



Eighth Grade - Functions

1) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y?Rule:

Add two

In	10	11	12	13	14
Out					

- OUT = 11,12,15,18,16 equ : $y = x-3$
- OUT = 32,13,64,15,32 equ : $y = x-4$
- OUT = 12,13,14,15,16 equ : $y = x+2$
- OUT = 22,43,14,25,46 equ : $y = x-7$

2) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y?Rule:

Add(-4)

In	-2	0	2	8	10
Out					

- OUT = -6, -4, -2, 4, 6 equ : $y = x-4$
- OUT = -8, -6, -4, 4, 6 equ : $y = x-9$
- OUT = -9, -7, -5, 4, 6 equ : $y = x-10$
- OUT = -7, -5, -3, 4, 6 equ : $y = x-8$

3) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y?Rule:

Add(-9)

In	6	8	10	15	-10
Out					

- OUT = -8, -5, 9, 8,-20 equ : $y = x-1$
- OUT = -4, -2, 3, 7,-20 equ : $y = x-20$
- OUT = -3, -1, 1, 6,-19 equ : $y = x-9$
- OUT = -6, -5, 4, 7, -9 equ : $y = x-8$



4) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y?Rule:
Multiply by 3 followed by add 5

In	0	1	2	3	5
Out					

- OUT = 8,11,14,17,23 equ : $y = 6x+8$
- OUT = 5,8,11,14,20 equ : $y = 3x+5$
- OUT = 6,9,12,15,21 equ : $y = 4x+6$
- OUT = 7,10,13,16,22 equ : $y = 5x+7$

5) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y?Rule:
Multiply by 5 and subtract 4

In	-5	-4	-3	-2	-1
Out					

- OUT = -30,-25,-20,-15,-10 equ : $y = 6x-6$
- OUT = -29,-24,-19,-14,-9 equ : $y = 5x-4$
- OUT = -40,-26,-21,-16,-11 equ : $y = 6x-7$
- OUT = -41,-28,-22,-17,-12 equ : $y = 8x-7$

6) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y?Rule:
Multiply by 1/2 and add 3

In	2	4	6	8	10
Out					

- OUT = 5,6,7,8,9 equ : $y = \frac{1}{2}x + 4$
- OUT = 4,5,6,7,8 equ : $y = \frac{1}{2}x + 3$
- OUT = 9,10,11,12 equ : $y = \frac{1}{2}x + 5$
- OUT = 12,13,14,15 equ : $y = \frac{1}{2}x + 6$



7) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y?Rule:
Square the input and add 3d subtract 5

<i>In</i>	-2	-1	0	1	2
<i>Out</i>					

- OUT = 7,4,3,4,7 equ : $y = x^2+3$
- OUT = 8,4,4,5,7 equ : $y = x^2+4$
- OUT = 10,11,12,13,14 equ : $y = x^2+7$
- OUT = 9,7,8,2,5 equ : $y = x^2+6$

8) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y.Rule:
Cube the input and subtract 5

<i>In</i>	-1	-2	-3	2	1
<i>Out</i>					

- OUT = -7,-14,-32,4,-5 equ : $y = x^3-6$
- OUT = -8,-15,-33,5,-7 equ : $y = x^3-7$
- OUT = -9,-16,-34,7,9 equ : $y = x^3-8$
- OUT = -6,-13,-32,3,-4 equ : $y = x^3-5$

9) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y?Rule:
subtract two times of input from 5

<i>In</i>	0	1	4	5	7
<i>Out</i>					

- OUT = 7,8,9,10,11 equ : $y = 6-4x$
- OUT = 6,4,-4,-6, -9 equ : $y = 5-3x$
- OUT = 5,3,-3,-5,-9 equ : $y = 5-2x$
- OUT = 5,6,7,8,9 equ : $y = 7-8x$



10) IN and OUT Box and write the equation of the functions rule by taking IN as x and OUT as y?Rule: subtract three times the square of input from 7

<i>In</i>	-2	-3	-4	-5	-1
<i>Out</i>					

- OUT = -6,-7,-8,-9,-10 equ : $y = 8-4x^2$
- OUT = -5,-20,-41,-68,4 equ : $y = 7-3x^2$
- OUT = -5,-6,-7,-8,-9,-10 equ : $y = 6-3x^2$
- OUT = -7,-8,-9,-10,11 equ : $y = 9-4x^2$

11) Complete the input and output of the following table and write down the function rule?

