

Lesson 4: Inverse Reflections

Question #1

Reference Q.11539

The function $y = f(x)$ is transformed to the function below. Given that there are invariant points, describe the location of these points.

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

Question #2

Reference Q.11541

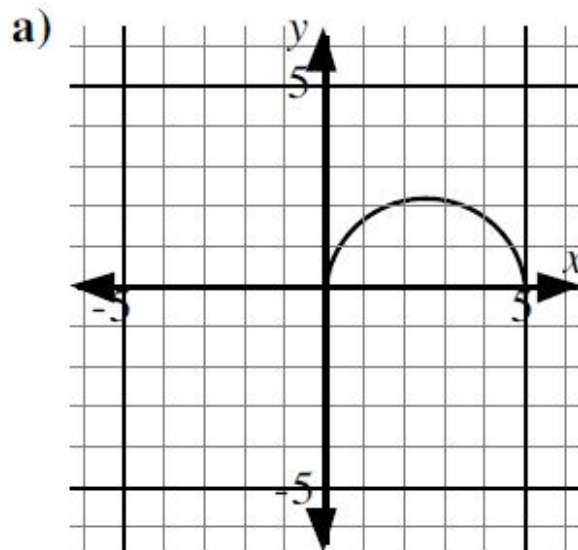
The point (x, y) lies on the graph of the function $y = f(x)$. State the coordinates of the image of (x, y) under the following transformations:

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

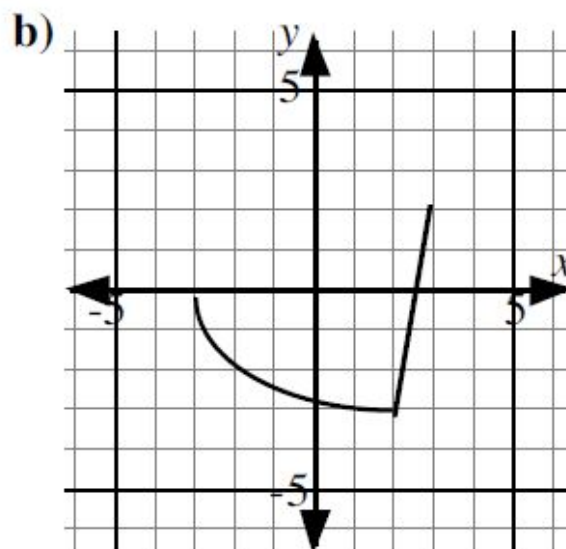
Question #3

Reference Q.11543

The graph of $y = f(x)$ is shown. Sketch the graph of $x = f(-y)$.



a.

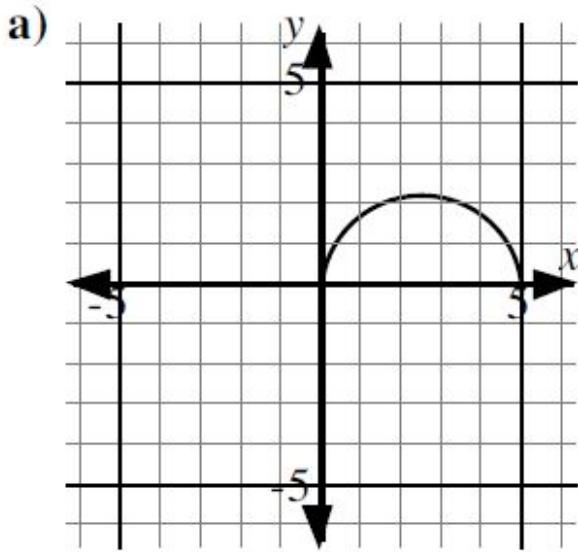


b.

