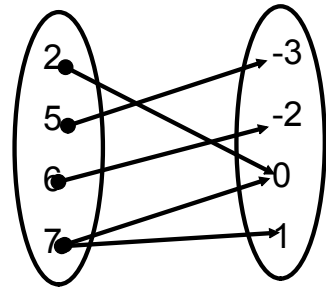


Warm Up

Nov. 4, 2016



- 1) Given the following arrow diagram
- State the domain $\{2, 5, 6, 7\}$
 - State the range $\{-3, -2, 0, 1\}$
 - Is this a function or not? How do you know?
 No, input 7 repeats

- 2) Given the following set $\{(1, 3), (2, 6), (-1, 8), (5, 7), (-2, 4)\}$
- State the domain $\{-2, -1, 1, 2, 5\}$
 - State the range $\{3, 4, 6, 7, 8\}$
 - Is this a function or not? How do you know?

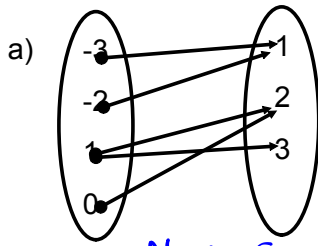
Yes it is a function because no repeats in the input.

Homework Questions

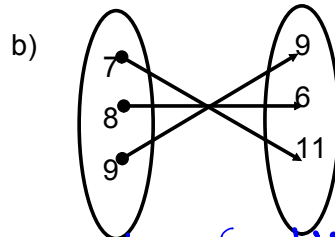
pg 270 #4,5,8 Pg 294 #4a,b, 7

- 8a) $\{(1, 1), (2, 8), (3, 27), (4, 64)\}$
 No repeats of x value so a function
- D $\{1, 2, 3, 4\}$
- R $\{1, 8, 27, 64\}$

State which of the following relations are functions. Explain your answers.



Not a function
b/c input 1
Repeats



Yes a function
no repeated
inputs

c)

x	y
10	2
11	2
12	2
12	2

Hint -graph it if you are unsure

Repeat 12
so not
a function

d)

x	y
-5	3
-3	4
1	7
1	8
2	4

Not a
function

Discrete and Continuous Data

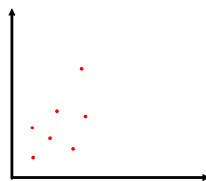
Discrete Data

- points are **not** joined together with a line on the graph.
- A finite number of values exist between points
- hint ask yourself can you have part of a "x" value. If no then discrete

Continuous Data

- points **are** joined together with a line on the graph.
- A infinite number of values exist between points
- hint ask yourself can you have part of a "x" value. If yes then continuous

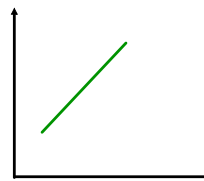
Examples)



Discrete

with dots then

$$\left. \begin{array}{l} x \in W \\ x \in I \\ x \in N \end{array} \right\} \begin{array}{l} y \in W \\ y \in I \\ y \in N \end{array}$$



Continuous

with line

$$\begin{array}{l} x \in R \\ y \in R \end{array}$$

Linear & Non-Linear

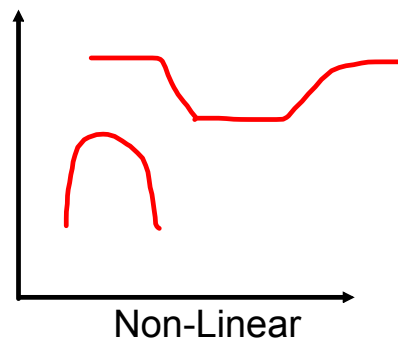
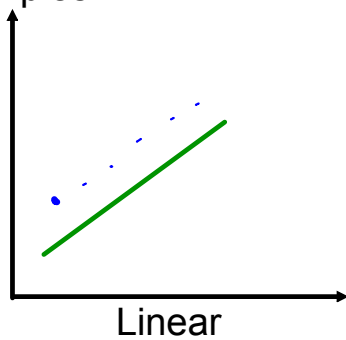
Linear graphs - the data is a straight line

(Doesn't have to be connected)

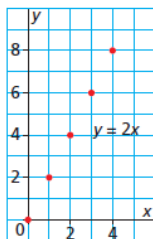
Non-Linear graphs - the data is NOT a straight line

- It can curve or spread out with no real pattern.

Examples



Using the graph write the domain and range.



Use two ways to represent both

Method 1

Domain: $\{0, 1, 2, 3, 4\}$
 Range: $\{0, 2, 4, 6, 8\}$

$\{ \quad \leq \text{let } \leq \quad \rightarrow \in \}$

Method 2

Domain: $\{x \mid 0 \leq x \leq 4, x \in \mathbb{I}\}$
 Range: $\{y \mid 0 \leq y \leq 8, y \in \mathbb{I}\}$

x	y
0	0
1	2
2	4
3	6
4	8

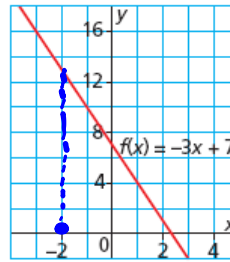
Is this graph linear or non-linear?

Is this graph continuous or discrete?

