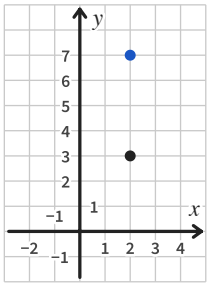
Graph transformations: where does the point go?

ANSWERS

1

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



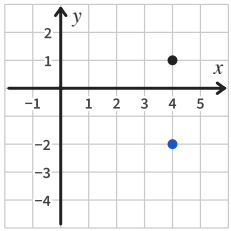
	x	y
before	2	3
after	2	7

Rule outside the bracket changes y

Answer (2, 7)

2

(4, 1) is on the graph of $y = f(x)$. Where is it on the graph of $y = f(x) - 3$?

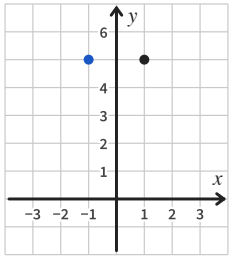


	x	y
before	4	1
after	4	−2

Answer (4, −2)

3 Notice the change!

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

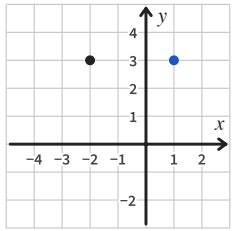


	x	y
before	1	5
after	−1	5

Answer (−1, 5)

4

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

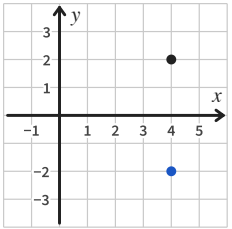


	x	y
before	−2	3
after	1	3

Answer (1, 3)

5 Notice the change!

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

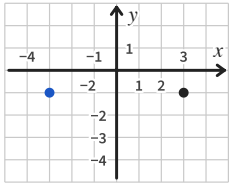


	x	y
before	4	2
after	4	−2

Answer (4, −2)

6

(3, −1) is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(-x)$?

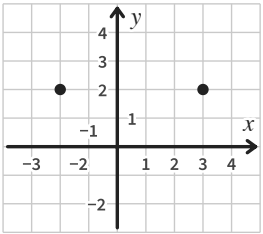


	x	y
before	3	−1
after	−3	−1

Answer (−3, −1)

7 Notice the change!

(3, 2) is on the graph of $y = f(x)$.
After a transformation it is at (−2, 2).
Write down the equation of the new graph.



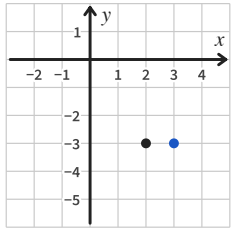
x changes 3 to −2: 5 left

y changes? no

New graph $y = f(x + 5)$

8

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



	x	y
before	2	−3
after	3	−3

Minimum point (3, −3)

Graph transformations: where does the point go? *further practice*

ANSWERS

9

$(-4, 2)$ is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(x) - 5$?

outside: $y - 5$

$2 - 5 = -3$

Answer $(-4, -3)$

10

$(0, 6)$ is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(x - 2)$?

inside: the opposite way, $x + 2$

$0 + 2 = 2$

Answer $(2, 6)$

11

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

outside: $y \times -1$

$-3 \times -1 = 3$

Answer $(5, 3)$

12

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

x changes sign, y stays

inside the bracket: $-x$

Answer $y = f(-x)$

13

$y = f(x)$ has a maximum point at $(-2, 5)$.
Write down the maximum point of $y = f(x + 4)$.

$+ 4$ inside: 4 left

$-2 - 4 = -6$, y stays 5

Answer $(-6, 5)$

14

$(6, 1)$ is on the graph of $y = f(x)$.
Jonah says that on the graph of $y = f(x - 2)$ it is at $(4, 1)$.
Explain his mistake and give the right point.

inside goes the opposite way: 2 right

$6 + 2 = 8$

Answer $(8, 1)$

15

$(3, 2)$ is on the graph of $y = f(x)$.
Where is it on the graph of $y = f(x - 1) + 4$?

inside: $x + 1 = 4$

outside: $y + 4 = 6$

Answer $(4, 6)$

16

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

$y \times -1$: $-5 \rightarrow 5$

then $+ 3$: $5 + 3 = 8$

Answer $(-2, 8)$