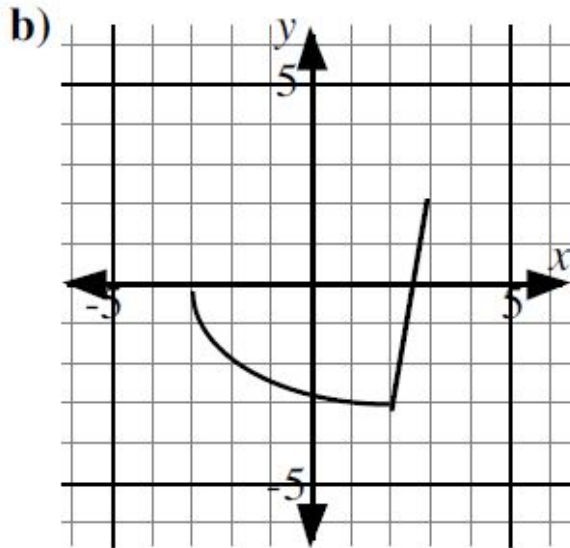
🔗 **Question #4**

Reference Q.11538

The graph of $y = f(x)$ is shown. Sketch the graph of $x = f(y)$.



a.

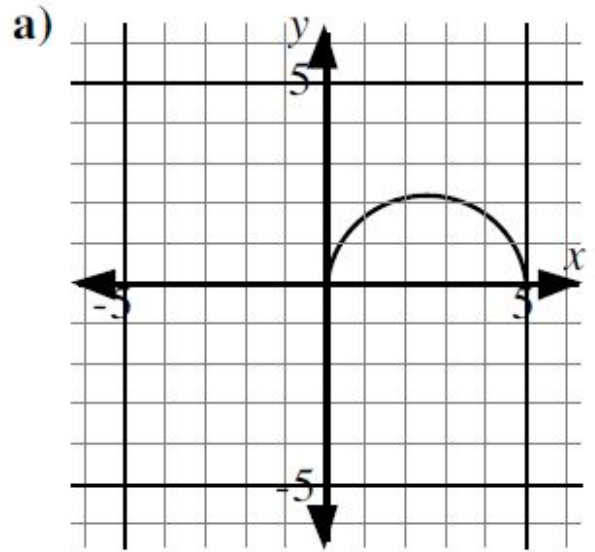


b.

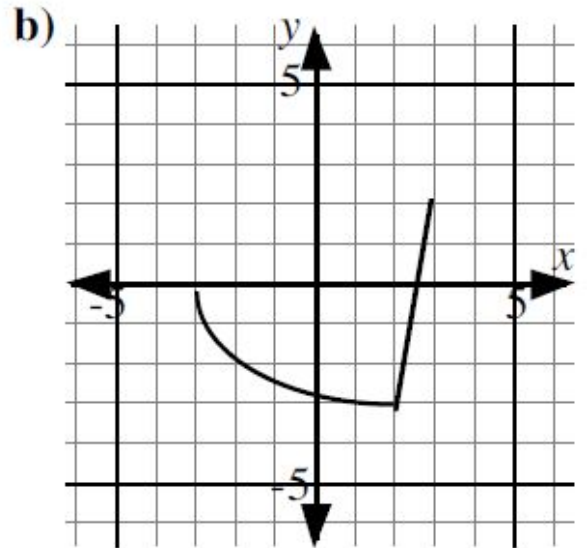
🔗 **Question #5**

Reference Q.11544

The graph of $y = f(x)$ is shown. Sketch the graph of $x = -f(y)$.



a.

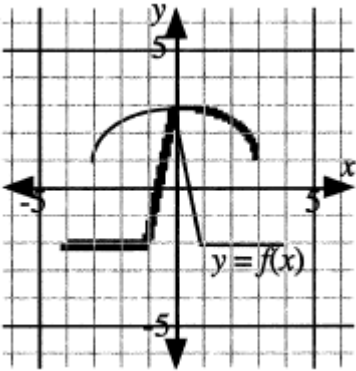


b.

