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QUESTION 1

Choose the correct answer.

Let f be the function whose inverse function is given by $f^{-1}(x) = \frac{2}{x^2+1}, \ x \leq 0$. The correct expression for f is:

- $f(x) = \sqrt{\frac{2}{x} - 1}$
- $f(x) = -\sqrt{\frac{2}{x} + 1}$
- $f(x) = \sqrt{\frac{2}{x} + 1}$
- $f(x) = -\sqrt{\frac{2}{x} - 1}$ ✓

QUESTION 2

Choose the correct answer.

Given the one-to-one function f with its inverse function f^{-1}, A is the point on the graph of f with abscissa a. Similarly, B is the point on the graph of f^{-1} with ordinate $f^{-1}(f(a))$, and M is the midpoint of the segment $[AB]$.

Which of the following is correct?

- ◉ M belongs to the line $y = x$, and the coordinates of M are $\left(\frac{a + f(a)}{2}, \frac{a + f(a)}{2}\right)$. ✓

- M belongs to the line $y = ax$, and the coordinates of

M

are

$\left(\frac{a}{2}, \frac{f^{-1}(a)}{2}\right)$

.

M

belongs to the line

$y = a$

, and the coordinates of

M

are

$\left(\frac{a + f^{-1}(a)}{2}, \frac{a + f^{-1}(a)}{2}\right)$

.

M

belongs to the line

$y = -x$

, and the coordinates of

M

are

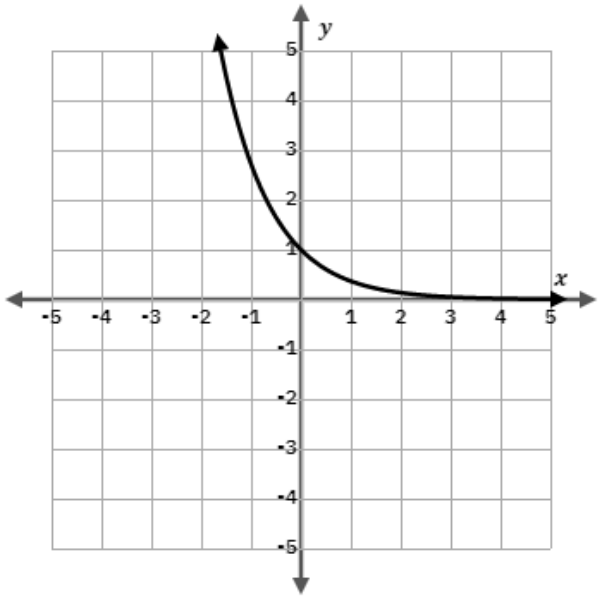
$\left(\frac{a + f^{-1}(a)}{2}, \frac{a + f^{-1}(a)}{2}\right)$

.

