Activate Prior Learning:
Solving Linear Equations

To solve a linear equation, we isolate the variable on one side of the equation.

To do this, we use inverse operations. Whatever we do to one side of an equation, we must also do to the other side.

Always verify the solution.

Solve: $3a + 17 = 26$

$3a = 26 - 17$

$\frac{3a}{3} = \frac{9}{3}$

$a = 3$

$$(30)\frac{x}{3} - \frac{2x+1}{5} = \frac{1}{2}(30)$$

$$10x - 6(2x+1) = 15$$

$$10x - 12x - 6 = 15$$

$$\frac{-2x}{-2} = \frac{21}{-2}$$

$$x = -\frac{21}{2}$$

① Clear ALL Fractions!!

LCM = 30

Solve:

$$\frac{1}{4}(4x-1)-\frac{1}{3}(2x+3)=\frac{3}{2}$$

(12) (4) (6)

$$3(4x-1)-4(2x+3)=18$$

$$12x-3-8x-12=18$$

$$4x-15=18$$

$$4x=18+15$$

$$\frac{4x}{4}=\frac{33}{4}$$

$$x=\frac{33}{4}$$

ex. $\frac{3}{2}(4x-2)-\frac{1}{2}(x-5)=\frac{4}{1}(2)$

$3(4x-2)-1(x-5)=8$

$12x-6-x+5=8$

$11x-1=8+1$

$\frac{11x}{11}=\frac{9}{11}$

$x=\frac{9}{11}$

$x=\frac{9}{11}$

$$2x+8-6x+3=120-6x+55$$

$$2x=175-8-3$$

$$2x=164$$

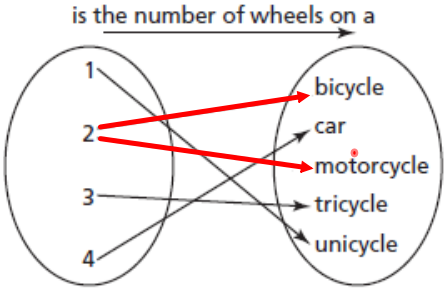
$$x=82$$

Properties of Functions

The set of first elements of a relation is called the **domain**.
The set of related second elements of a relation is called the **range**.
A **function** is a special type of relation where each element in the domain is associated with exactly one element in the range.

A function is a "well-behaved" relation !!

This relation associates a number with a vehicle with that number of wheels.



What is the domain?

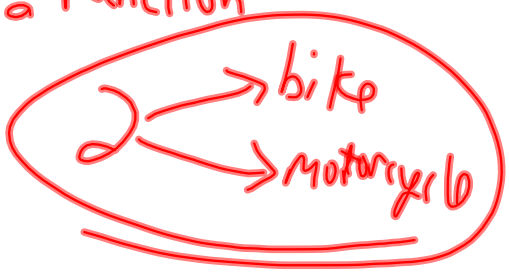
{1, 2, 3, 4}

What is the range?

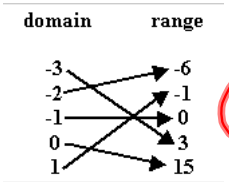
{bicycle, car, motorcycle, tricycle, unicycle}

Is this relation a function?

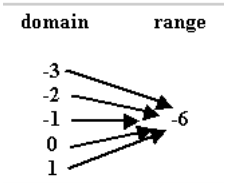
Not a function



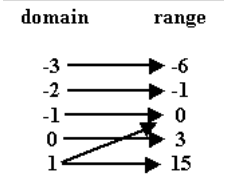
Would any of these be functions???



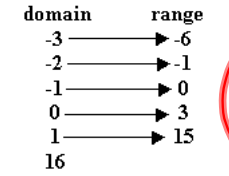
yes



yes



No



No

- State the domain and range of the following relation. Is the relation a function?
  {(2, –3), (4, 6), (3, –1), (6, 6), (2, 3)}

