

Complete the chart for $y = -2x + 5$

Independent x	dependent y
0	5
1	3
2	1
3	-1

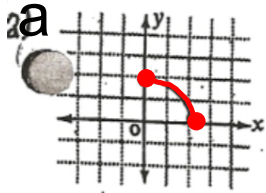
Note: Handwritten annotations include a blue line representing the function, a yellow arrow pointing down from the line, and a green arrow pointing down from the y-value 5 to 3, labeled with a '-2'.

x = 0	x = 1	x = 2
$y = -2(0) + 5$	$y = -2(1) + 5$	$y = -2(2) + 5$
$= 0 + 5$	$= -2 + 5$	$= -4 + 5$
$= 5$	$= 3$	$= 1$
(0, 5)	(1, 3)	(2, 1)

Solutions

Class/Homework

Write the domain, range, is it continuous or discrete, and is linear or nonlinear.



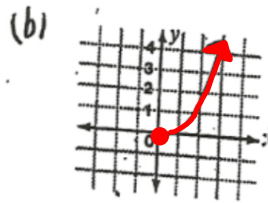
a)

Domain: $\{x \mid 0 \leq x \leq 2, x \in \mathbb{R}\}$

Range: $\{y \mid 0 \leq y \leq 2, y \in \mathbb{R}\}$

Is it continuous or discrete?

Is it linear or non linear?



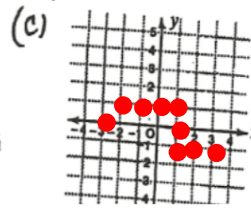
b)

Domain: $\{x \mid 0 \leq x, x \in \mathbb{R}\}$

Range: $\{y \mid 0 \leq y, y \in \mathbb{R}\}$

Is it continuous or discrete?

Is it linear or non linear?



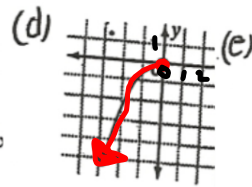
c)

Domain: $\{x \mid -3 \leq x \leq 3, x \in \mathbb{I}\}$

Range: $\{y \mid -1 \leq y \leq 1, y \in \mathbb{I}\}$

Is it continuous or discrete?

Is it linear or non linear?



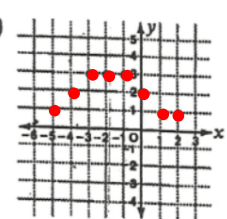
d)

Domain: $\{x \mid x \leq 0, x \in \mathbb{R}\}$

Range: $\{y \mid y \leq 0, y \in \mathbb{R}\}$

Is it continuous or discrete?

Is it linear or non linear?



e)

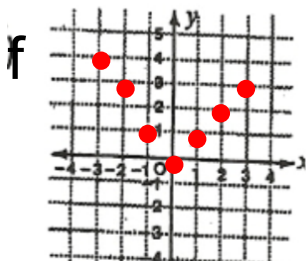
Domain: $\{x \mid -5 \leq x \leq 2, x \in \mathbb{I}\}$

Range: $\{y \mid 1 \leq y \leq 3, y \in \mathbb{I}\}$

Is it continuous or discrete?

Is it linear or non linear?

Solutions



f)

Domain: $\{x \mid -3 \leq x \leq 3, x \in \mathbb{I}\}$

Range: $\{y \mid 0 \leq y \leq 4, y \in \mathbb{I}\}$

Is it continuous or discrete?

Is it linear or non linear?

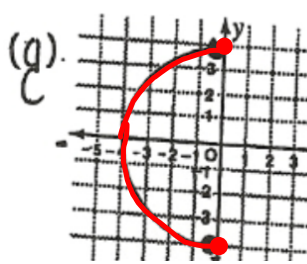
i)

Domain: $\{x \mid x \in \mathbb{R}\}$

Range: $\{y \mid y \leq 0, y \in \mathbb{R}\}$

Is it continuous or discrete?

Is it linear or non linear?



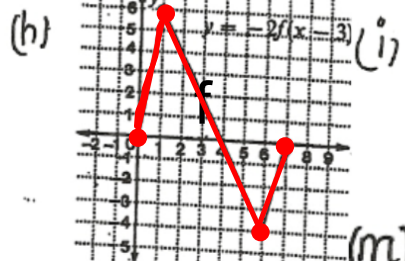
g)

Domain: $\{x \mid -4 \leq x \leq 0, x \in \mathbb{R}\}$

Range: $\{y \mid -4 \leq y \leq 4, y \in \mathbb{R}\}$

Is it continuous or discrete?

