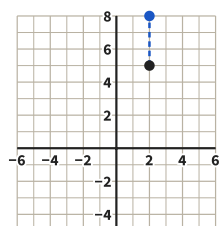


Graph Transformations: Where Does the Point Go?

ANSWERS

1

(2, 5) is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(x) + 3$?
outside the bracket changes y ; inside changes x , the opposite way

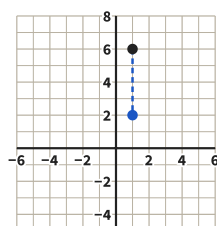


x	y
before	
2	5
after	
2	8

Answer (2, 8)

2

(1, 6) is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(x) - 4$?
outside the bracket changes y ; inside changes x , the opposite way

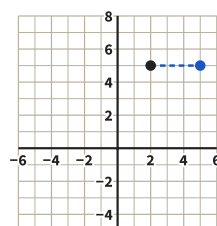


x	y
before	
1	6
after	
1	2

Answer (1, 2)

3

(2, 5) is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(x - 3)$?
outside the bracket changes y ; inside changes x , the opposite way

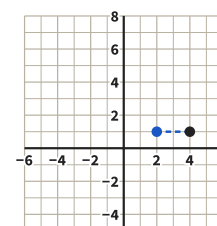


x	y
before	
2	5
after	
5	5

Answer (5, 5)

4

(4, 1) is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(x + 2)$?
outside the bracket changes y ; inside changes x , the opposite way

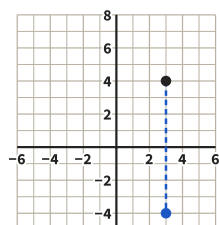


x	y
before	
4	1
after	
2	1

Answer (2, 1)

5

(3, 4) is on the graph of $y = f(x)$.
Where is it on the graph of $y = -f(x)$?
outside the bracket changes y ; inside changes x , the opposite way

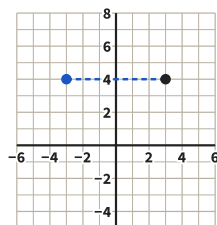


x	y
before	
3	4
after	
3	-4

Answer (3, -4)

6

(3, 4) is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(-x)$?
outside the bracket changes y ; inside changes x , the opposite way



x	y
before	
3	4
after	
-3	4

Answer (-3, 4)

7

(4, 1) is on the graph of $y = f(x)$.
After a transformation it is at (4, 6).
Write the equation of the new graph.

x stays the same, y goes up 5

Answer $y = f(x) + 5$

8

$y = f(x)$ has a minimum point at (3, -2).
Write down the minimum point of $y = f(x - 4) + 1$.

right 4, then up 1

Answer (7, -1)

Graph Transformations: Where Does the Point Go? further practice

ANSWERS

9

(3, -2) is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(x + 5)$?

inside the bracket: 5 left

Answer (-2, -2)

10

(-1, 4) is on the graph of $y = f(x)$.
Where is it on the graph of $y = -f(x) + 2$?

y changes sign, then add 2

Answer (-1, -2)

11

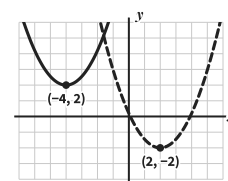
$y = f(x)$ has a maximum point at (2, 5).
The graph of $y = f(x + a) + b$ has its maximum point at (-1, 8).
Find a and b .

3 left and 3 up: $f(x + 3) + 3$

Answer $a = 3, b = 3$

12

The solid curve is $y = f(x)$.
The dashed curve is a translation of it.
Write the equation of the dashed curve.



lowest point: 6 right and 4 down

Answer $y = f(x - 6) - 4$

13

On Monday the temperature was $T = f(t)$ °C, t hours after midnight.
The highest was 18 °C at 2 pm.
On Tuesday it was $T = f(t - 2) - 3$ °C.
When was Tuesday's highest temperature, and what was it?

(14, 18) moves to (16, 15)

Answer 15 °C at 4 pm

14

The graph of $y = x^2$ is translated so that its turning point moves from (0, 0) to (-3, 5). Write the equation of the new graph in the form $y = x^2 + bx + c$.

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

Answer $y = x^2 + 6x + 14$

15

In a computer game a ramp is the curve $y = f(x)$. Its highest point is (6, 4). The game reflects the ramp in the y axis, then moves it 1 unit down. Write the equation of the new ramp and the coordinates of its highest point.

$f(-x)$, then subtract 1

Answer $y = f(-x) - 1, (-6, 3)$

16

(2, 7) is on the graph of $y = f(x)$.
Sam says that on the graph of $y = f(x + 3)$ it moves to (5, 7).
Is Sam right? Explain.

inside the bracket: 3 left, not right

check: $f(-1 + 3) = f(2) = 7$

Answer No, it moves to (-1, 7)