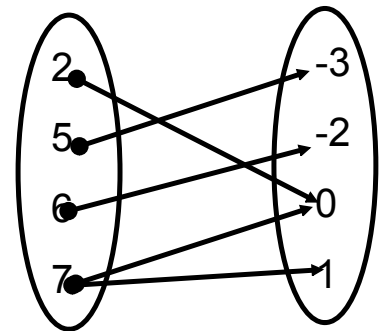




Warm Up

Apr. 20, 2017



1) Given the following arrow diagram

a) State the domain $\{2, 5, 6, 7\}$

b) State the range $\{-3, -2, 0, 1\}$

c) Is this a function or not? How do you know?

*Not a function
 $x=7$ is repeated twice*

2) Given the following set $\{(1, 3), (2, 6), (-1, 8), (5, 7), (-2, 4)\}$

a) State the domain $\{-2, -1, 1, 2, 5\}$

b) State the range $\{3, 4, 6, 7, 8\}$

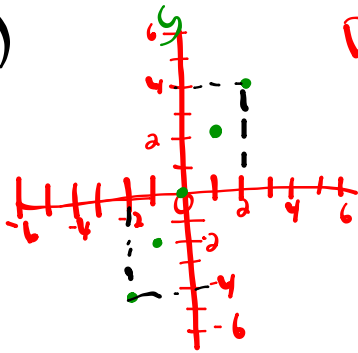
c) Is this a function or not? How do you know?

No repeats in x so it is a function.

Homework Questions

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

4a)

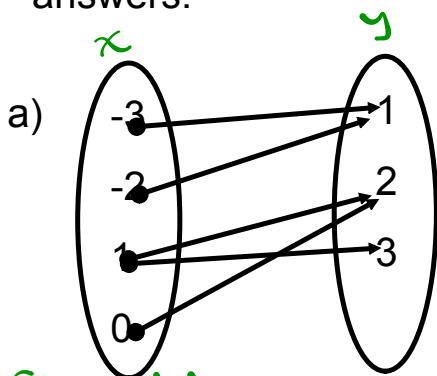


Domain $\{ x \mid \underset{\text{left}}{-2} \leq x \leq \underset{\text{right}}{+2}, x \in \underline{\mathbb{I}} \}$

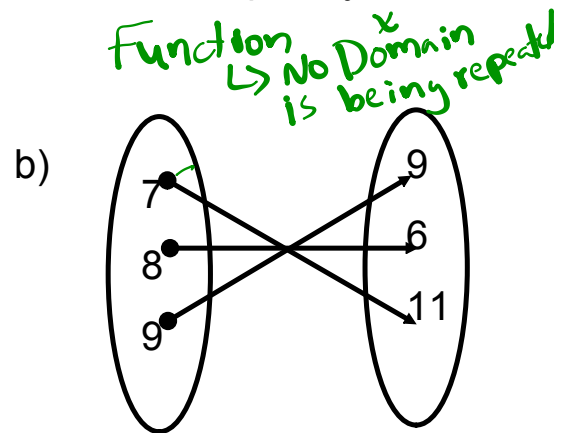
\mathbb{R}

Range $\{ y \mid \text{such that } -4 \leq y \leq +4, y \in \underline{\mathbb{I}} \}$

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



Since 1 is repeated in the 1st set (Domain) then NOT a function



Function
 ↳ No Domain is being repeated

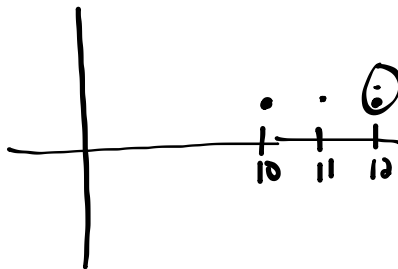
c)

x	y
10	2
11	2
12	2
12	2

Repeat

Not a function
 (x being repeated)