Is it linear or non linear?



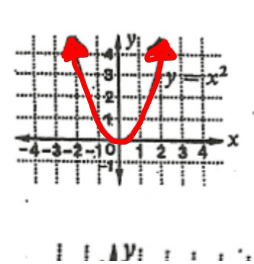
h)

Domain: $\{x \mid 0 \leq x \leq 7, x \in \mathbb{R}\}$

Range: $\{y \mid -4 \leq y \leq 6, y \in \mathbb{R}\}$

Is it continuous or discrete?

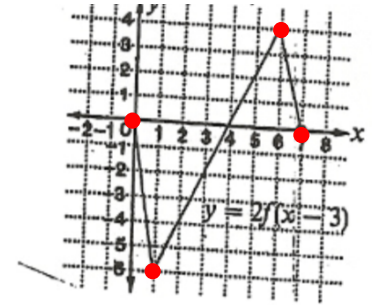
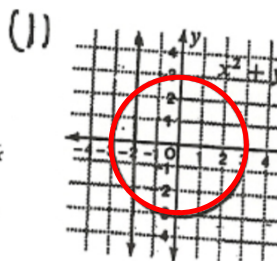
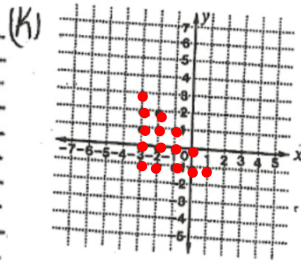
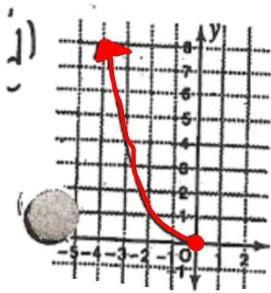
Is it linear or non linear?



(m)

Solutions

Class/Homework Write the domain, range, is it continuous or discrete, and is linear or nonlinear.



j)

Domain: $\{x \mid x \leq 0, x \in \mathbb{R}\}$

Range: $\{y \mid 0 \leq y, y \in \mathbb{R}\}$

Is it continuous or discrete?

Is it linear or non linear?

k)

Domain: $\{x \mid -3 \leq x \leq 1, x \in \mathbb{I}\}$

Range: $\{y \mid 1 \leq y \leq 3, y \in \mathbb{I}\}$

Is it continuous or discrete?

Is it linear or non linear?

l)

Domain: $\{x \mid -3 \leq x \leq 3, x \in \mathbb{R}\}$

Range: $\{y \mid -3 \leq y \leq 3, y \in \mathbb{R}\}$

Is it continuous or discrete?

Is it linear or non linear?

m)

Domain: $\{x \mid 0 \leq x \leq 7, x \in \mathbb{R}\}$

Range: $\{y \mid -5 \leq y \leq 4, y \in \mathbb{R}\}$

Is it continuous or discrete?

Is it linear or non linear?

Write an equation for the chart

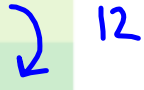
Independent Variable

- Hours do not depend on the person's pay.

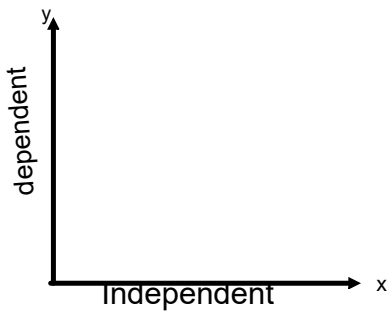
Dependent Variable

- A person's pay often depends on the number of hours worked.