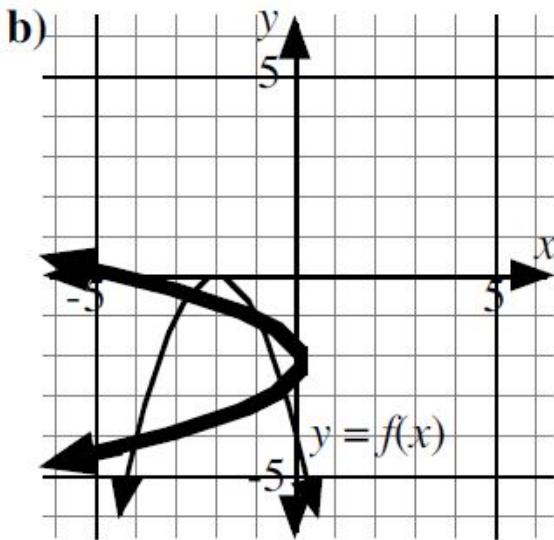
Question #6

Reference Q.11540

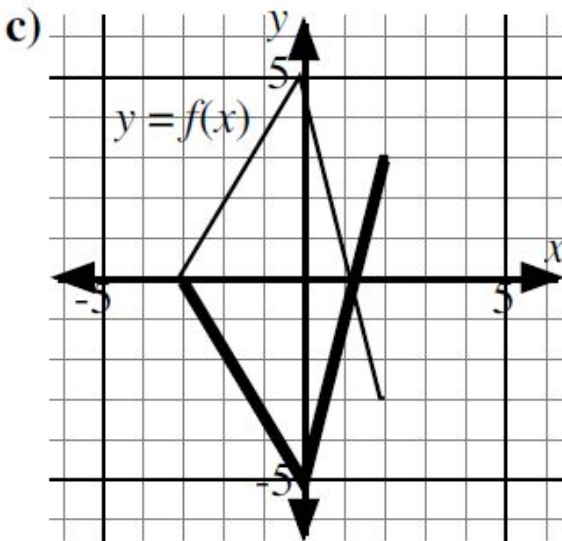
The graph drawn in the thick line is a transformation of the graph drawn in the thin line. Write an equation for each graph drawn in the thick line and state whether this graph represents a function.



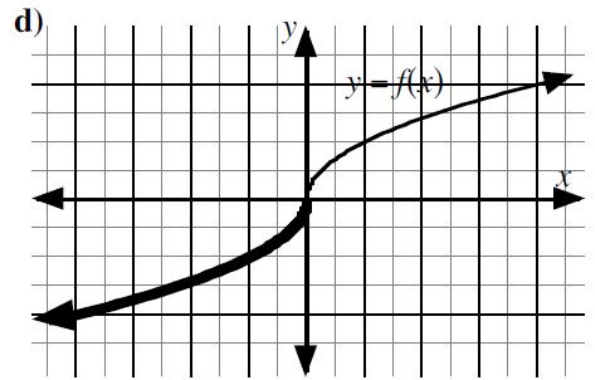
a.



b.



c.

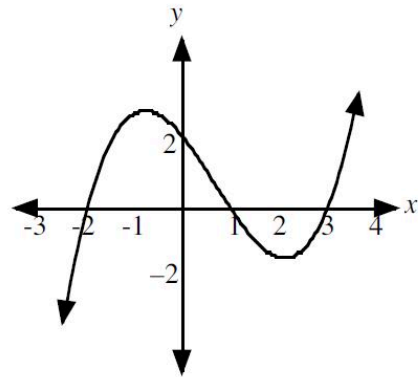


d.

Question #7

Reference Q.11548

A partial graph of $y = f(x)$ is shown.
The y -intercept and all the x -intercepts are integers.



On the graph of $x = -f(y)$, the y -intercept(s) is/are

- A. -2 only
- B. 2 only
- C. -2, 1, and 3
- D. -3, -1, and 2

Question #8

Reference Q.11554

Write the equation of the image of

- a. $y = \frac{1}{x}$ after a reflection in the line $y = x$
- b. $y = x^3 + x$ after a reflection in the y -axis
- c. $y = |x|$ after a reflection in the x -axis
- d. $y = \sqrt{x-2}$ after a reflection in the line $y = x$
- e. $y = x^2 + 1$ after a reflection in the y -axis
- f. $y = \cos x$ after a reflection in the x -axis

