What three numbers have the same answer when multiplied together and when added together?

Answer: 1, 2 and 3

Factor fully:

$x - 5$
$+ \quad -4$

$$ab^2c - 4abc - 5ac$$

$$ac(b^2 - 4b - 5)$$

$$ac(b-5)(b+1)$$

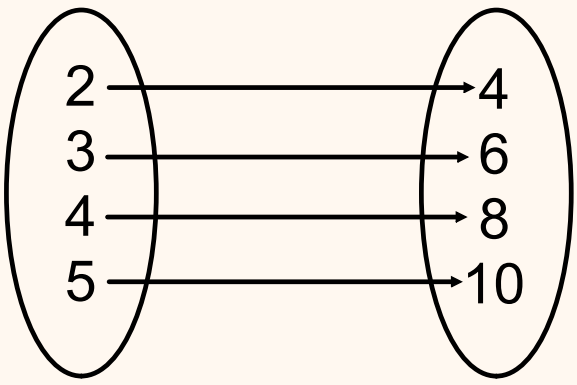
MCR 3U
1.1 - Part 2

Domain and Range

Domain and Range

The Domain is the set of all input values in a relationship. (x-values)
The Range is the set of all output values in a relationship. (y-values)

We can state the domain and range using Set Notation.



$D = \{2, 3, 4, 5\}$

$R = \{4, 6, 8, 10\}$

Relationships in Set Notation

We can write relationships using set notation as well.

x	y
2	4
3	6
4	8
5	10

⟹ {(2,4), (3,6), (4,8), (5,10)}

Example

eg. State the domain and range of the relationship: {(3,5), (4,6), (4,7), (5,6), (7,3)}

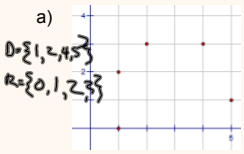
$D = \{3, 4, 5, 7\}$

$R = \{5, 6, 7, 3\}$

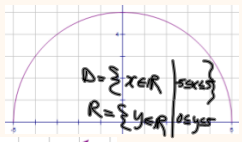
Domain and Range from Graphs

Eg. State the domain and range of each relationship from the graph shown.

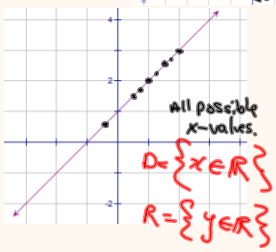
a)



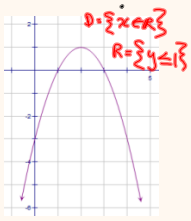
d)



b)



c)



Domain and Range from equations

Determine the domain and the range for each relation.

a) $y = 2x - 5$

$= 2(0) - 5$

$= -5$

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

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

b) $y = (x - 1)^2 + 3$

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

$R = \{y \in \mathbb{R} \mid y \geq 3\}$

c) $y = \frac{1}{x + 3}$

$D = \{x \in \mathbb{R} \mid x \neq -3\}$

$R = \{y \in \mathbb{R} \mid y \neq 0\}$

d) $y = \sqrt{x - 1} + 3$

$D = \{x \in \mathbb{R} \mid x \geq 1\}$

$R = \{y \in \mathbb{R} \mid y \geq 3\}$

Problem Solving:

Amy volunteers to help enclose a rectangular area for a dog run behind the humane society. The run is bordered on one side by the building wall. The society has 100 m of fencing available.

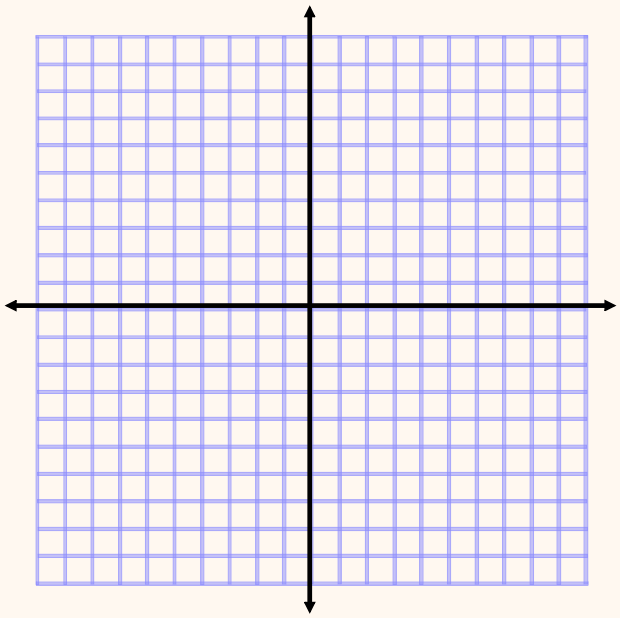
a) Express the area function in terms of the width.

b) Determine the domain and range for the area function.

Problem

Eg. Draw a function that satisfies the following properties:

- it contains the point (2, 3)
- D = {x $\in$ R, x $\leq$ 4}
- R = {y $\in$ R, -3 $\leq$ y $\leq$ 2}



Homework

p.12 #1-7,9,11,13

and

Determine what an Asymptote is.