Hours Worked, h	Gross Pay, P
0	0
1	12
2	24
3	36
4	48
5	60



$P = 12h$



When graphing always

MATH 10

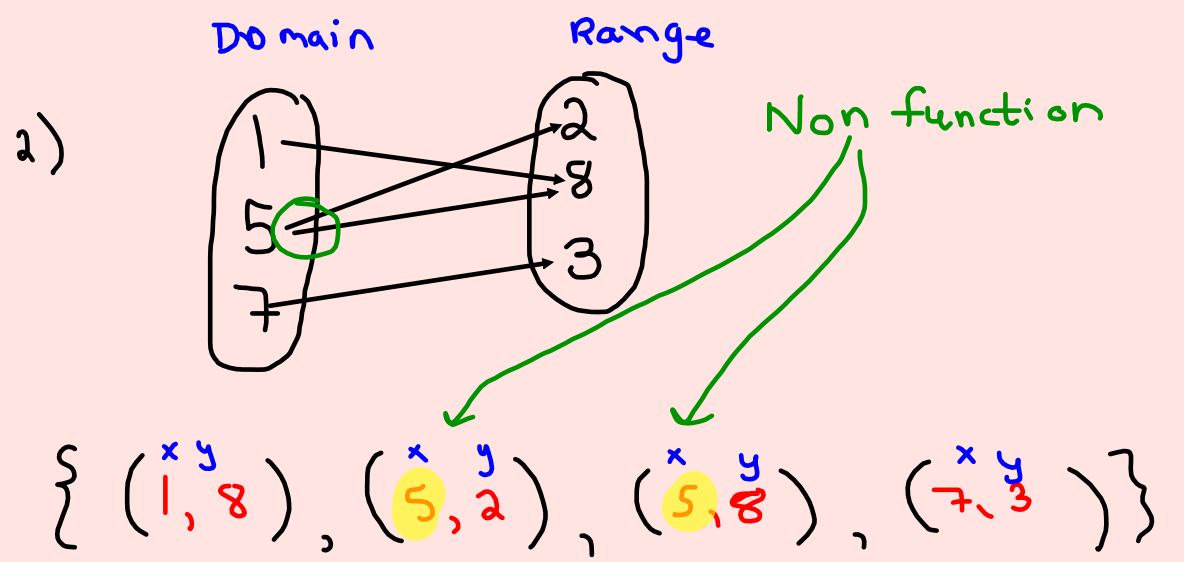
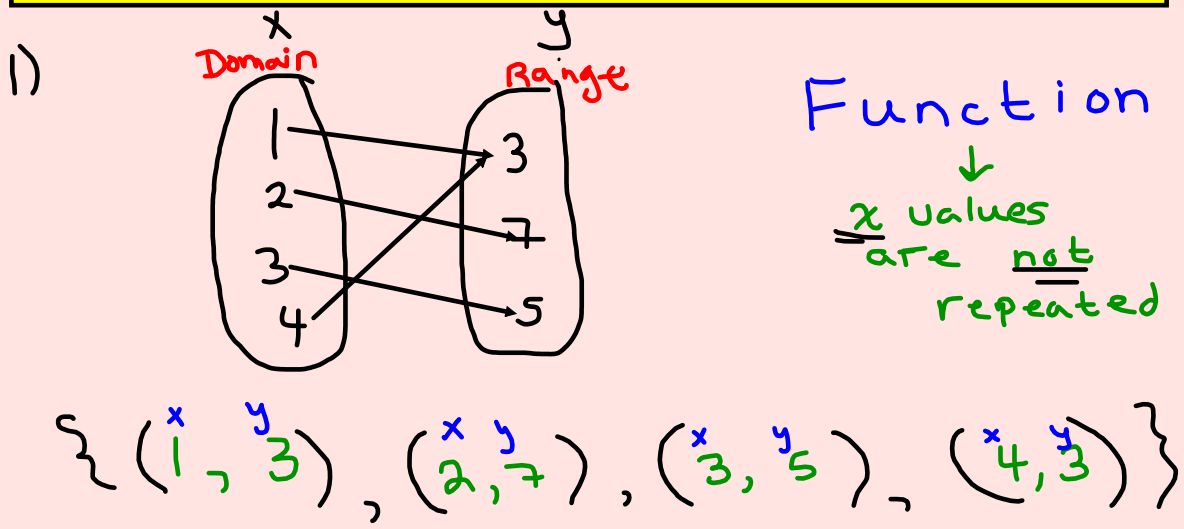
FUNCTIONS



Relations VS Functions

- a **relation** is where a pattern/relationship exists between the independent variable (x) and the dependent variable (y).

Study
 - a **function** is a special relationship where...
 "each x has one and only one y value".



Function or Nonfunction

Function:

A relation where each element in the first set is associated with one and only one element in the second set.

Functions

- How can I tell from a set of points/table?
 - a function is a relation in which no two ordered pairs have the same first coordinate.

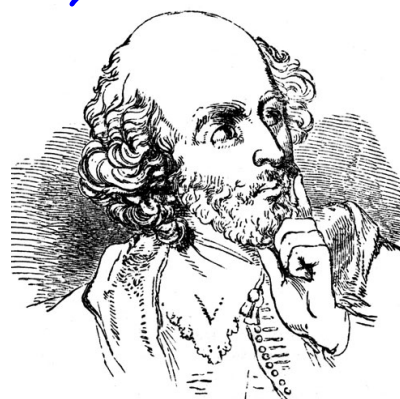
(a function CANNOT have x repeated)

If x is repeated then it is a NON-function

x	y
3	5
7	11
8	15
9	22

Function or Not a function
that is the question?

