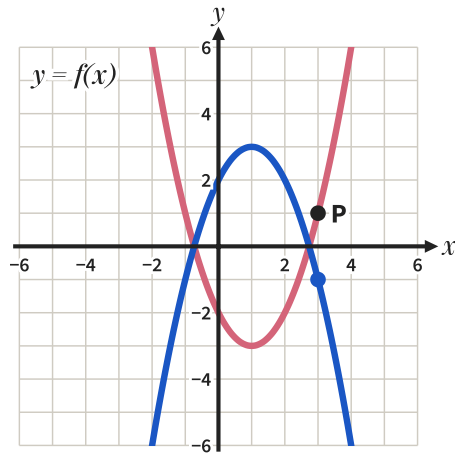


Graph Transformations: Reflections

ANSWERS

1

Sketch $y = -f(x)$.



The graph is reflected in the

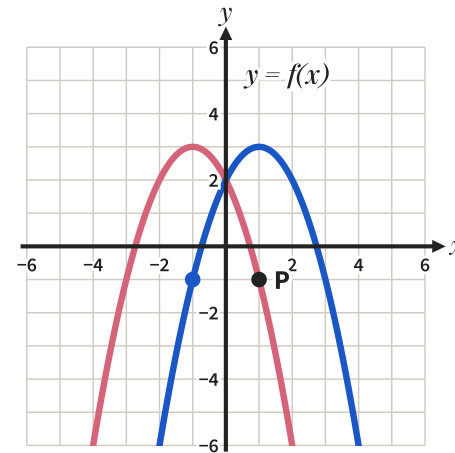
x -axis

y -axis

P goes to (3 , -1)

2

Sketch $y = f(-x)$.



The graph is reflected in the

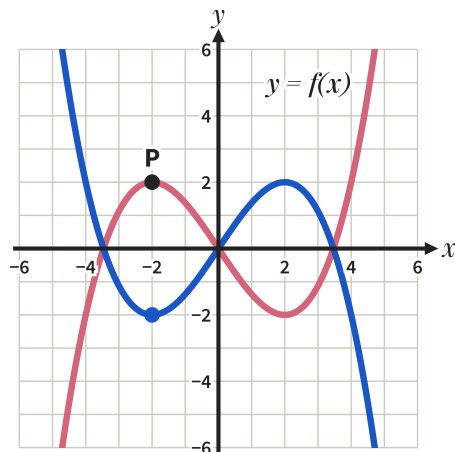
x -axis

y -axis

P goes to (-1 , -1)

3

Sketch $y = -f(x)$.



The graph is reflected in the

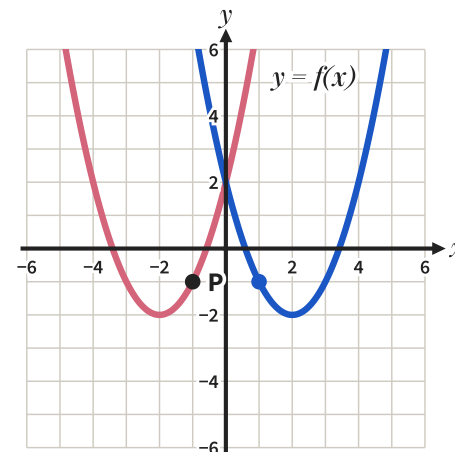
x -axis

y -axis

P goes to (-2 , -2)

4

Sketch $y = f(-x)$.



The graph is reflected in the

x -axis

y -axis

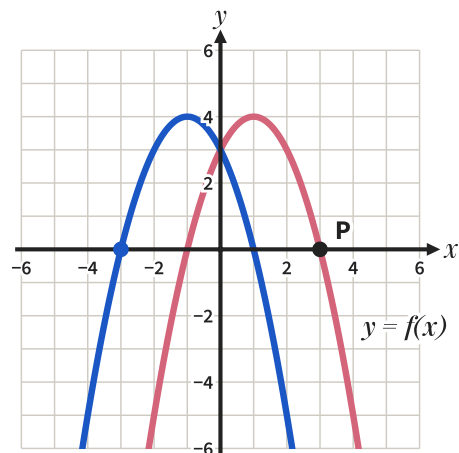
P goes to (1 , -1)

Graph Transformations: Reflections

ANSWERS

5

Sketch $y = f(-x)$.



