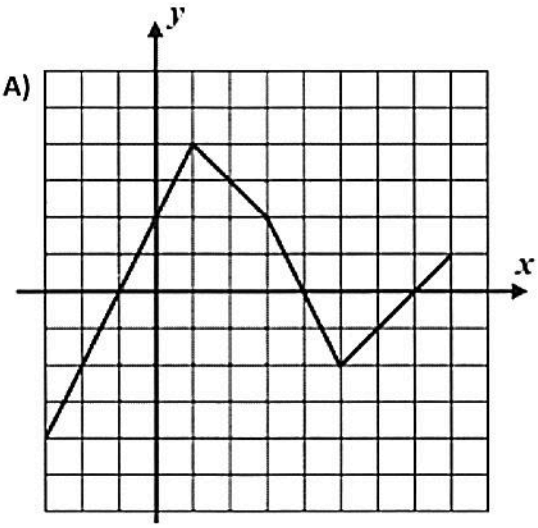
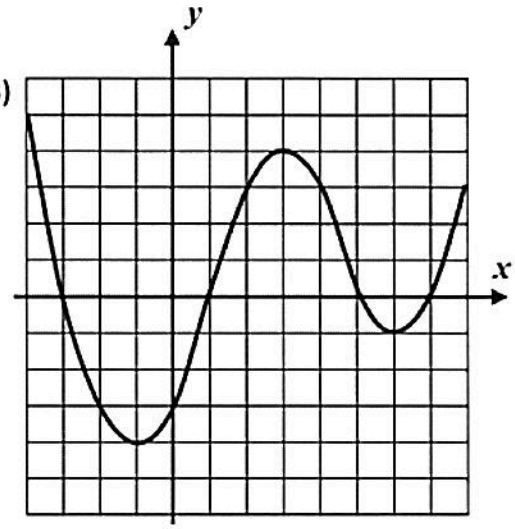
Essential Question: How do we evaluate functions using a graph?

Do Now: Determine if each graph below is a function. Be ready to justify your response.

A)



B)

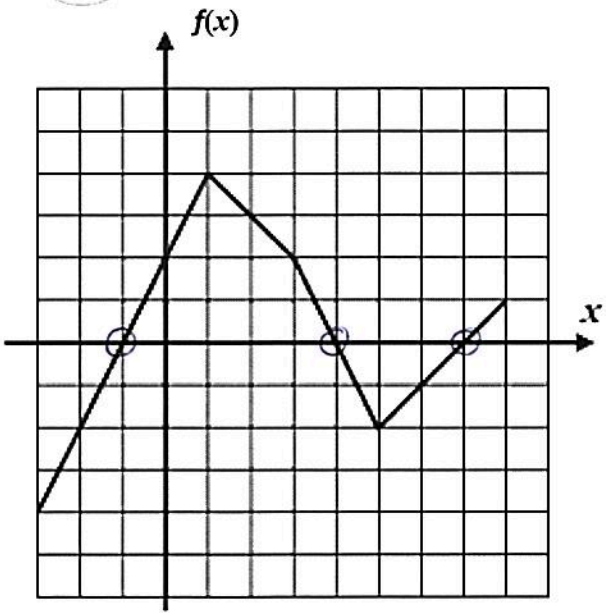


A function because it passes the vertical line test (any vertical line drawn will only touch the graph in one place)

This is a function. It passes the vertical line test.

Analyzing Graphs of Functions using Function Notation

Let's take a closer look at the graphs from the Do Now and complete a – e below.



The function **y = *f*(x)** is defined by the accompanying graph.

a) Find $f(5)$ = -2 ← x = 5

b) Find $f(-3)$ = -4 ← x = -3

c) Find the value of x when $f(x) = 4$ ← y = 4

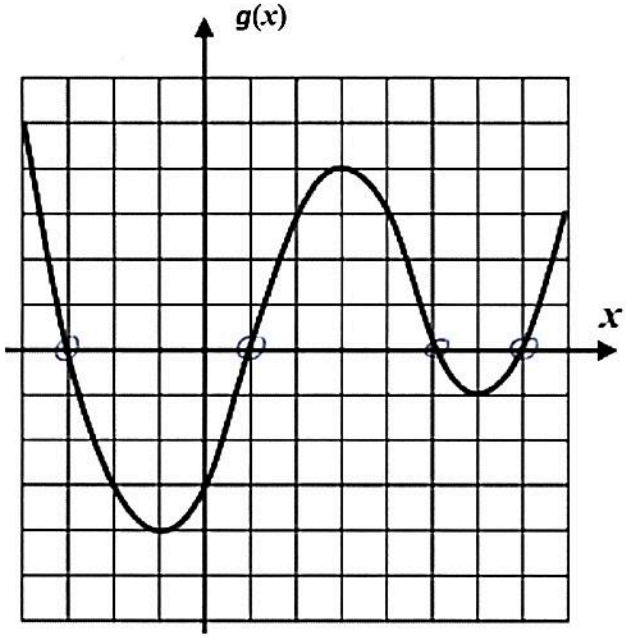
x = 1

d) Find the values of x when $f(x) = 2$ ← y = 2

{0, 3}

e) Find the values of x when $f(x) = 0$ ← y = 0

{-1, 4, 7}



The function **y = *g*(x)** is defined by the accompanying graph.

a) Find $g(2)$ $x=2$

3

b) Find $g(6)$ $= -1$

$x=6$

c) Find $g(0)$ $= -3$

$x=0$

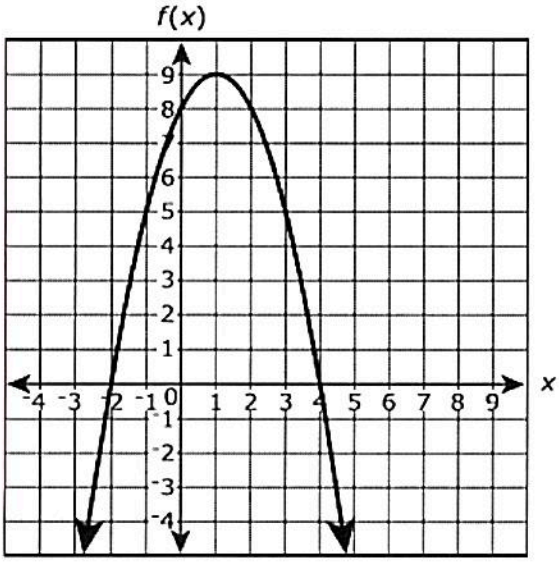
d) Find the value of x when $g(x) = -4$

$y=-4$ $x=-1$

e) For what values of x is $g(x) = 0$?

$y=0$ $\{-3,1,5,7\}$

The figure below shows the graph of the function $\boxed{y = f(x)}$. The function ***h*** is defined by $\boxed{h(x) = -3x + 2.}$ Which statements below are true? *Select all that apply*. Justify your response.



~~A.~~ $f(-2)$ is greater than $h(-2)$ $= -3(-2)+2$

$0 > 8$ $= 6+2$

$= 8$

~~C.~~ $f(1)$ is less than $h(1)$ $= -3(1)+2$

$= -3+2$

$9 < -1$ $= -1$

B. $f(0)$ is greater than $h(0)$ $h(0) = -3(0)+2$

$= 2$

$8 > 2$

D. When x = -1, $f(x) = h(x)$.

$h(-1) = -3(-1)+2$

$= 3+2$

$= 5$

$f(-1) = h(-1)$

$5 = 5$