Example 4

Determining Domain Values and Range Values from the Graph of a Function

Here is a graph of the function $f(x) = -3x + 7$.



- a) Determine the range value when the domain value is -2 . $x = -2$
- b) Determine the domain value when the range value is 4 . $y = 4$

SOLUTION

$$f(x) = -3x + 7$$

$$x = -2$$

$$f(-2) = -3(-2) + 7$$

$$\quad \quad \quad +6 \quad +7$$

$$(-2, +13) \quad +13$$

$$f(x) = -3x + 7$$

$$4 = -3x + 7$$

Solve for x

$$-3 = -3x$$

$$\frac{-3}{-3} = \frac{-3x}{-3}$$

$+1 = x$

CHECK YOUR UNDERSTANDING

$$y = 2x + 3$$



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

"f" of "x"

Activate Prior Learning:

Writing Inequalities



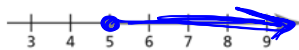
The inequality signs are:

- < less than
- > greater than
- ≤ less than or equal to
- ≥ greater than or equal to

To write an inequality that corresponds to a statement, replace the words that represent the inequality with the corresponding sign.

g is greater than or equal to 5:

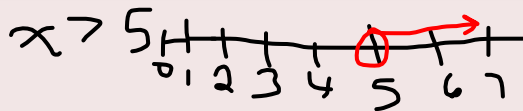
$$g \geq 5$$



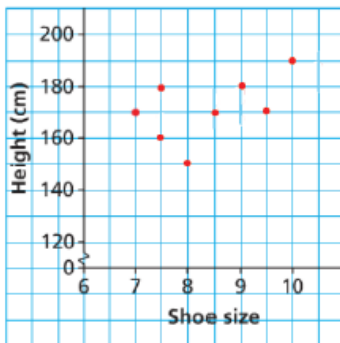
Since 5 is part of the solution, we draw a shaded circle at 5.

(Continues on next page)

5.5 Graphs of Relations and Functions



Discrete
Height against Shoe Size

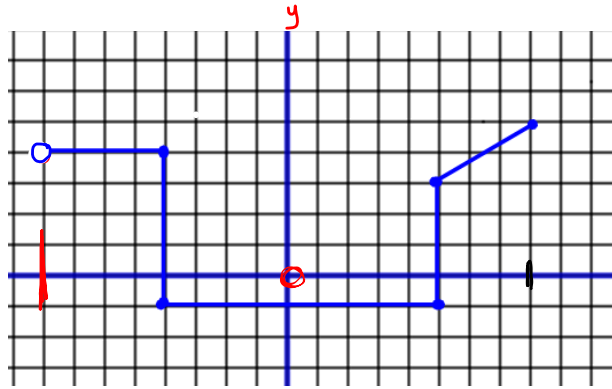


- State the domain & range.
- Is this relation a function?
- Why are the points not connected? Explain.

No b/c shoe size 7.5 has 2 values of height
Shoe sizes only increase by half sizes which is the scale on x axis. Can't have 7.1/4 size

D $\{ x \mid 7 \leq x \leq 10, x \in \mathbb{I} \}$

R $\{ y \mid 150 \leq y \leq 190, y \in \mathbb{I} \}$



Discrete/Continuous:

Function/Non-Functions

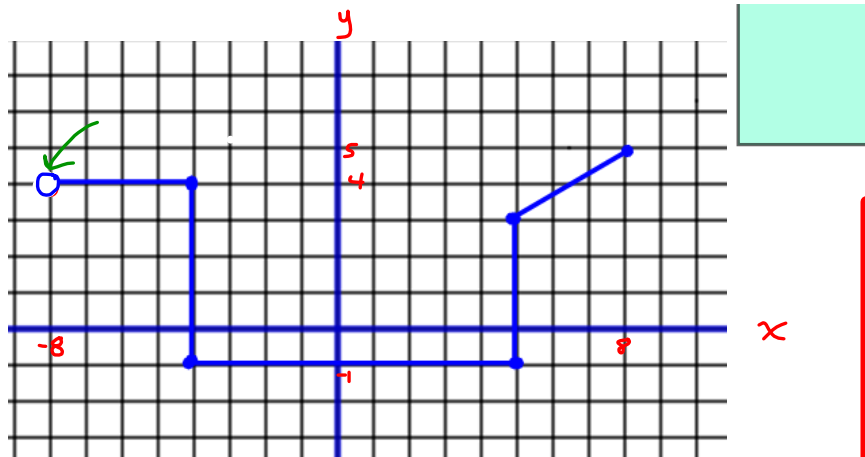
Domain & Range

Linear or Non-linear

Domain $\{x \mid -8 < x \leq 8, x \in \mathbb{R}\}$

Range $\{y \mid -1 \leq y \leq 5, y \in \mathbb{R}\}$

open dot → can't include equal sign
closed dot → equal sign



Discrete/Continuous:

Non-linear

Function/Non-Functions

Domain: $\left\langle \begin{matrix} -8 & 8 \end{matrix} \right\rangle$

$-8 < x \leq 8$

Range: $\left\langle \begin{matrix} 5 \\ -1 \end{matrix} \right\rangle$

$-1 \leq y \leq 5$

Class/Homework

Page 294 - 296:

Questions: 6, ~~7~~, 8, 9

Page 299:

Questions: 3