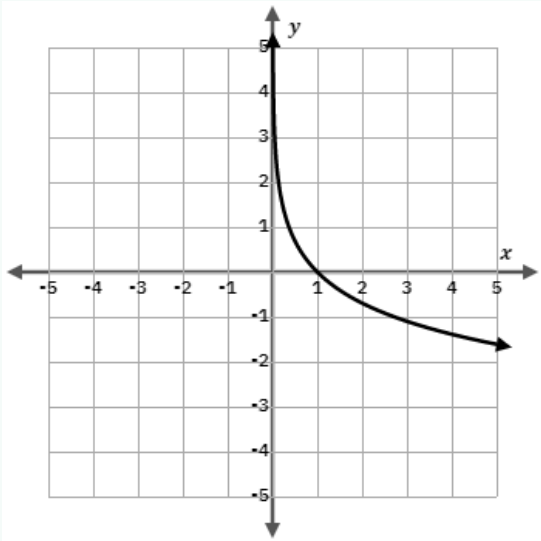
QUESTION 3

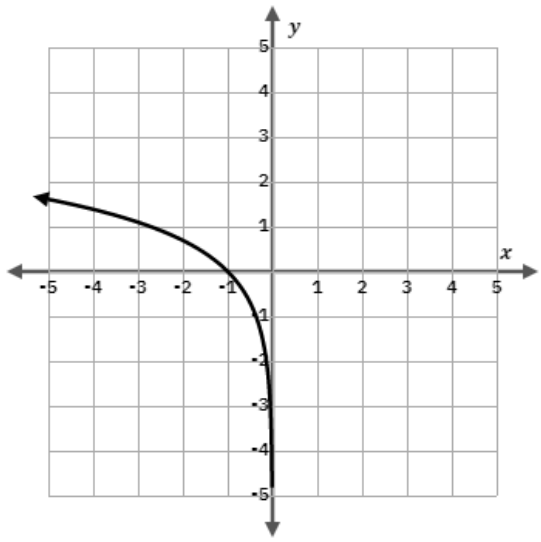
Choose the correct answer.

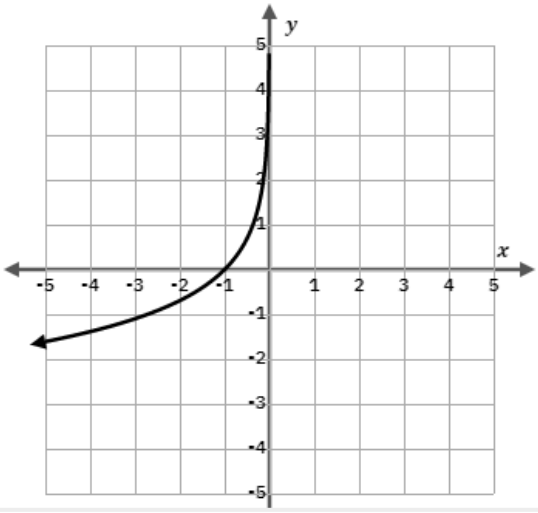
The graph of the function $f(x)$ is shown.

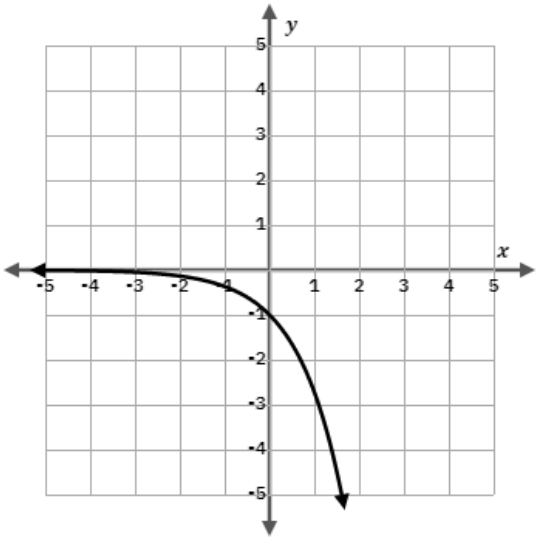


Which graph represents the inverse of the function $f(x)$?









QUESTION 4

Choose the correct answer.

Find the inverse of the function

$f(x) = (x-2)^3 - 3$

.

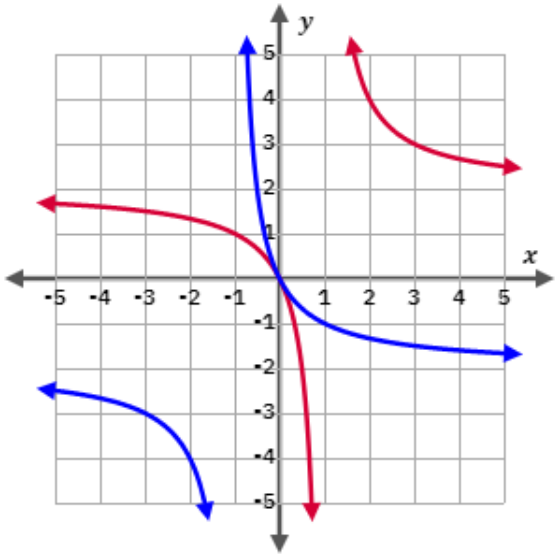
- ◉ $f^{-1}(x) = \sqrt[3]{x+3} + 2$ ✓
- ○ $f^{-1}(x) = 3\sqrt[3]{x} - 2$