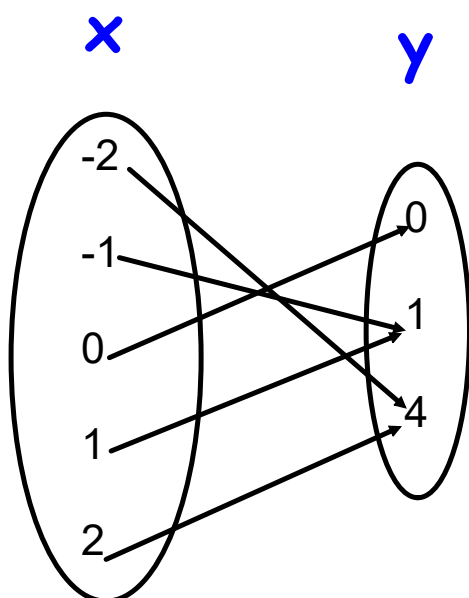
No repeats in x
so
Function



Arrow Diagrams

Function:

For every first element there is one and only one second element. (Only one arrow starts from each element of the domain.)



Function or Not a function
that is the question?



$(-2, 4)$, $(-1, 1)$ $(0, 0)$ $(1, 1)$ $(2, 4)$



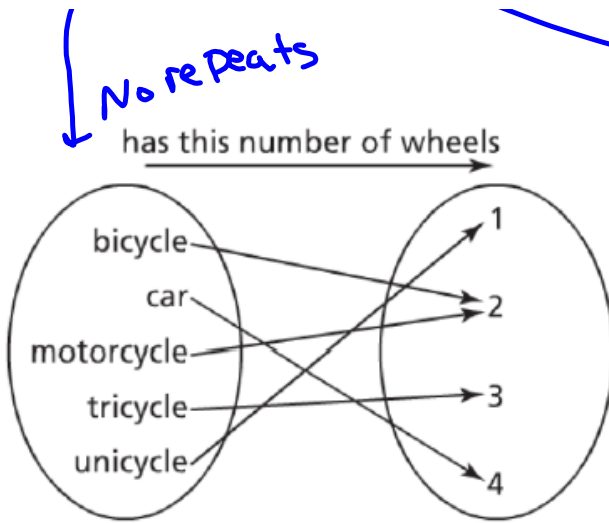
x	y
Sport	Equipment
badminton	shuttlecock
badminton	racquet
hockey	puck
hockey	stick
tennis	ball
tennis	racquet
soccer	ball

Repeat

→

Function or Not a function
that is the question?





No repeats

Function or Not a function
that is the question?

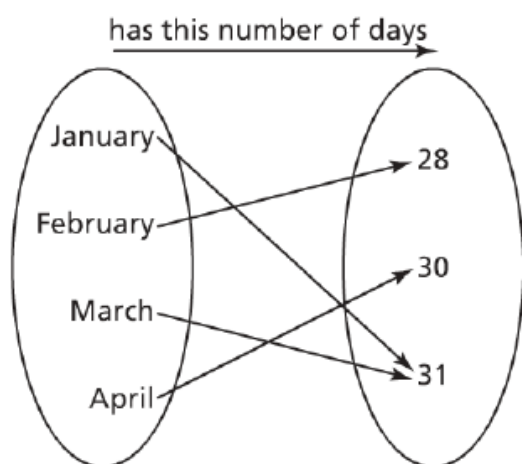


(x, y) Repeat $x=2$

$\{ (2, 5), (3, 7), (4, 2), (2, 6), (8, 0) \}$

Function or Not a function
that is the question?





Function or Not a function
that is the question?