<i>x</i>	-2	-3	-4	-5	-6	0
<i>y</i>	4	9				

- Slope = -8, $y = -8x - 3$, $y = 11,15,27,-8$
- Slope = -6, $y = -6x - 3$, $y = 15,17,23,-7$
- Slope = -7, $y = -7x - 2$, $y = 14,27,13,-8$
- Slope = -5, $y = -5x - 6$, $y = 14,19,24,-6$

12) Complete the input and output of the following table and write down the function rule?

<i>x</i>	2	3	4	5	6	30
<i>y</i>	7	10	13			

- Slope = 4, $y = 4x + 1$, $y = 16,17,93$
- Slope = 7, $y = 7x + 3$, $y = 11,13,95$
- Slope = 2, $y = 2x + 2$, $y = 14,17,91$
- Slope = 3, $y = 3x + 1$, $y = 16,19,91$



13) Complete the input and output of the following table and write down the function rule, $y = 3x - 4$?

x	-3	-2		1		5
y	-13	-10	-4		5	

- Slope = 5, $y = 5x - 1$, $x = 0, 6$, $y = -1, 13$
- Slope = 3, $y = 3x - 4$, $x = 0, 3$, $y = -1, 11$
- Slope = 7, $y = 7x - 4$, $x = 0, 4$, $y = -1, 12$
- Slope = 4, $y = 4x - 1$, $x = 0, 6$, $y = -2, 14$

14) Complete the input and output of the following tables and write down the function rule: $y = x^3 - 1$

x	0	3	4		-1	
y	-1	-26		124		28

- Slope=6, $y = 6x^3 - 1$, $x (3, -5)$, $y (51, -3)$
- Slope=5, $y = 5x^3 - 1$, $x (4, -2)$, $y (65, -5)$
- No constant slope, $y = x^3 - 1$, $x (5, -3)$, $y (63, -2)$
- Slope=7, $y = 7x^3 - 1$, $x (4, -7)$, $y (67, -5)$

15) Complete the input and output of the following tables and write down the function rule, $y = 2x - 1$

x	4	5		8		
y	7	9	11		19	-1

- Constant slope, $y = 4x - 1$, $x (4, 12, 0)$, $y (12, 15)$
- No constant slope, $y = 3x - 5$, $x (5, 12, 0)$, $y (17, 13)$
- No constant slope, $y = 6x - 3$, $x (5, 12, 0)$, $y (13, 17)$
- Constant slope, $y = 4x - 1$, $x (4, 12, 0)$, $y (12, 15)$

16) Write the domain and range of the following relations $\{(1,2), (-1,2), (3,4), (-3,4), (5,6), (-5,6)\}$?

- Domain: $\{0, 2, 1, 2, -3, 5, 6\}$, Range: $\{2, 4, 6\}$



- Domain: $\{-1,-3,-5\}$, Range: $\{1,2,2\}$
- Domain: $\{1,3,5\}$, Range: $\{1,4,3\}$
- Domain: $\{1,-1,3,-3,5,-5\}$, Range: $\{2,4,6\}$

17) Write the domain and range of the following relations $\{(0, -1), (1,-1),(2,-1),(3,-1),(4,-1)\}$?

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

18) Write the domain and range of the following relations $\{(2,8), (3,4), (2,9), (5,9), (0,9)\}$?

- Domain: $\{2, 3, 5, 0\}$, Range: $\{8,4,9\}$
- Domain: $\{2, 3, 2, 5, 0\}$, Range: $\{2,4,1\}$
- Domain: $\{2, 3, 5, 0\}$, Range: $\{2,4,3\}$
- Domain: $\{2\}$, Range: $\{2,4,3\}$

19) Write the domain and range of the following relations $\{(7,8), (8,7),(2,3),(3,2),(4,5),(5,4)\}$?