Hint -graph it if you are unsure

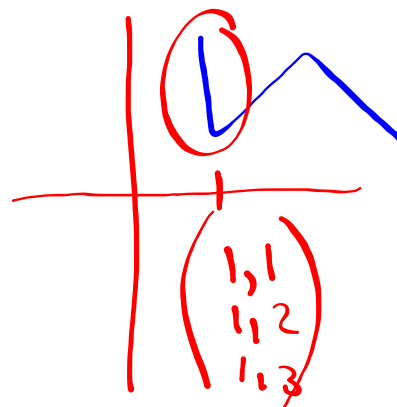
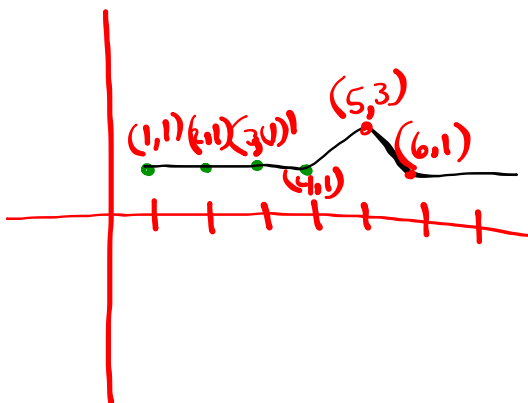


d)

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

Repeat

Not a function



Discrete and Continuous Data

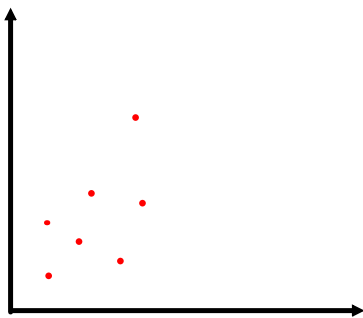
Discrete Data

- 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

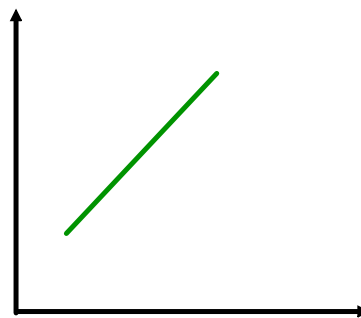
Examples)



Discrete

with dots then

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



Continuous

with line

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

Linear & Non-Linear

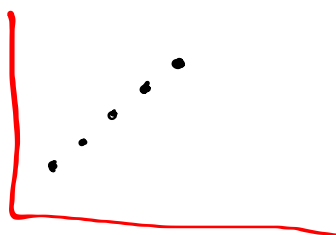
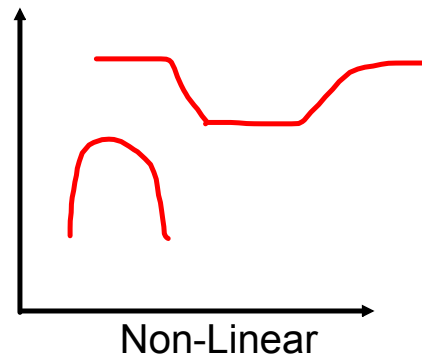
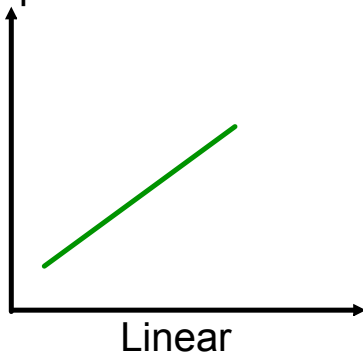
Linear graphs - the data is a straight line

(Doesn't have to be connected)

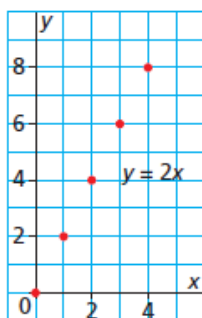
Non-Linear graphs - the data is NOT a straight line

- 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

Linear Graph \rightarrow looks like a straight line

Method 1

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

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

Discrete \rightarrow dots

- (0,0)
- (1,2)
- (2,4)
- (3,6)
- (4,8)

Method 2

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

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

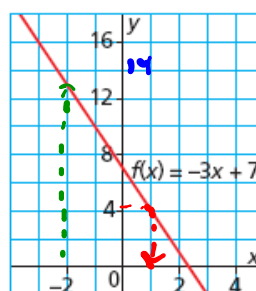
Is this graph linear or non-linear?