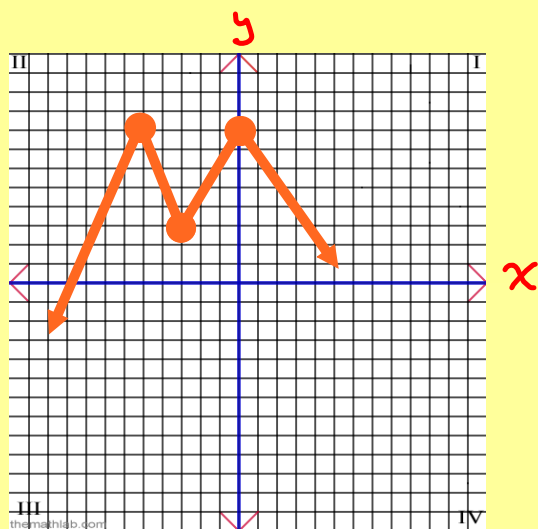
Function or Nonfunction



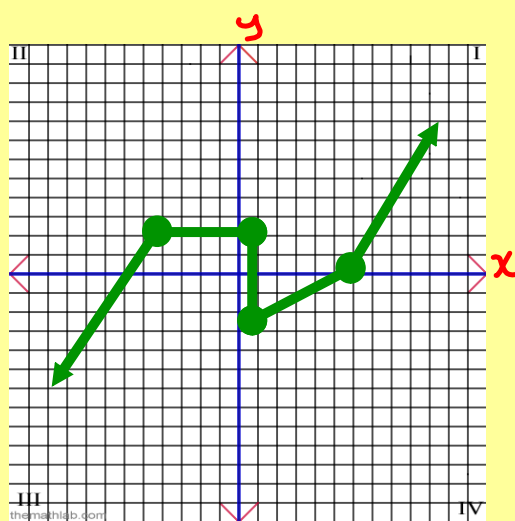
** To determine whether or not a graph is a function or nonfunction, we use what is called the vertical line test!!