Question #9

Reference Q.11555

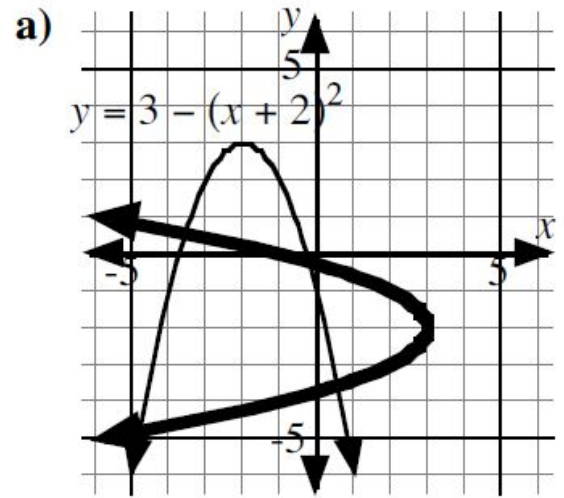
Describe how the graph of the second function compares to the graph of the first function.

- a. $y = 3x + 1$
 $y = -3x - 1$
- b. $y = 3x + 1$
 $y = -3x + 1$
- c. $y = 3x + 1$
 $x = 3y + 1$
- d. $y = 10^x$
 $y = 10^{-x}$
- e. $y = 10^x$
 $y = -10^x$
- f. $y = 4x^2$
 $y = \pm \frac{\sqrt{x}}{2}$

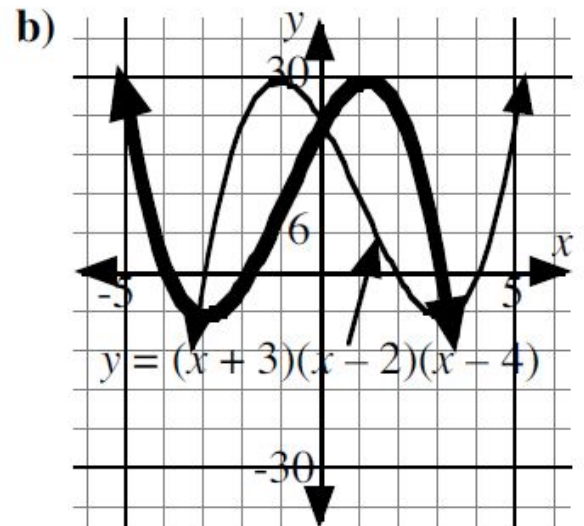
Question #10

Reference Q.11556

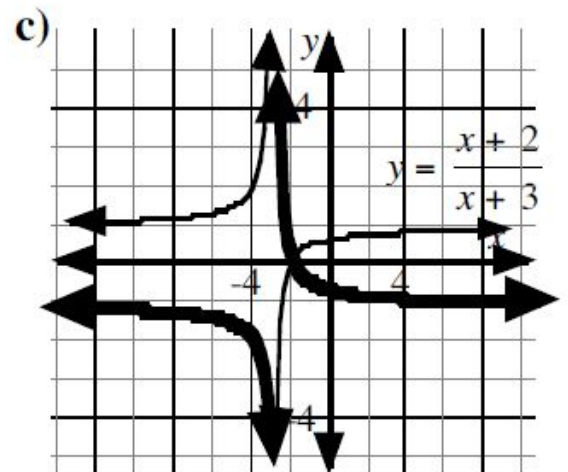
The graph drawn in the thick line is a transformation of the graph drawn in the thin line. Write an equation for each graph drawn in the thick line.



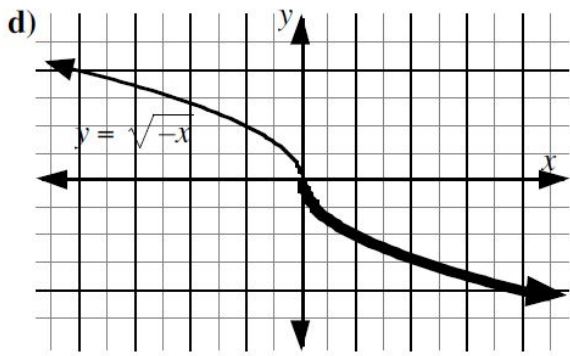
a.



b.



c.

