



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

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 = -9, -7, -5, 4, 6 equ :  $y = x-10$
- OUT = -8, -6, -4, 4, 6 equ :  $y = x-9$
- OUT = -6, -4, -2, 4, 6 equ :  $y = x-4$
- 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 = -6, -5, 4, 7, -9 equ :  $y = x-8$
- OUT = -3, -1, 1, 6,-19 equ :  $y = x-9$



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 = 7,10,13,16,22 equ :  $y = 5x+7$
- 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 :  $y = 4x+6$

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 = -41,-28,-22,-17,-12 equ :  $y = 8x-7$
- OUT = -40,-26,-21,-16,-11 equ :  $y = 6x-7$

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



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 = 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 :  $y = x^2+6$
- OUT = 7,4,3,4,7 equ :  $y = x^2+3$

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

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



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

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

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

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

x	-2	-3	-4	-5	-6	0
y	4	9				

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

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

x	2	3	4	5	6	30
y	7	10	13			

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



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

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

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

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

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



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

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

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

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

- 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}
- 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}

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



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

- b
- c
- d
- a

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

- a
- c
- 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

- d
- c
- b
- a

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
- d
- a
- b

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)

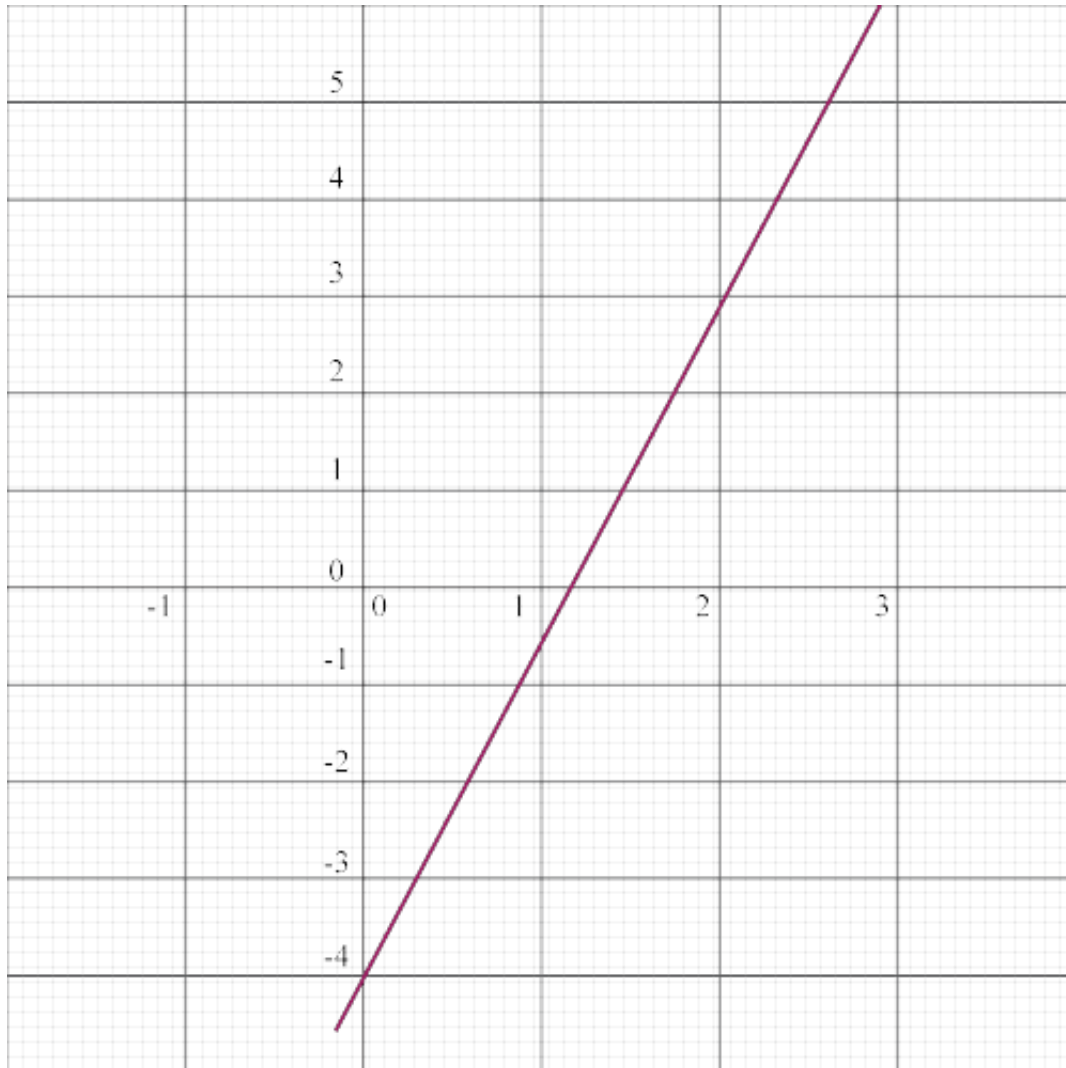
$x$	-3	-2	-1	0	1	2	3
$y$	$-27/5$	$-8/5$	$-1/5$	0	$1/5$	$8/5$	$27/5$