- Domain: $\{3, 9, 0, 1, 4, 5\}$, Range: $\{5, 6, 3, 2, 5, 5\}$
- Domain: $\{1, 1, 2, 3, 4, 6\}$, Range: $\{8, 3, 3, 2, 2, 2\}$
- Domain: $\{2, 3, 4, 5\}$, Range: $\{5, 7, 3, 2, 2, 1\}$
- Domain: $\{7, 8, 2, 3, 4, 5\}$, Range: $\{8, 7, 3, 2, 5, 4\}$

20) Write the domain and range of the following relations $\{(2,3), (2,4), (2,5),(2,6),(2,7)\}$?

- Domain: $\{2, 3, 4, 5, 6, 7\}$, Range: $\{2, 4, 4, 3, 2\}$
- Domain: $\{2\}$, Range: $\{3, 4, 5, 6, 7\}$
- Domain: $\{1, 3, 2, 5, 4, 9\}$, Range: $\{2, 1, 5, 6, 5\}$
- Domain: $\{2, 2, 2, 2, 2\}$, Range: $\{1, 4, 2, 6, 6\}$



21) Construct a table of values that includes $x = -3, -2, -1, 0, 1, 2$ and 3 for the following functions. $y = 3x - 2$?

a)

x	-3	-2	-1	0	1	2	3
y	-11	-8	-5	-2	1	4	7

b)

x	-3	-2	-1	0	1	2	3
y	-108	-32	-4	0	4	32	108

c)

x	-3	-2	-1	0	1	2	3
y	-18	-8	-2	0	-2	-8	-18

d)

x	-3	-2	-1	0	1	2	3
y	-4.5	-2	-0.5	0	-0.5	-2	-4.5

- a
- c
- d
- b

22) Construct a table of values that includes $x = -3, -2, -1, 0, 1, 2$ and 3 for the following functions. $y = 4x^3$?



a)

x	-3	-2	-1	0	1	2	3
y	-11	-8	-5	-2	1	4	7

b)

x	-3	-2	-1	0	1	2	3
y	-108	-32	-4	0	4	32	108

c)

x	-3	-2	-1	0	1	2	3
y	-18	-8	-2	0	-2	-8	-18

d)

x	-3	-2	-1	0	1	2	3
y	-4.5	-2	-0.5	0	-0.5	-2	-4.5

- c
- a
- b
- d

23) Construct a table of values that includes $x = -3, -2, -1, 0, 1, 2$ and 3 for the following functions. $y = -2x^2$?



a)

x	-3	-2	-1	0	1	2	3
y	-11	-8	-5	-2	1	4	7

b)

x	-3	-2	-1	0	1	2	3
y	-108	-32	-4	0	4	32	108

c)

x	-3	-2	-1	0	1	2	3
y	-18	-8	-2	0	-2	-8	-18

d)

x	-3	-2	-1	0	1	2	3
y	-4.5	-2	-0.5	0	-0.5	-2	-4.5

- b
- c
- a
- d

24) Construct a table of values that includes $x = -3, -2, -1, 0, 1, 2$ and 3 for the following functions. $y = -\frac{1}{2}x^2$



a)

x	-3	-2	-1	0	1	2	3
y	-11	-8	-5	-2	1	4	7

b)

x	-3	-2	-1	0	1	2	3
y	-108	-32	-4	0	4	32	108

c)

x	-3	-2	-1	0	1	2	3
y	-18	-8	-2	0	-2	-8	-18

d)

x	-3	-2	-1	0	1	2	3
y	-4.5	-2	-0.5	0	-0.5	-2	-4.5

- c
- a
- b
- d

25) Construct a table of values that includes $x = -3, -2, -1, 0, 1, 2$ and 3 for the following functions. $y = (1/5)x^3$



a)

x	-3	-2	-1	0	1	2	3
y	-11	-8	-5	-2	1	4	7

b)

x	-3	-2	-1	0	1	2	3
y	-108	-32	-4	0	4	32	108

c)