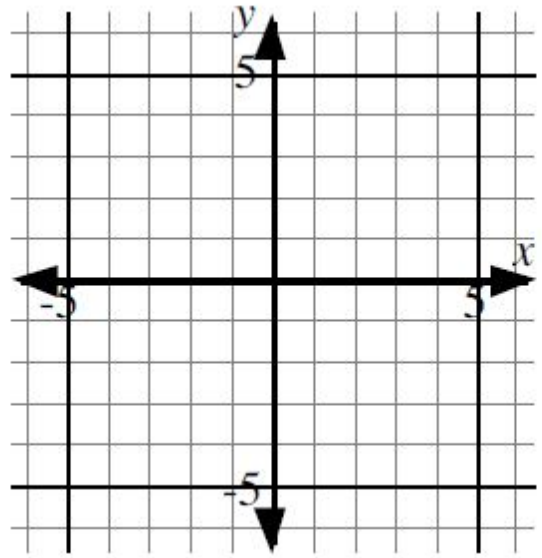


d.

🔗 **Question #11**

Reference Q.11557

a. Sketch the graph of $f(x) = (x - 1)^2$.



b. Write the equation for:

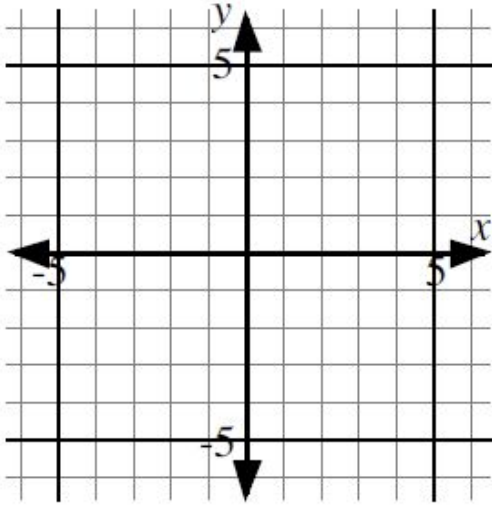
iii. $y = -f(x)$

iv. $y = f(-x)$

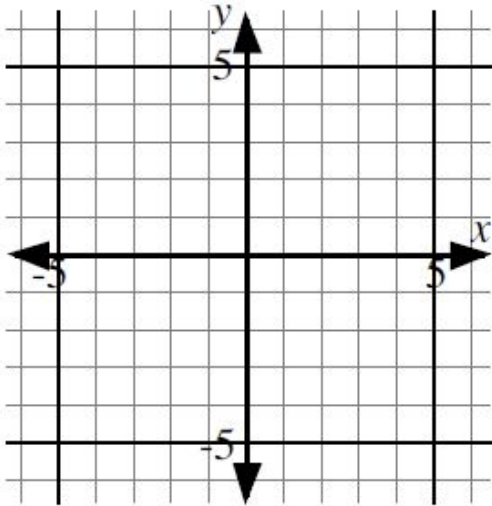
v. $x = f(y)$

c. Sketch each graph in b) and state whether the graph represents a function.