d)

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

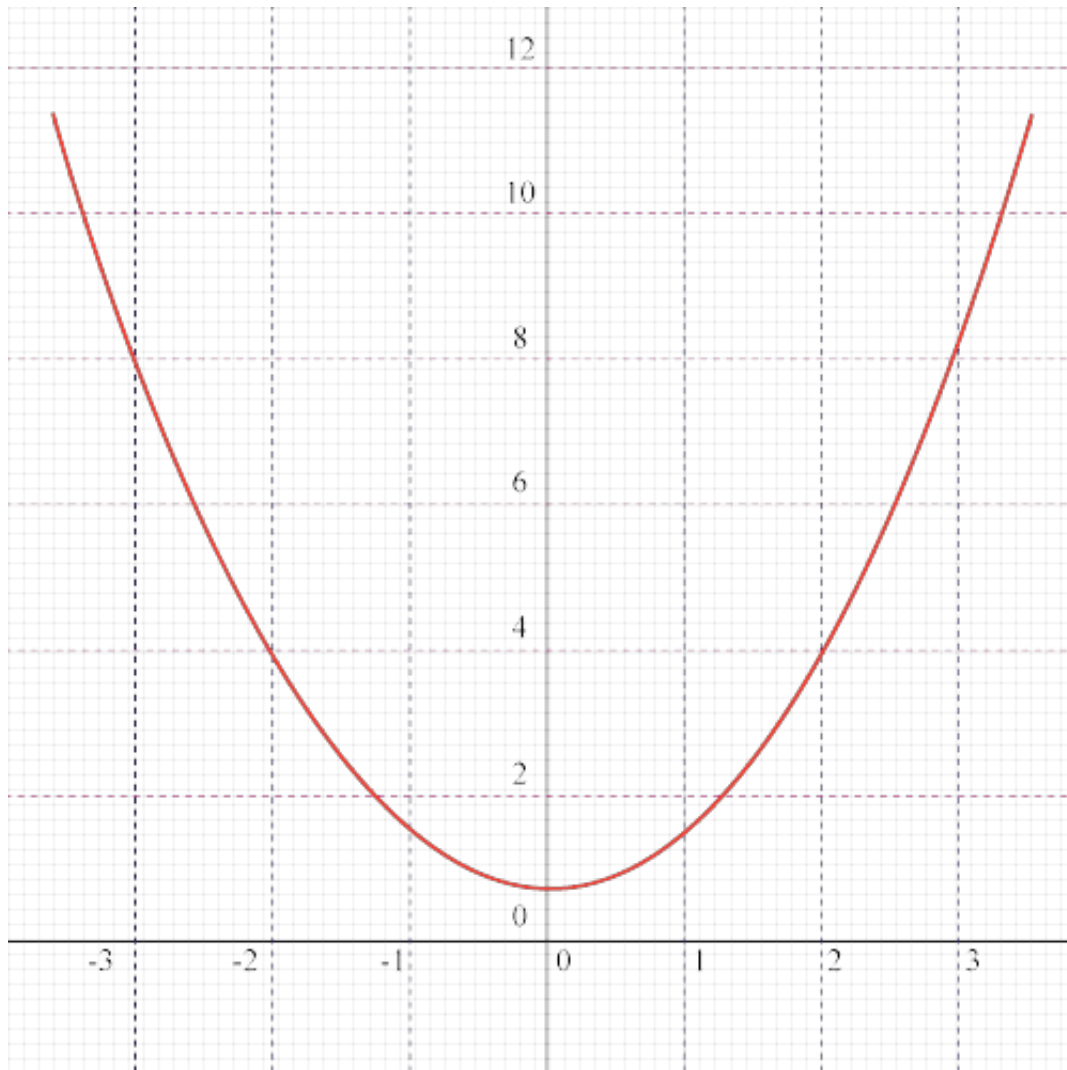
- c
- b
- d
- a

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?