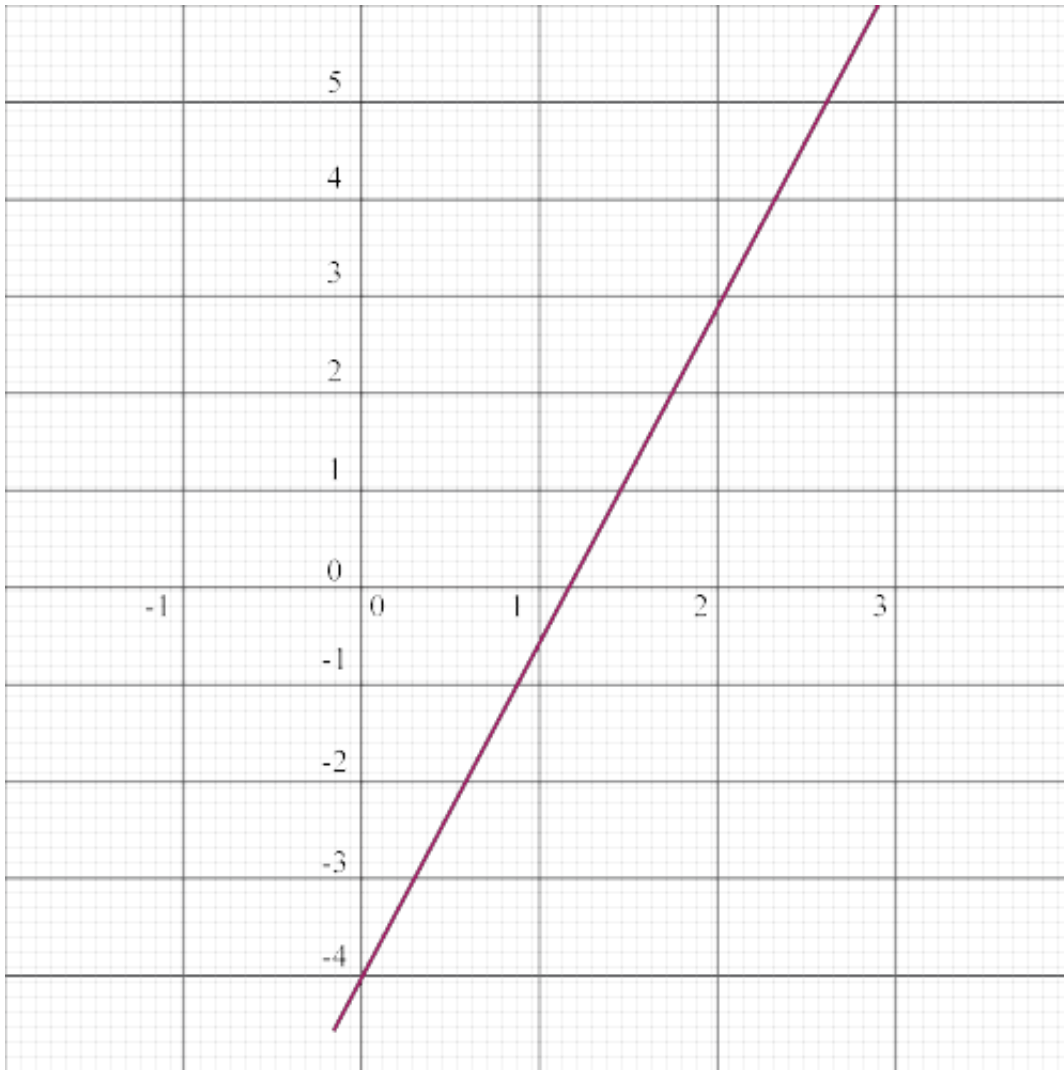
x	-3	-2	-1	0	1	2	3
y	$-27/5$	$-8/5$	$-1/5$	0	$1/5$	$8/5$	$27/5$

d)