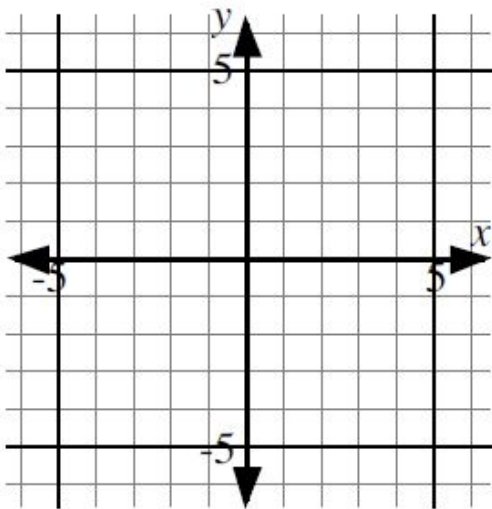
iv. $y = -f(x)$



v. $y = f(-x)$



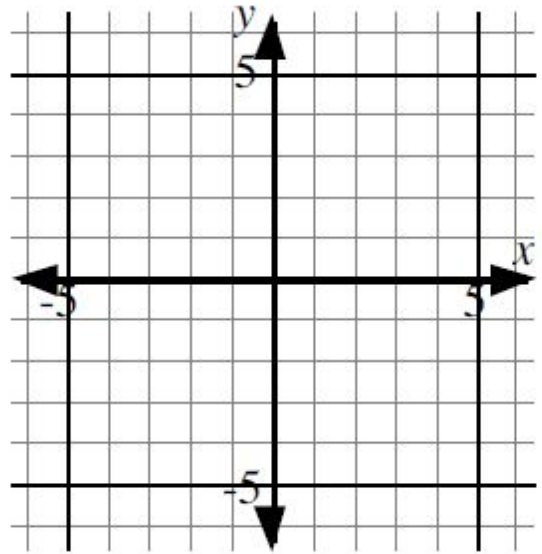
vi. $x = f(y)$



Question #12

Reference Q.11558

a. Sketch the graph of the semi-circle $f(x) = \sqrt{16 - x^2}$.



b. Write the equation for:

iii. $y = -f(x)$

iv. $y = f(-x)$

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

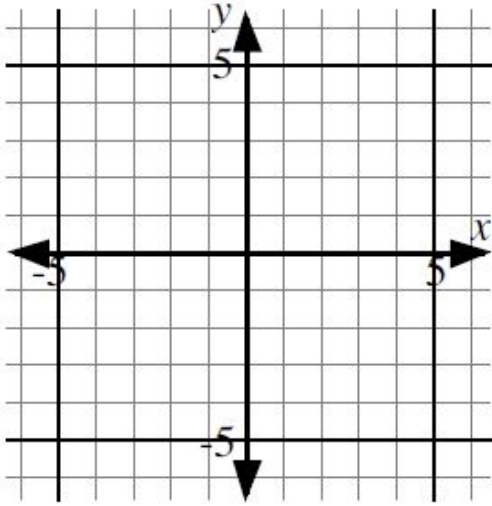
vi. $x = f(y)$

vii. $x = -f(y)$

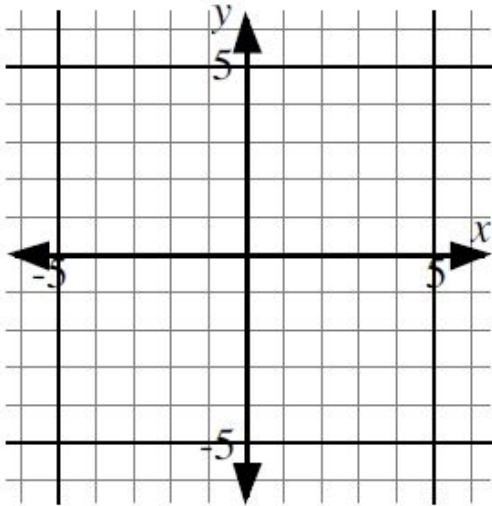
viii. $x = f(-y)$

c. Sketch each graph in b) and state whether the graph represents a function.