The graph is reflected in the

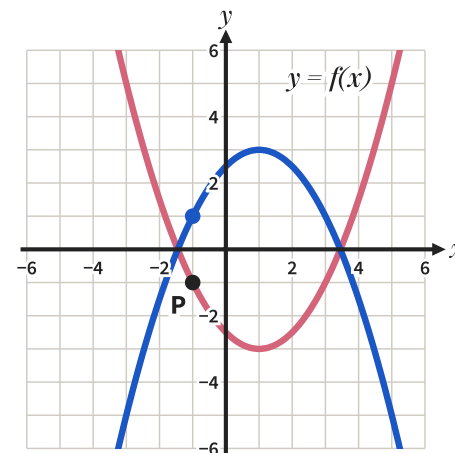
x -axis

y -axis

P goes to (,)

6

Sketch $y = -f(x)$.



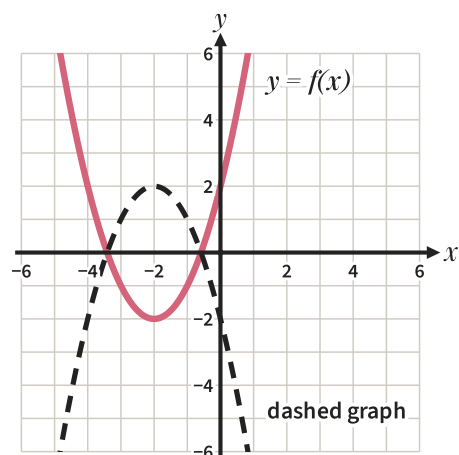
The graph is reflected in the

x -axis

P goes to (,)

7

The dashed graph is $y = f(x)$ reflected. Write its equation.



The graph is reflected in the

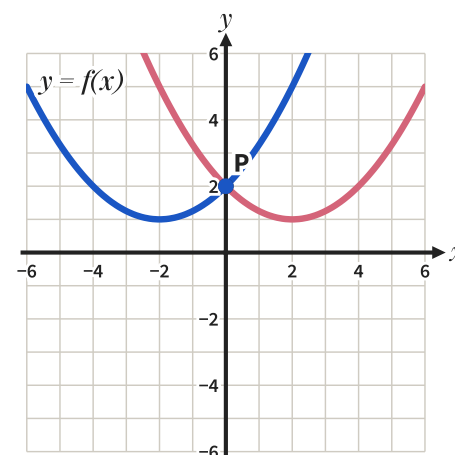
x -axis

Its equation

$y = -f(x)$

8

Sketch $y = f(-x)$.



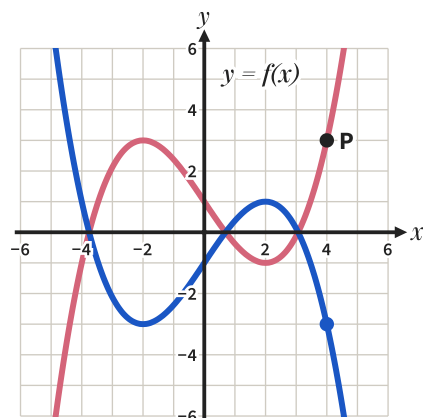
P goes to (,)

Graph Transformations: Reflections *further practice*

ANSWERS

9

Sketch $y = -f(x)$.



P goes to (,)

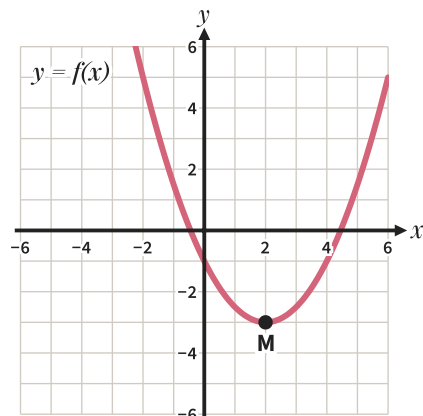
10

P(3, -5) is a point on the graph of $y = f(x)$. Where does P go on each new graph?