x	-3	-2	-1	0	1	2	3
y	-4.5	-2	-0.5	0	-0.5	-2	-4.5

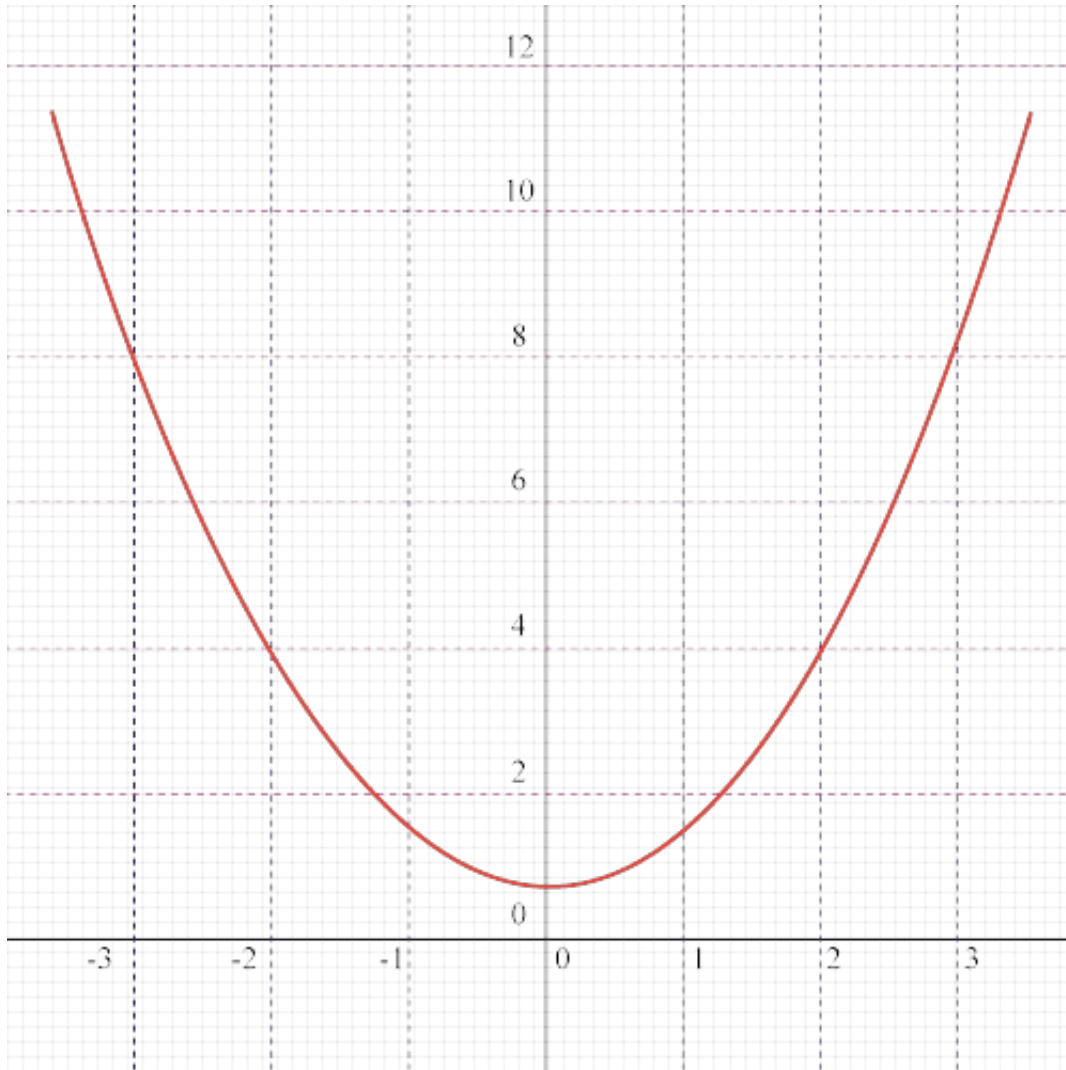
- c
- d
- a
- b

26) Tell whether the graphs below represent a function and answer the questions that follow Domain = (0, 1, 2, 3) If it is a function find the range of the function?