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 .
- b) Determine the domain value when the range value is 4 .



SOLUTION

a) Domain is -2
 $x = -2$

$$y = 13$$

$$(x, y)$$

$$(-2, 13)$$

b) Range = 4

$$y = 4 \quad x = 1$$

$$(x, y)$$

$$(1, 4)$$



CHECK YOUR UNDERSTANDING

Activate Prior Learning:

Writing Inequalities



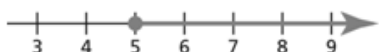
The inequality signs are:

$<$ less than \leq less than or equal to
 $>$ greater than \geq 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:

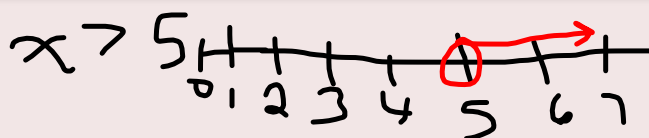
$$g \geq 5$$



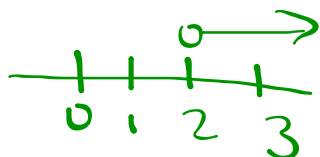
Since 5 is part of the solution, we draw a shaded circle at 5.

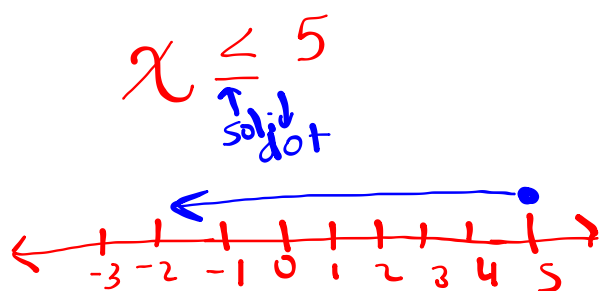
(Continues on next page)

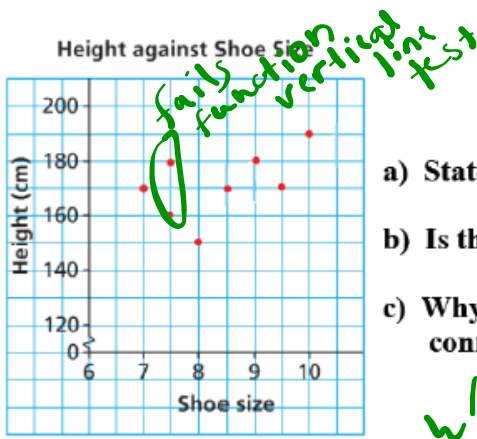
5.5 Graphs of Relations and Functions



$x > 2$
no equal so open dot







a) State the domain & range.

b) Is this relation a function? *No*

c) Why are the points not connected? Explain.

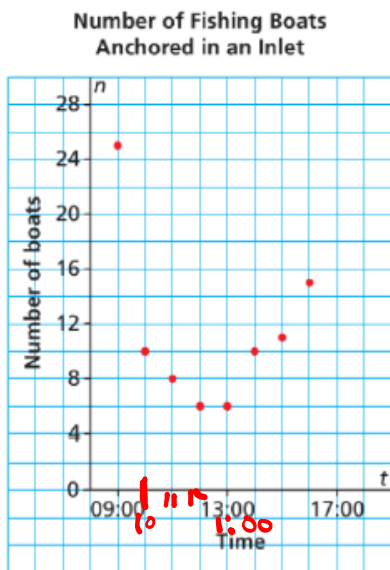
Not connected since shoe size and height are not related

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

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

$$x \quad \{7, 7.5, 8, 8.5, 9, 9.5, 10\}$$

$$y \quad \{150, 160, 170, 180, 190\}$$



a) State the domain & range.