** If the line crosses the graph more than once at any particular location, then it is not a function.

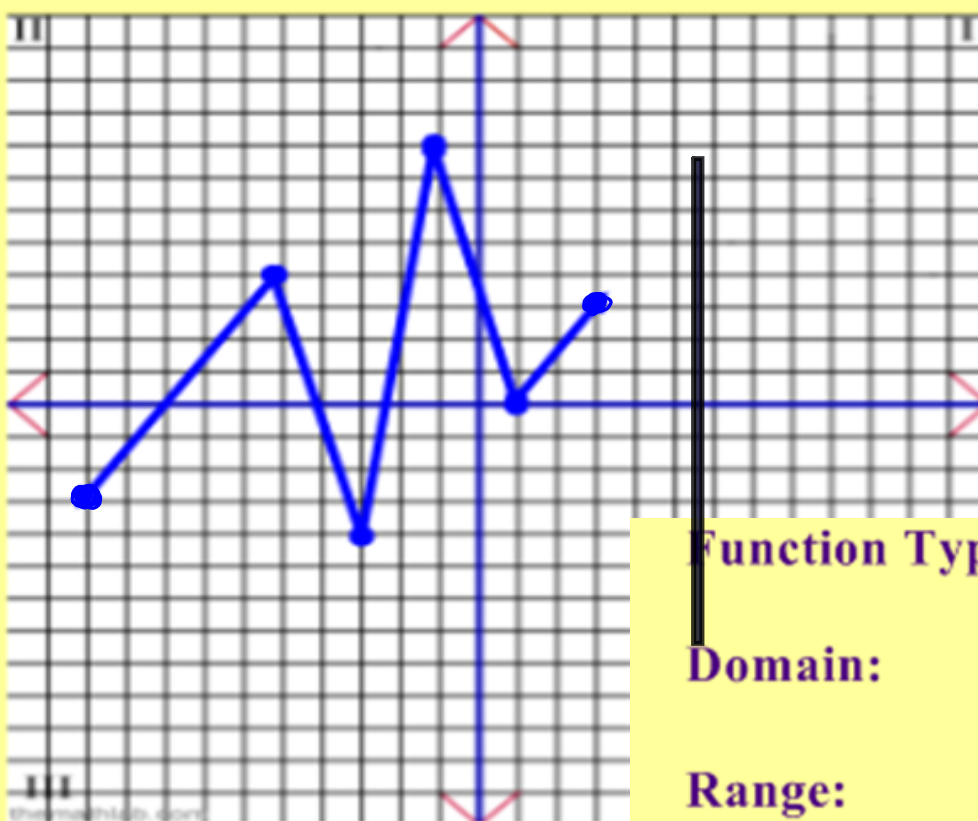
Function



Nonfunction



**** State whether the graph is a function or nonfunction, as well as ~~stating the domain & range!~~**

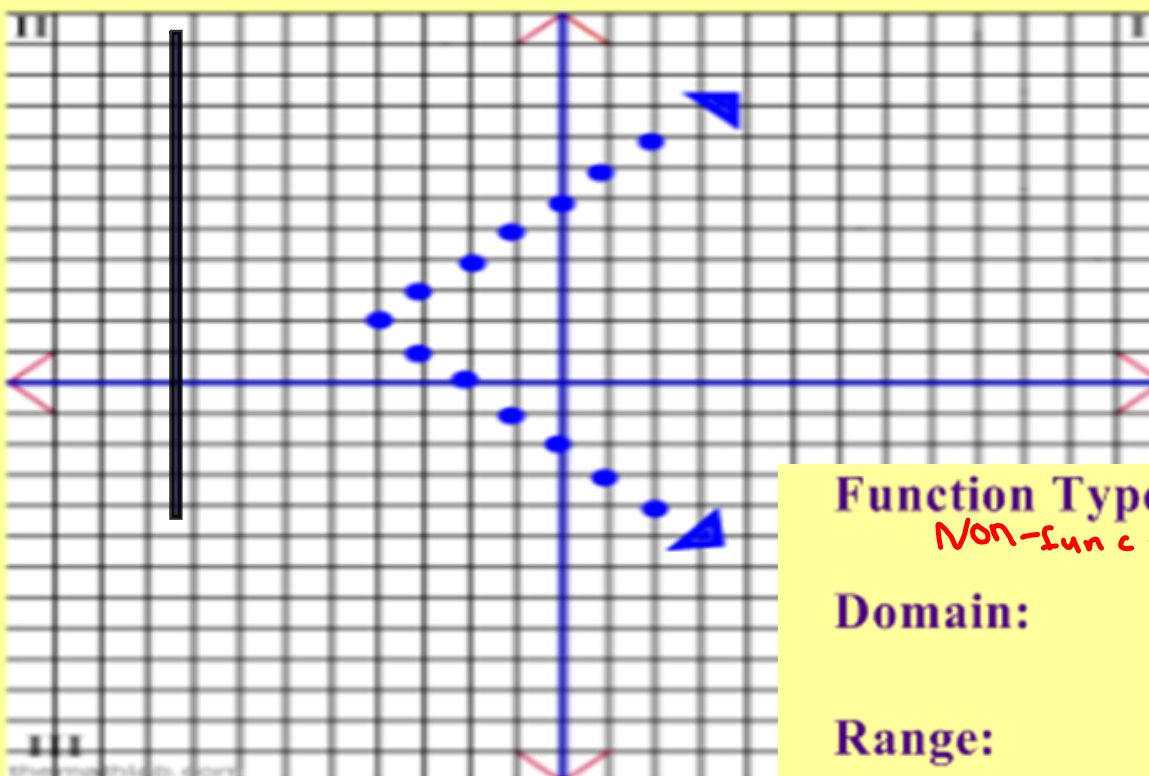


Function Type: *Function*

Domain:

Range:

* State whether the graph is a function or nonfunction,
~~as well as stating the domain & range!~~

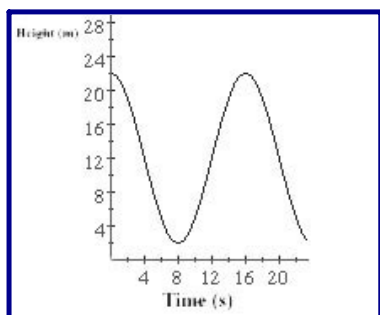


Function Type:
Non-function

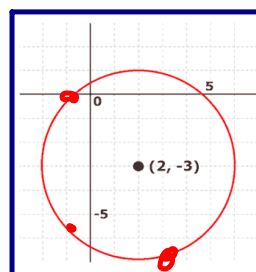
Domain:

Range:

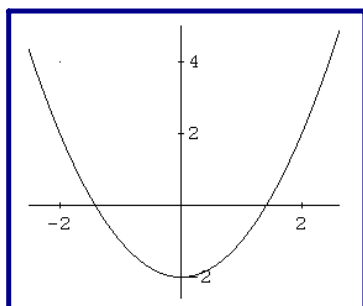
Use the Vertical Line Test to see if the graph is a function