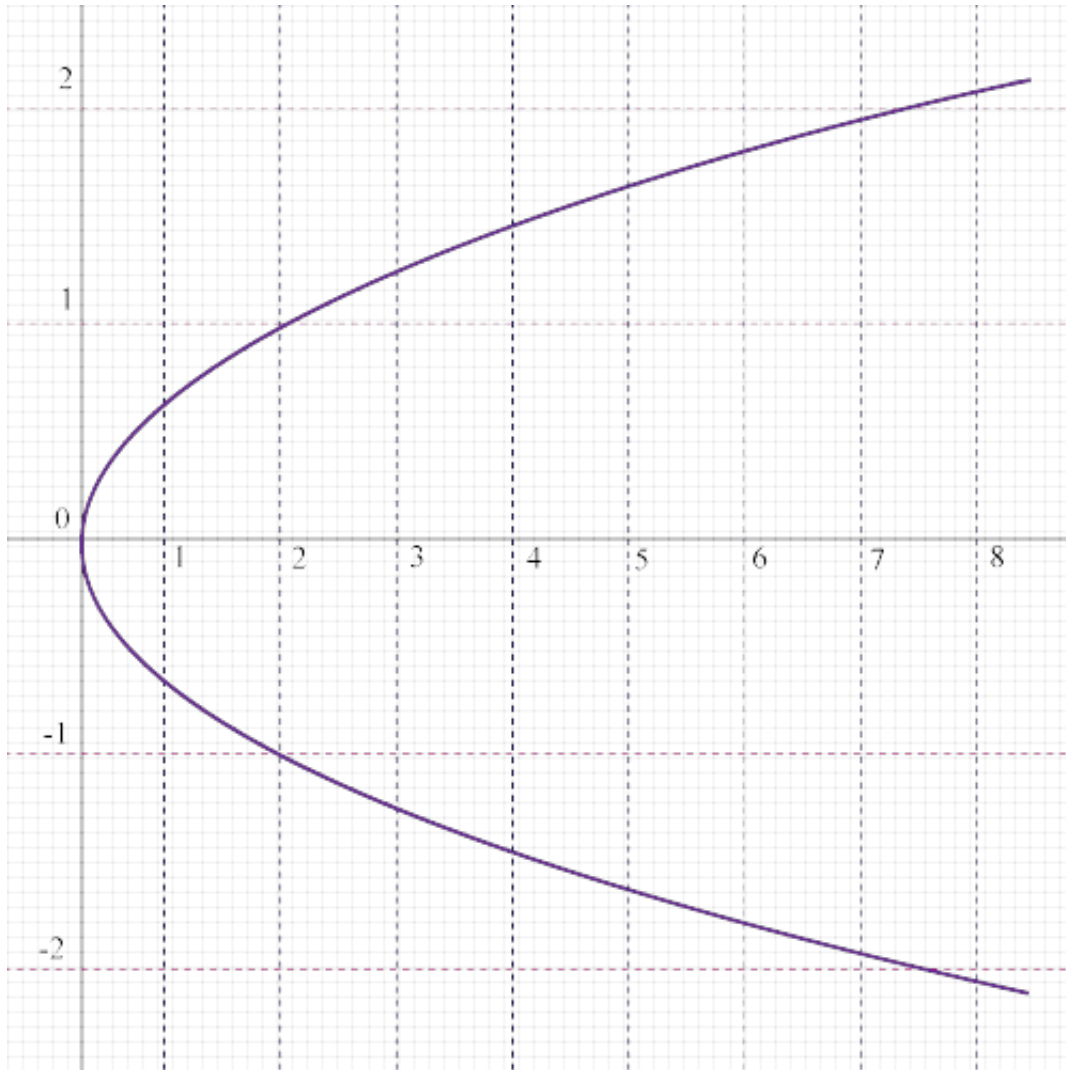
- Unpredictable Range: $\{0, 1, 2, 5\}$
- Function Range: $\{-4, -1, 2, 5\}$
- Not a function Range: $\{-4, -1, 2, 5\}$
- Data inadequate Range: $\{0, 1, 2, 3\}$

27) Tell whether the graphs below represent a function and answer the questions that follow Is it a linear function domain: $(-3, -1, 0, 1, 3)$ find the range?