b) Is this relation a function *Function no repeated times (x)*

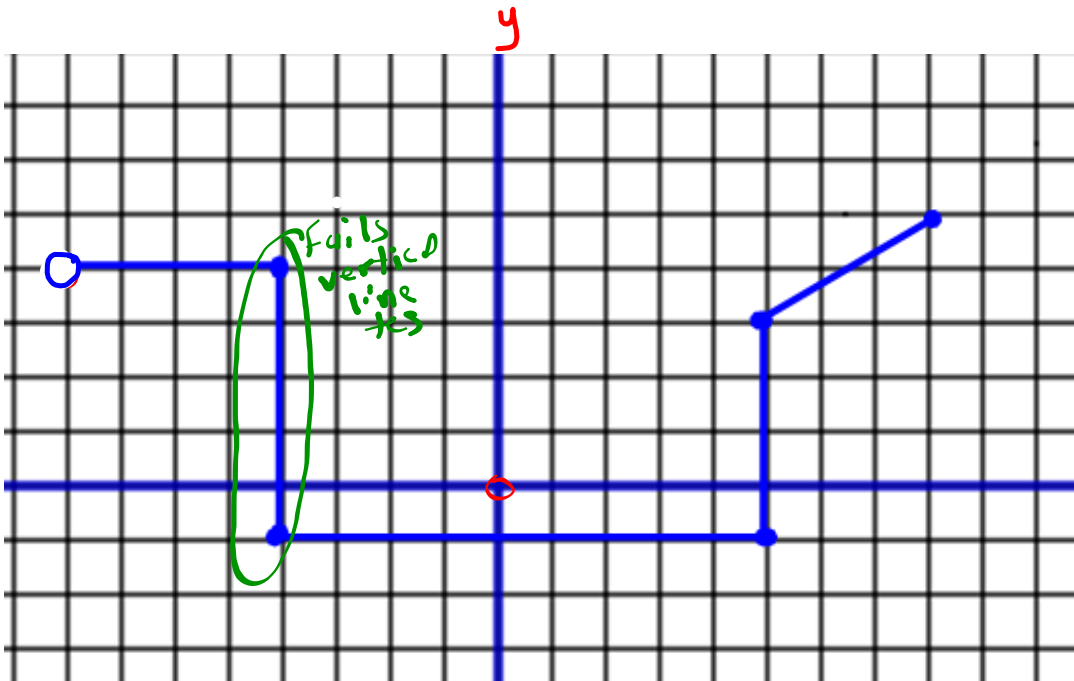
c) Why are the points not connected? Explain *Can't have half a boat at a time*

Whole $\rightarrow W (0, 1, 2, 3)$

2)