$f^{-1}(x) = \sqrt[3]{x+3} - 2$

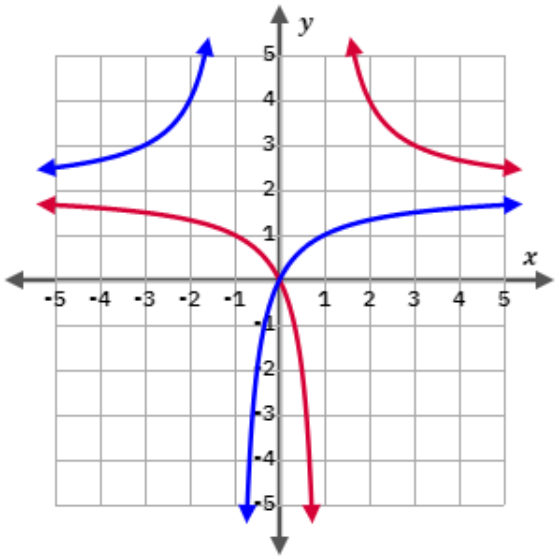
$f^{-1}(x) = \sqrt[3]{x-3} - 2$

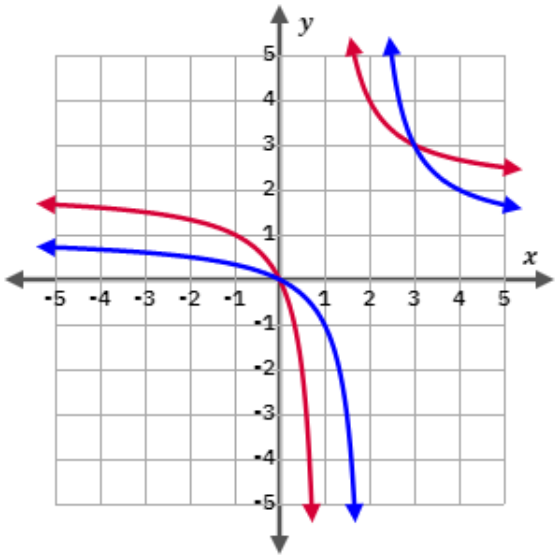
QUESTION 5

Which graph represents a function $f(x)$ and its inverse $g(x)$?









QUESTION 6

Choose the correct answer.

A teacher used the formula

$$y = \frac{4}{5}x + 20$$

in a math class to improve the test marks.
What formula used to calculate the test mark produces a mark of 64? What is this test mark?

- $y = \frac{5}{4}x - 30$; test mark = 50.
- $y = \frac{5}{4}x - 40$; test mark = 40.
- $y = \frac{5}{4}x - 20$; test mark = 60.
- ◉ $y = \frac{5}{4}x - 25$; test mark = 55. ✓

QUESTION 7

The price of a TV set in a store was discounted by 30% during a summer sale. But after that, due to hyperinflation, the price of all items in the store increased by 30%. Which of the below is/are correct?

- ☐ If x is the original price, then the function representing the price after a 30% discount is

$f(x) = 0.3x$

.

- [x] Decreasing by 30% and then increasing by 30% are not inverse processes. ✓

- [ ] The final price of the TV set will increase by 9% from its original value.

- [ ] The final price of the TV set will return to its original value since decreasing by 30% and increasing by 30% are inverse processes.