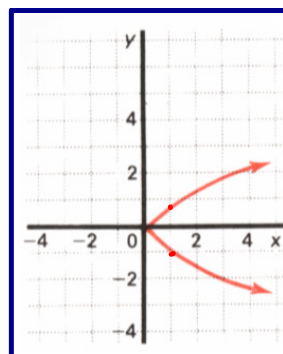
Fun



Non-
Fun

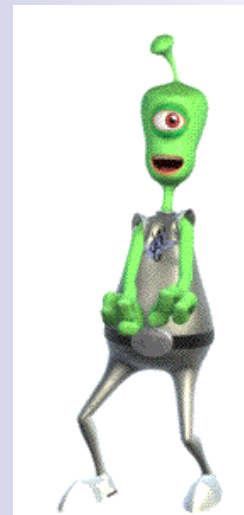


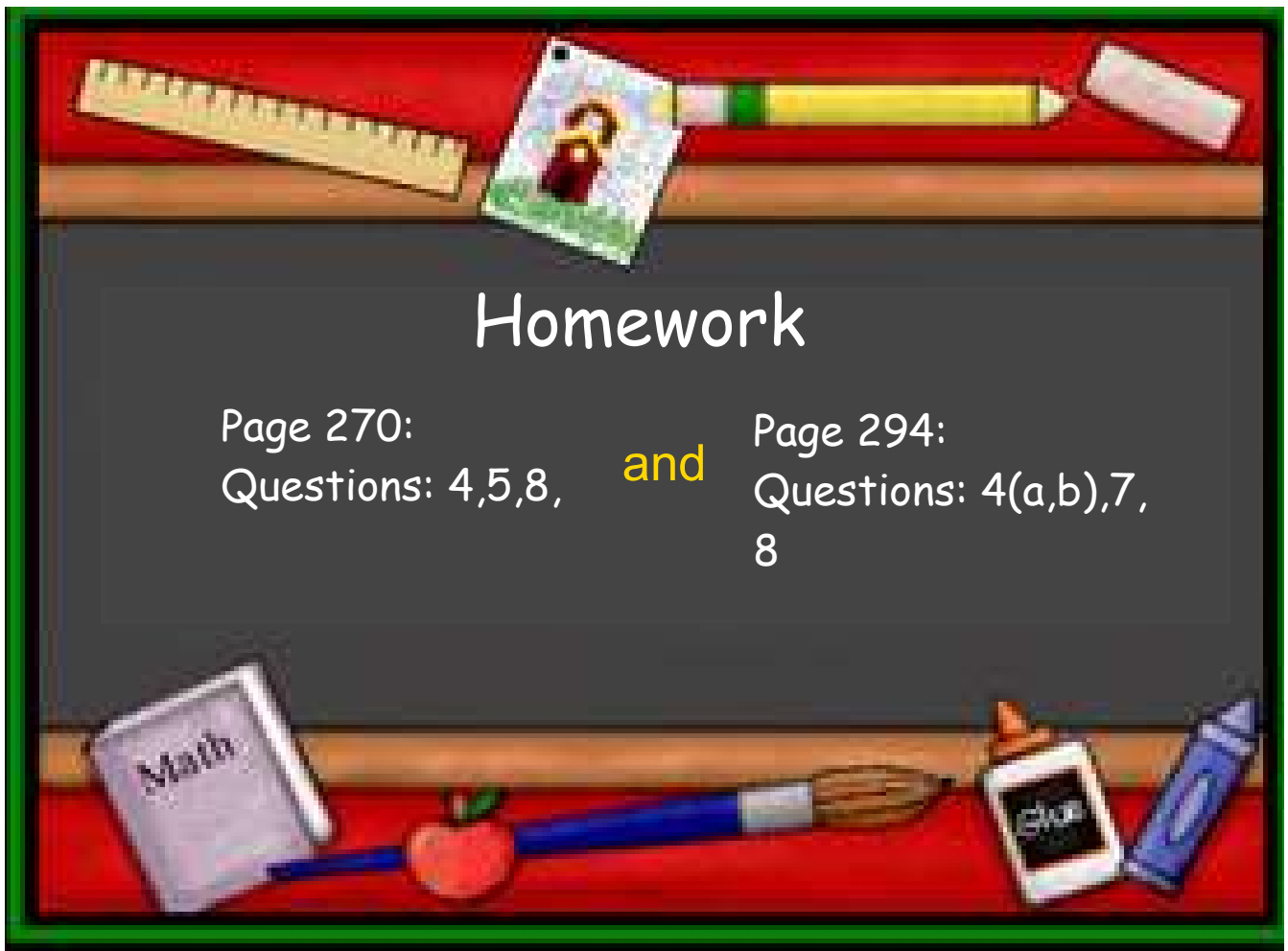
Fun



Non-
Fun

Graphs
are so EASY



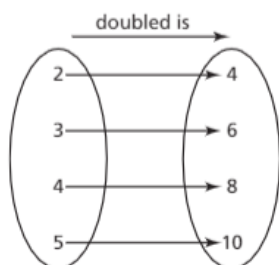


Exercises Page 270

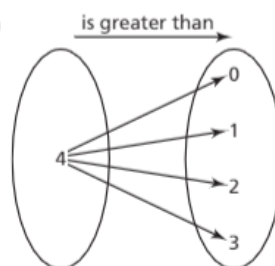
A

4. Which arrow diagrams represent functions?

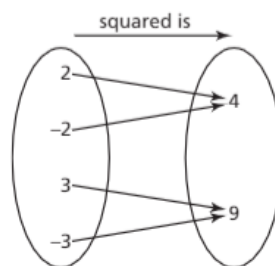
a)



b)



c)