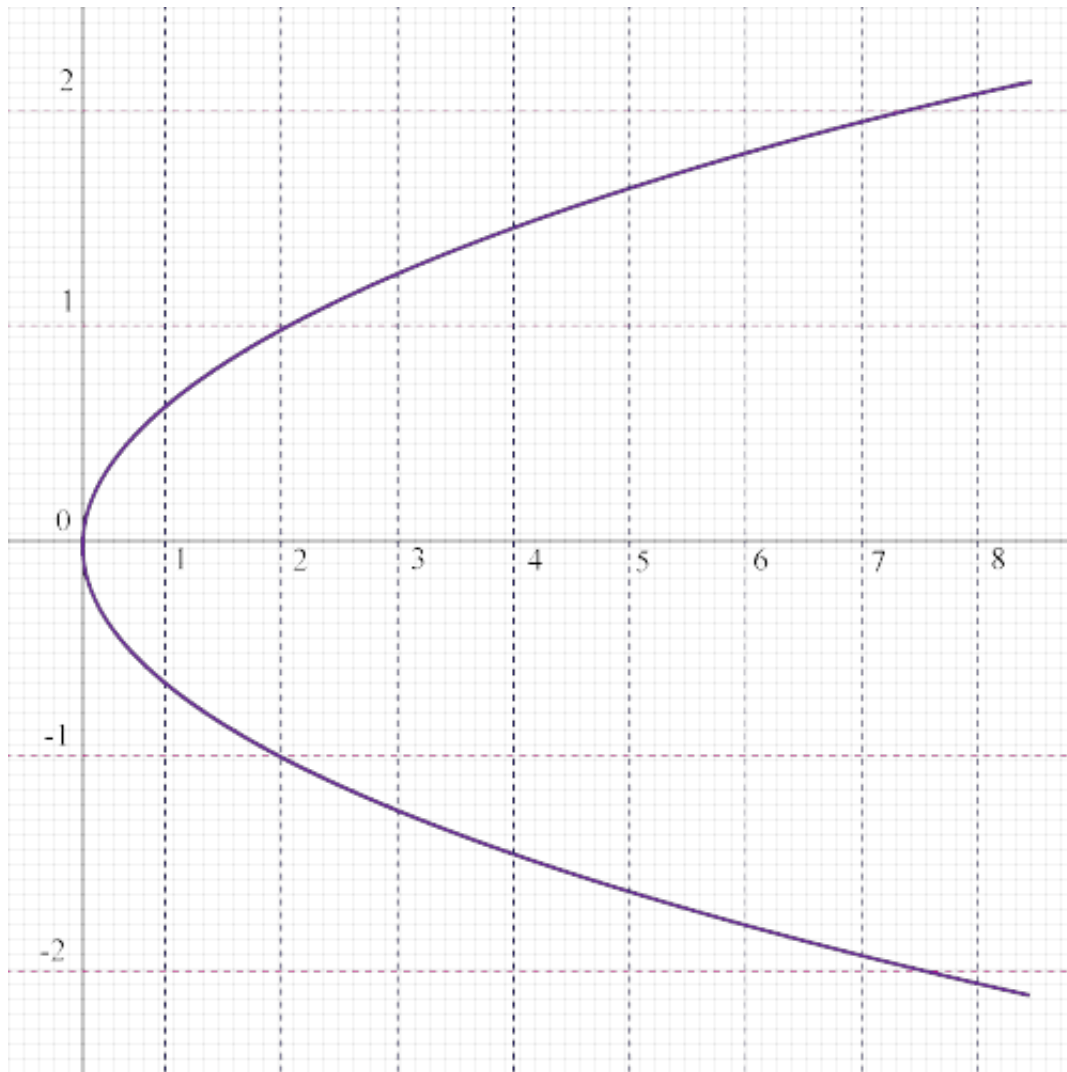
- Function Range:  $\{-4, -1, 2, 5\}$
- Unpredictable Range:  $\{0, 1, 2, 5\}$
- Not a function Range:  $\{-4, -1, 2, 5\}$
- Data inadequate Range:  $\{0, 1, 2, 3\}$

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?