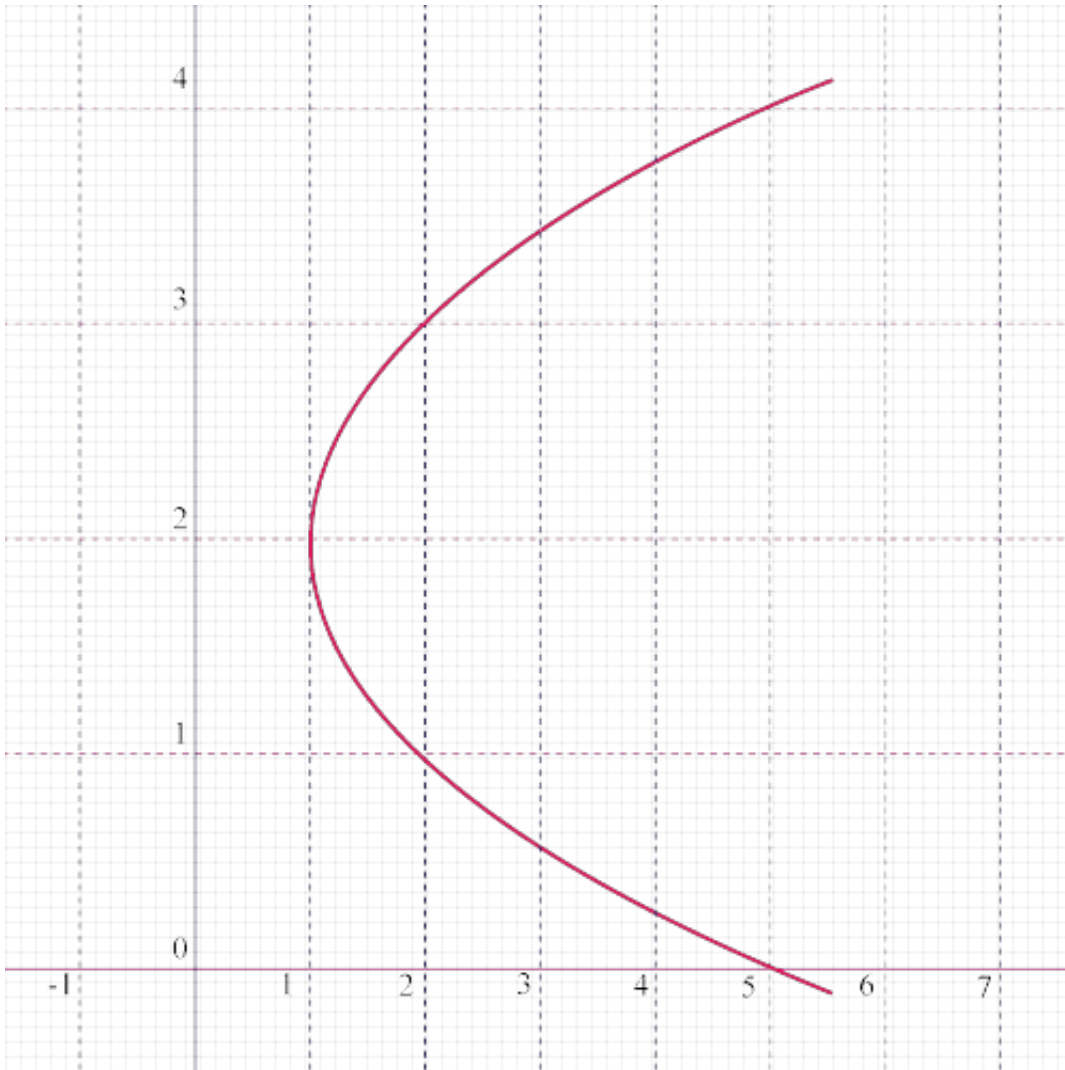
- Linear function Range: {10, 2, 1}
- Data inadequate Range: {10, 2, 1, 3}
- Not a linear function Range: {10, 2, 1}
- Unpredictable Range: {10, 2, 1, 8}

28) Tell whether the graphs below represent a function and answer the questions that follow



- Not a function
- Unpredictable
- Function
- Data inadequate

29) Tell whether the graphs below represent a function and answer the questions that follow?



- Not a function
- Function
- Data inadequate
- Unpredictable

30) Tell whether the graphs below represent a function and answer the questions that follow?

x	1	-3	-2	2	3
y					

- Unpredictable
- Function
- Data inadequate
- Not a function