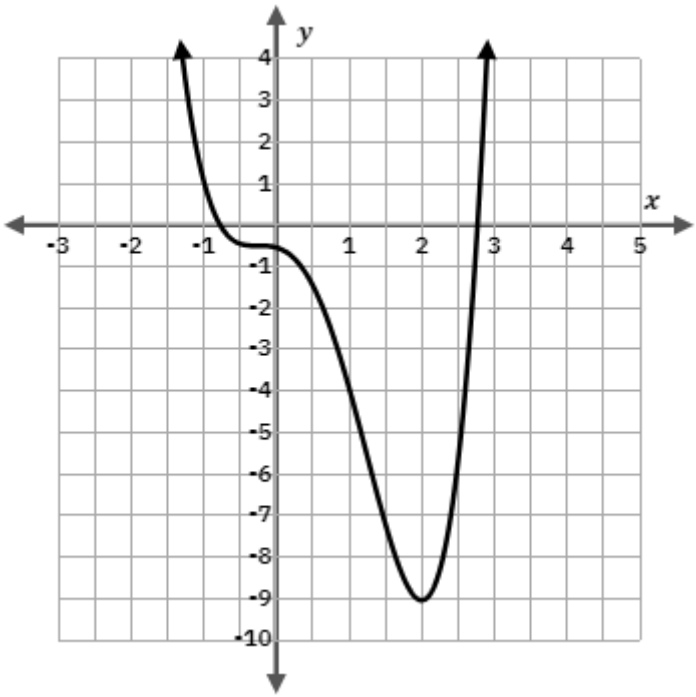
- [x] The final price of the TV set will decrease by 9% from its original value. ✓

- [ ] If x is the original price, then the inverse of the function representing the price after a 30% discount is $f^{-1}(x) = 0.3x$

.

QUESTION 8

The graph shown is of a function that is not one-to-one. What restrictions do we have to put on the domain so that the resulting function will be one-to-one?



- [ ] $x \leq 2.5$
- [ ] $x \geq 1.5$
- [x] $x \geq 2$ ✓
- [x] $x \leq -1$ ✓
- [ ] $x \geq 0$
- [ ] $x \geq 1$

QUESTION 9

Drag and drop to order the steps correctly.

Find the inverse of the function

$$f(x) = \frac{x+1}{x-2}$$

.

Steps	Reasons
$y = \frac{x+1}{x-2}$	Replace $f(x)$ with y .
$xy - 2y = x + 1$ ✓	Multiply each side by $(x-2)$, then apply the distributive property.
$xy - x = 2y + 1$	Isolate the x -terms.
$x(y-1) = 2y + 1$	Again, use the distributive property.
$x = \frac{2y+1}{y-1}$ ✓	Solve for x .
$f^{-1}(x) = \frac{2x+1}{x-1}$ ✓	Reverse the variables.

$f^{-1}(x) = \dfrac{2x-1}{x+1}$

$xy + 2y = x - 1$

$x = \dfrac{2y-1}{y+1}$

QUESTION 10

Drag and drop in the spaces provided to complete the solution.

Find the inverse of the function

$$f(x) = \frac{x+1}{x-1}$$

.

$f(x) = \dfrac{x+1}{x-1}$	Given function.
$y = \dfrac{x+1}{x-1}$ ✓	Substitute y for $f(x)$.
$xy - y = x + 1$	Cross multiply.
$xy - x = y + 1$ ✓	Isolate x -terms.
$x(y-1) = y + 1$	Use the distributive property.

$x = \frac{y+1}{y-1}$ ✓	Divide.
$f^{-1}(x) = f(x) = \frac{x+1}{x-1}$	Reverse the variables.

$x = \frac{y-1}{y+1}$

$x(y+1) = y-1$

QUESTION 11

Drag and drop your answers to correctly complete the sentence.

Find the inverse of the function

$f(x) = 8x^3$

, then find

$f^{-1}(64)$

.

The inverse

$f^{-1}(x) =$

$\frac{\sqrt[3]{x}}{2}$ ✓ , and

$f^{-1}(64) =$

2 ✓ .