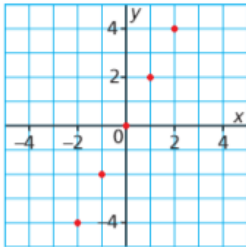
5. Which sets of ordered pairs represent functions? Identify the domain and range of each set of ordered pairs.
- a) $\{(1, 3), (2, 6), (3, 9), (4, 12)\}$
 - b) $\{(1, 0), (0, 1), (-1, 0), (0, -1)\}$
 - c) $\{(2, 3), (4, 5), (6, 7), (8, 9)\}$
 - d) $\{(0, 1), (0, 2), (1, 2), (0, 3), (1, 3), (2, 3)\}$
6. Write in function notation.
- a) $C = 20n + 8$
 - b) $P = n - 3$
 - c) $t = 5d$
 - d) $y = -x$
7. Write as an equation in two variables.
- a) $d(t) = 3t - 5$
 - b) $f(x) = -6x + 4$
 - c) $C(n) = 5n$
 - d) $P(n) = 2n - 7$

B

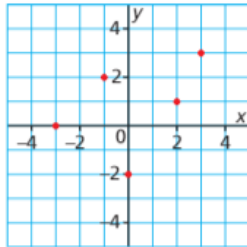
8. For each relation below:
- Determine whether the relation is a function. Justify your answer.
 - Identify the domain and range of each relation.
- a) $\{(1, 1), (2, 8), (3, 27), (4, 64)\}$
 - b) $\{(3, 4), (3, 5), (3, 6), (3, 7)\}$

4. List the domain and the range of the graph of each function.

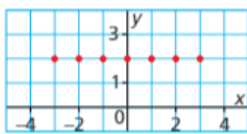
a)



b)



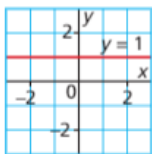
c)



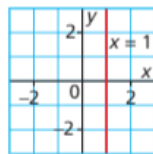
5. How can you tell that each graph in question 4 represents a function?

6. Which of these graphs represents a function? Justify your answer.

a)

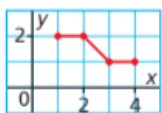


b)

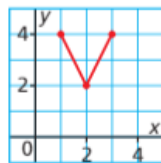


7. Match the graph of each function to its domain and range listed below.

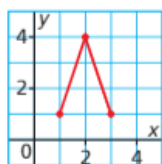
a)



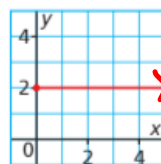
b)



c)



d)

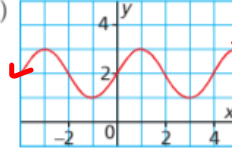


- i) domain: $1 \leq x \leq 3$; range: $2 \leq y \leq 4$
- ii) domain: $1 \leq x \leq 3$; range: $1 \leq y \leq 4$
- iii) domain: $x \geq 0$; range: $y = 2$
- iv) domain: $1 \leq x \leq 4$; range: $1 \leq y \leq 2$

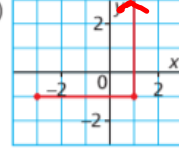
8. Which of these graphs represents a function? Justify your answer.

Write the domain and range for each graph.

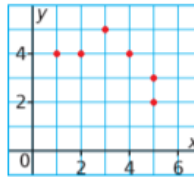
a)



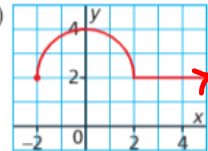
b)



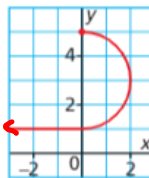
c)



d)

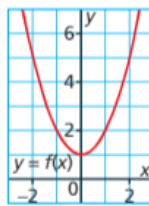


e)

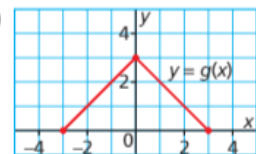


9. Determine the domain and range of the graph of each function.

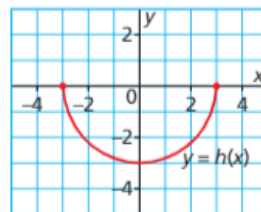
a)



b)



c)



d)