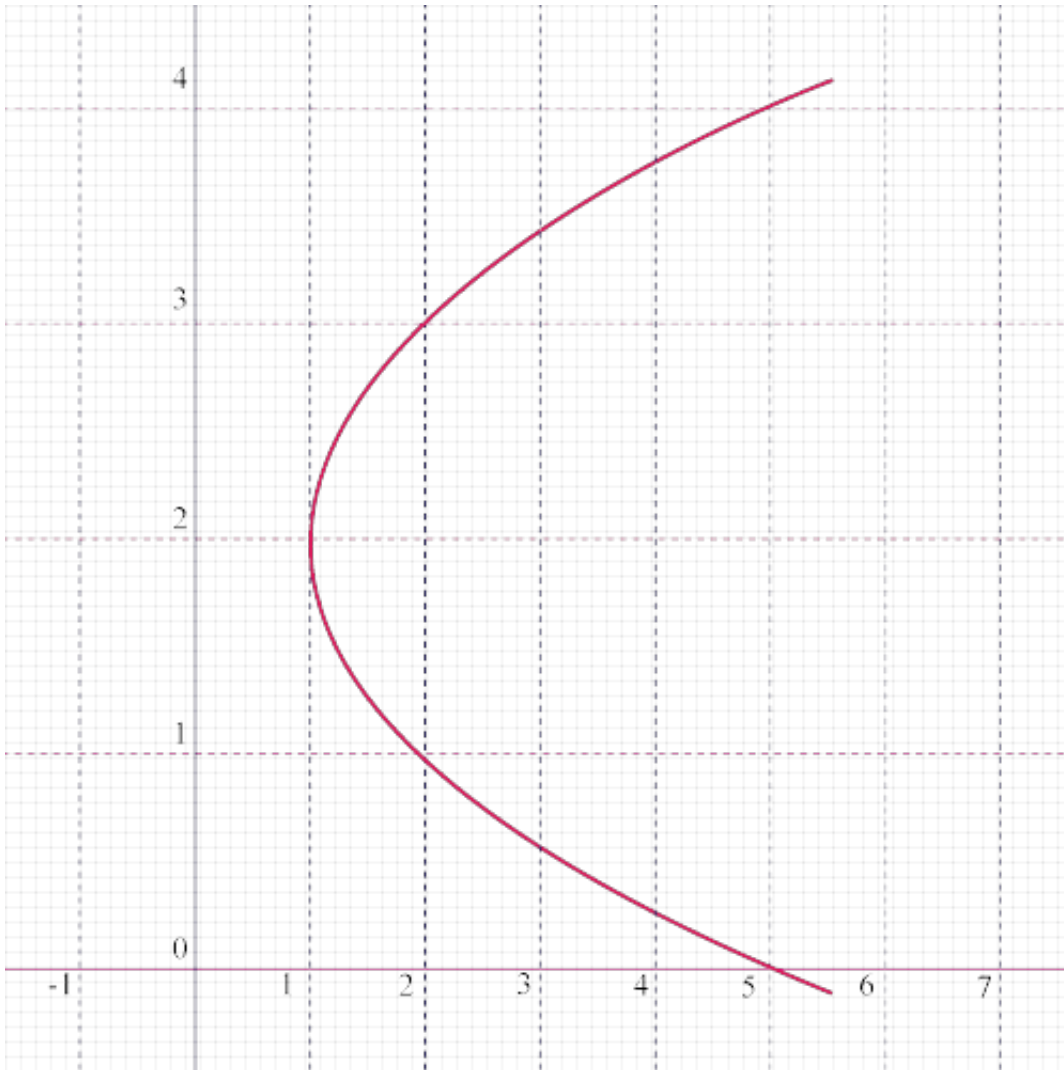
- Not a linear function Range: {10, 2, 1}
- Linear function Range: {10, 2, 1}
- Unpredictable Range: {10, 2, 1, 8}
- Data inadequate Range: {10, 2, 1, 3}

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



- Function
- Data inadequate
- Unpredictable
- Not a function

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



- Function
- Data inadequate
- Not a function
- Unpredictable

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

$x$	1	-3	-2	2	3
$y$					

- Not a function
- Function
- Unpredictable
- Data inadequate