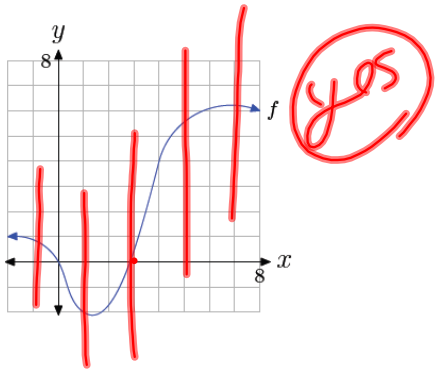
Not a function

Domain: {2, 4, 3, 6}

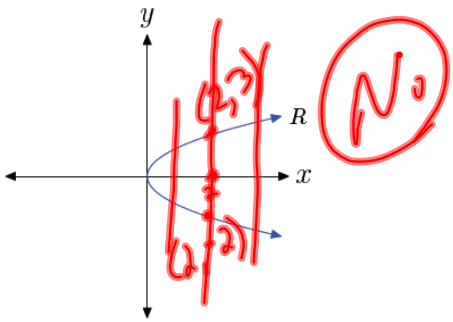
Range: {-3, 6, -1, 3}

What if we are provided a graph?

Would this be a function?

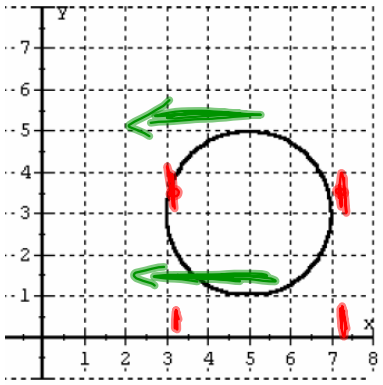


How about this one?



See any quick way to determine if a graph is a function?

The Vertical Line Test. If any vertical line cuts the graph of a relation more than once, then the relation is **NOT** a function.



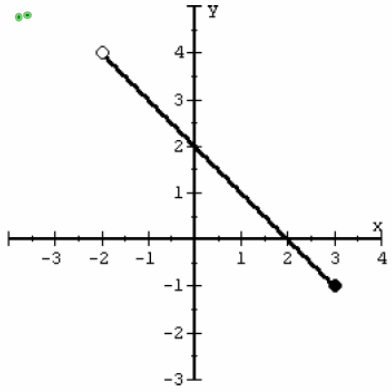
$(x-5)^2+(y-3)^2=4$

unction? No

)omain: $\{x \mid 3 \le x \le 7, x \in R\}$

:ange:

"x such that"

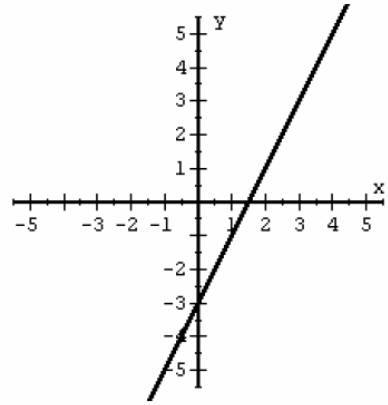


Line Segment

Function?

Domain:

Range:



$y = 2x - 3$

Function?

Domain:

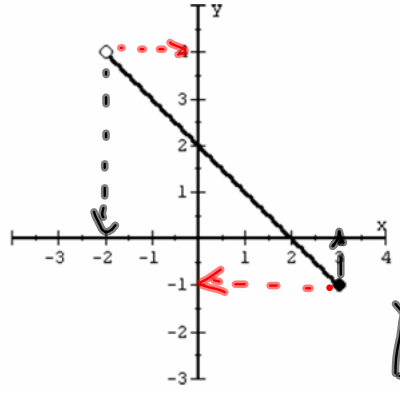
Range:

$x \in R$ ← Real #'s

"is an element of"

$\{y \mid 1 \le y \le 5, y \in R\}$

$\{y \mid 5 \ge y \ge 1, y \in R\}$



Line Segment

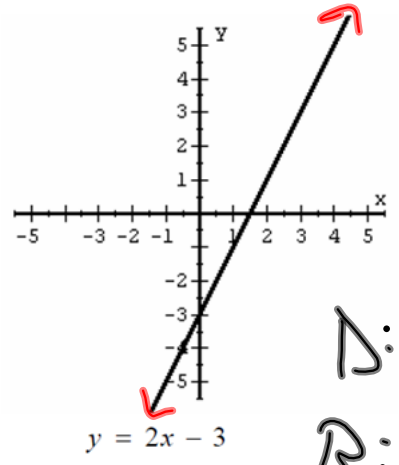
Function?

Domain:

Range:

$D: \{x \mid -2 < x \leq 3, x \in R\}$

$R: \{y \mid -1 \leq y < 4, y \in R\}$



$y = 2x - 3$

D: $\{x \in R\}$

R: $\{y \in R\}$

Pg. 294 #1-9