$$\{x \mid 9 \leq x \leq 16, x \in W\}$$

$$\{y \mid 6 \leq y \leq 23, y \in \mathbb{N}\}$$



Dots Connected
Discrete/ Continuous: Continuous

Function/ Non-Functions

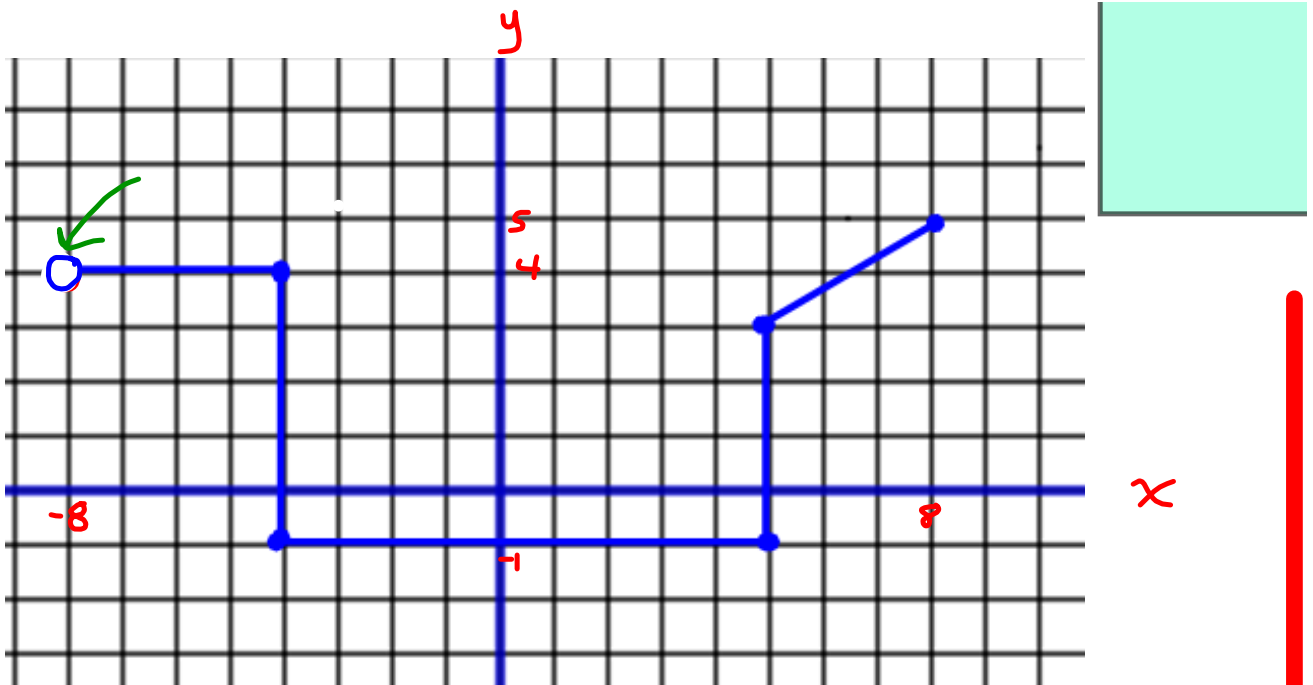
No function \swarrow open dot

Domain & Range

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

Linear or Non-linear

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



Discrete/ **Continuous:**

Non-linear

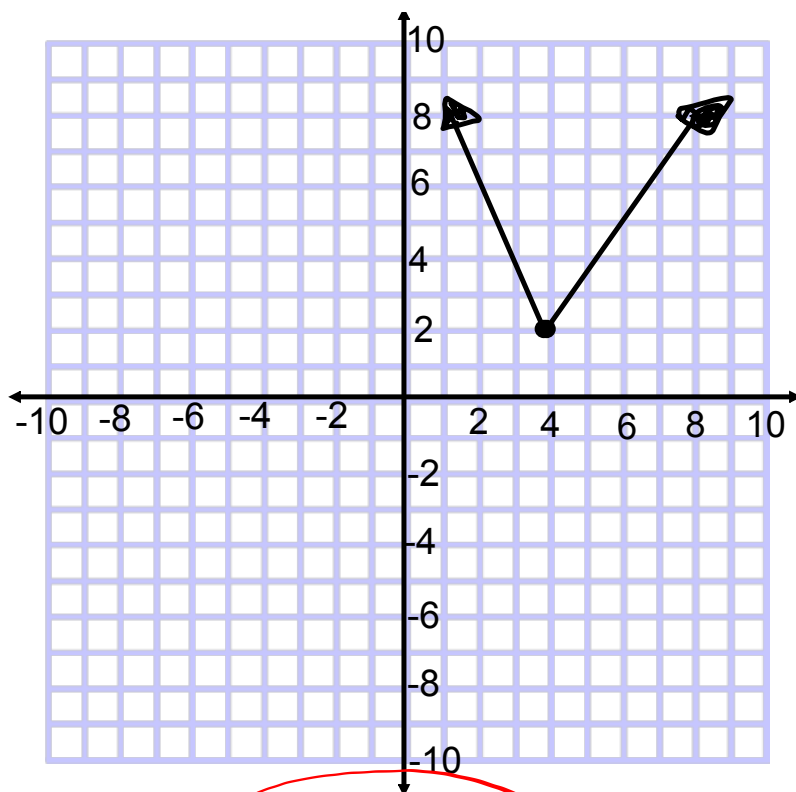
Function/ **Non-Functions**

Domain: $\overset{-8}{\longleftarrow} \overset{8}{\longrightarrow}$

$$-8 < x \leq 8$$

Range: $\updownarrow \overset{5}{-1}$

$$-1 \leq y \leq 5$$



Discrete/ Continuous:

Function/ Non-Functions
Linear or non-linear

Domain:

$\{x \mid$

$x \in \mathbb{R}\}$

Range:

$\{y \mid 2 \leq y$

$y \in \mathbb{R}\}$

Class/Homework

Page 294 - 296:
Questions: ~~6,7~~, 8, 9, 10

~~Page 299:
Questions: 3~~