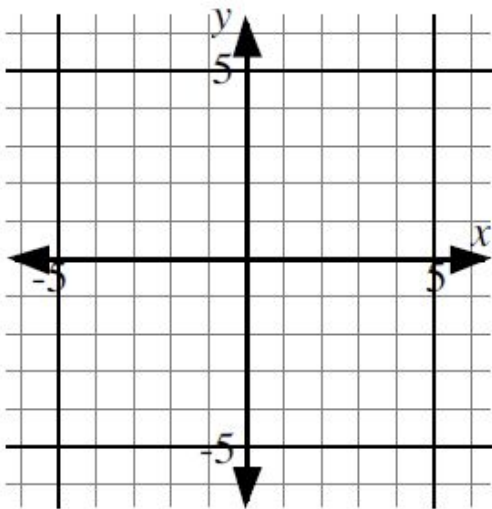
iv. $y = -f(x)$



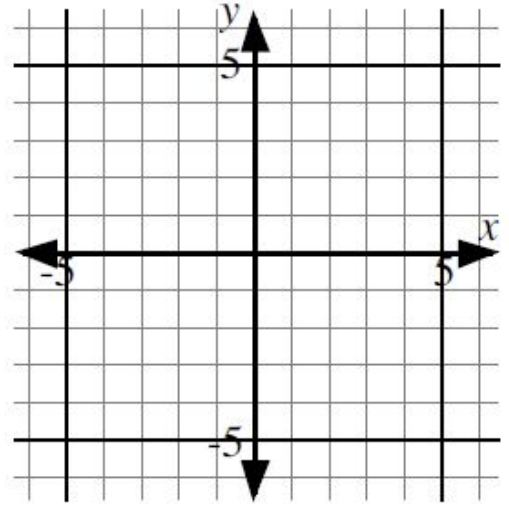
v. $y = f(-x)$



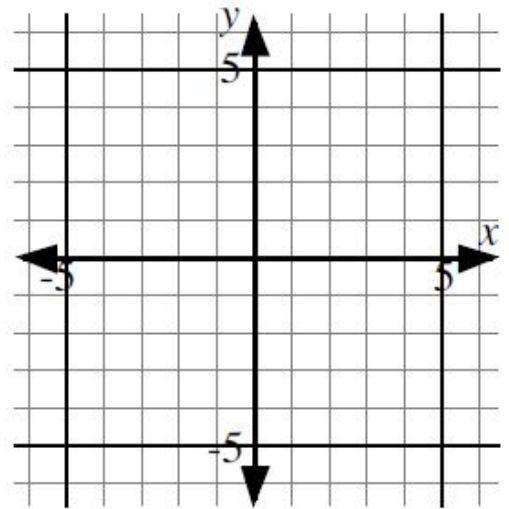
vi. $y = -f(-x)$



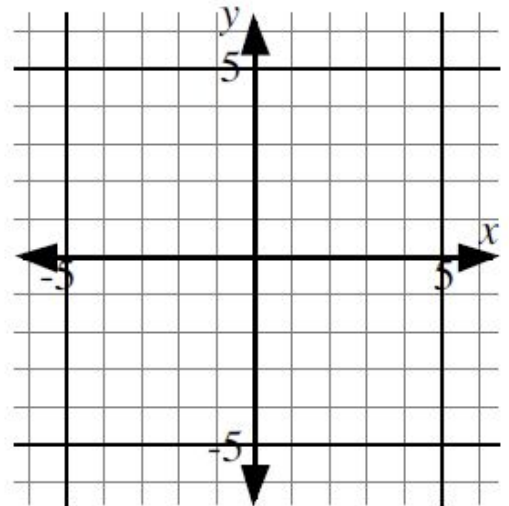
vii. $x = f(y)$



viii. $x = -f(y)$



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



d. State the domain and range of each graph in c).

Question	Domain	Range
i) $y = -f(x)$		
ii) $y = f(-x)$		
iii) $y = -f(-x)$		
iv) $x = f(y)$		
v) $x = -f(y)$		
vi) $x = f(-y)$		

Question #13

Reference Q.11559

The graph of $y = 2x^5$ is transformed to the graph of $y = -2x^5$. Three statements are made about the transformed graph.

- i) It is a reflection of the original graph in the x -axis.
- ii) It is a reflection of the original graph in the y -axis.
- iii) It is a reflection of the original graph in the line $y = x$.

How many of the above statements are **false**?

- A. 0
- B. 1
- C. 2
- D. 3

Question #14

Reference Q.11560

How could the graph of $y = 2x^3 + 1$ be used to graph $y = -2x^3 + 1$?

- A. Translate the graph of $y = 2x^3 + 1$ vertically.
- B. Reflect the graph of $y = 2x^3 + 1$ in the line $y = x$.
- C. Reflect the graph of $y = 2x^3 + 1$ in the x -axis.
- D. Reflect the graph of $y = 2x^3 + 1$ in the y -axis.