Graph	P goes to
$y = -f(x)$	(3 , 5)
$y = f(-x)$	(-3 , -5)
$y = -f(-x)$	(-3 , 5)

11

The graph of $y = f(x)$ has a minimum point at M(2, -3). Write the turning point of each new graph. Is it a maximum or a minimum?



Graph	Turning point, maximum or minimum
$y = -f(x)$	(2 , 3) maximum
$y = f(-x)$	(-2 , -3) minimum

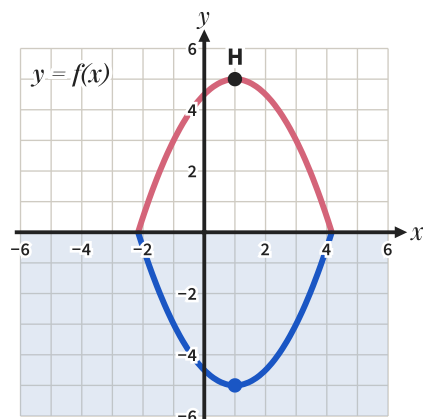
12

$f(x) = x^2 - 6x + 5$. Write the equation of each new graph without f .

Graph	Equation
$y = f(-x)$	<u>$y = x^2 + 6x + 5$</u>
$y = -f(x)$	<u>$y = -x^2 + 6x - 5$</u>

13

A ball flies over a still pond along $y = f(x)$. The water is the x -axis. Sketch its reflection in the water. H is the highest point.



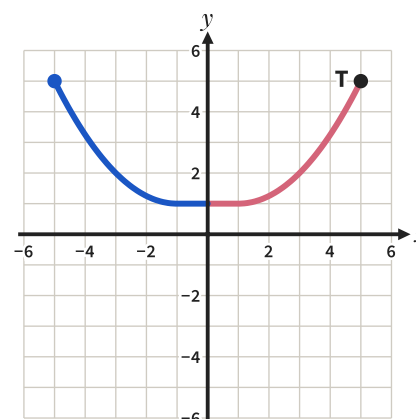
Equation of the reflection

$$y = -f(x)$$

H goes to (,)

14

The right side of a skate ramp is $y = f(x)$ for $0 \leq x \leq 5$. The left side is its reflection in the y -axis. Sketch it. T is the top.



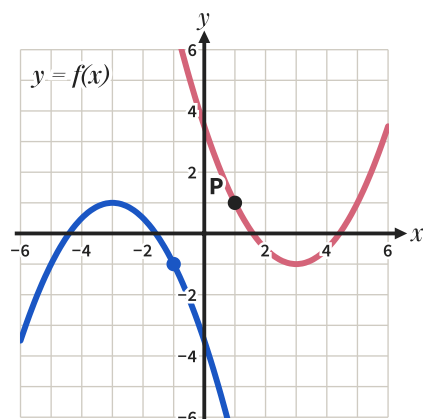
Equation of the left side

$$y = f(-x)$$

T goes to (,)

15

Sketch $y = -f(-x)$.

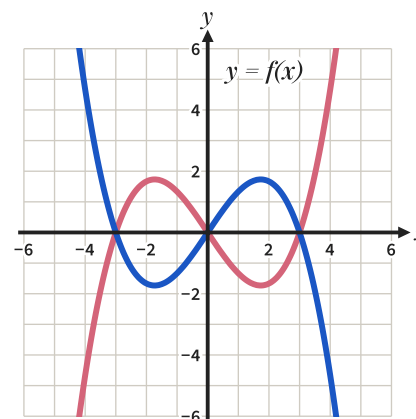


Reflect in one axis, then the other.

P goes to (,)

16

Ali says $y = -f(x)$ and $y = f(-x)$ are never the same graph. Here $y = f(x) = \frac{x^3 - 9x}{6}$. Sketch both. Is Ali right? Explain.



No. Both make the same graph:

$$f(-x) = \frac{9x - x^3}{6}$$

$$\text{and } -f(x) = \frac{9x - x^3}{6} \text{ too}$$