4

8

$\frac{x^3}{2}$

$\sqrt[3]{\frac{x}{2}}$

$\frac{\sqrt[3]{x}}{8}$

16

QUESTION 12

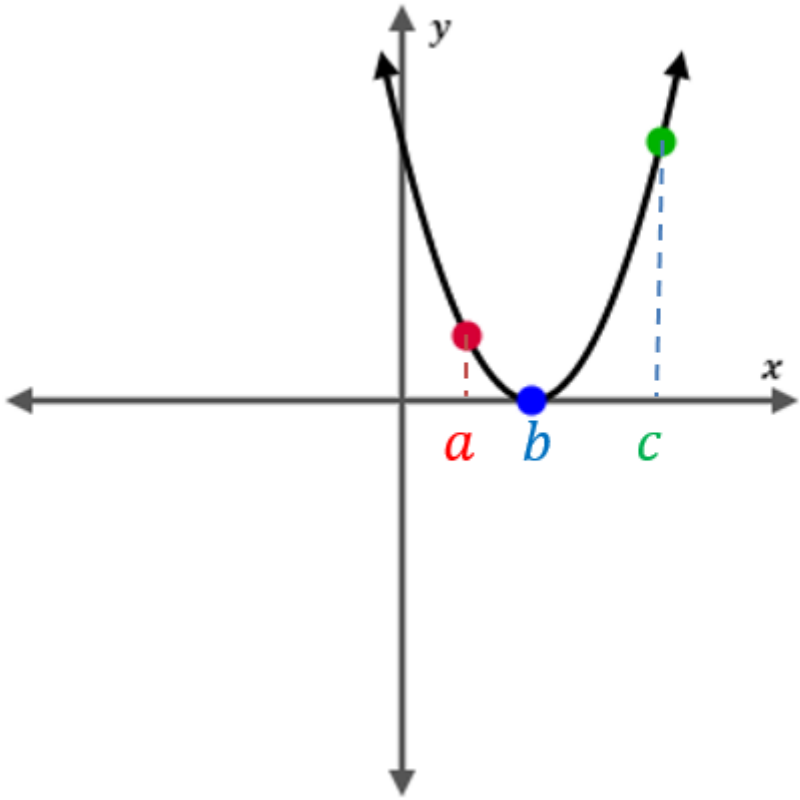
Drag and drop your answer to correctly complete the sentence.

The graphed function, if restricted to the domain $x \geq b$ ✓, becomes a one-to-one function.

$x \leq c$

$x \geq a$

$a \leq x \leq c$



QUESTION 13

Fill in the blank with the correct answer.

Given the function

$$f(x) = \frac{1}{2}(x-c)^2 + 1,\ x \le c$$

. The inverse of f is

$$f^{-1}(x) = a + b\sqrt{x-1}$$

, where

a, b, and c

are real constants.

Find the exact value of

$a + b - c$.

$a + b - c =$

$-\sqrt{2}$ ✓

QUESTION 14

Enter your answer in the space provided. (Use lowercase letters only)

The inverse of the function

$$f(x) = -\frac{1}{2}x + 5$$

is

$f^{-1}(x) =$

$-2x + 10$ ✓

QUESTION 15

What is true about the function

$f(x) = (x+2)^2$

?

- [ ] Restricted to the domain $x \leq 0$, the function has an inverse.

- [x] The inverse of $f(x)$, for $x \geq -2$, is $f^{-1}(x) = \sqrt{x} - 2$. ✓

- [ ] Restricted to the domain $x \leq -1$, the function has an inverse.

- [ ] The inverse of $f(x)$, for $x \geq -2$, is $f^{-1}(x) = \sqrt{x-2}$.

- [x] The function does not have an inverse. ✓

- [ ] The function has an inverse.

- [ ] The inverse of $f(x)$, for $x \geq -2$, is $f^{-1}(x) = -\sqrt{x} - 2$.

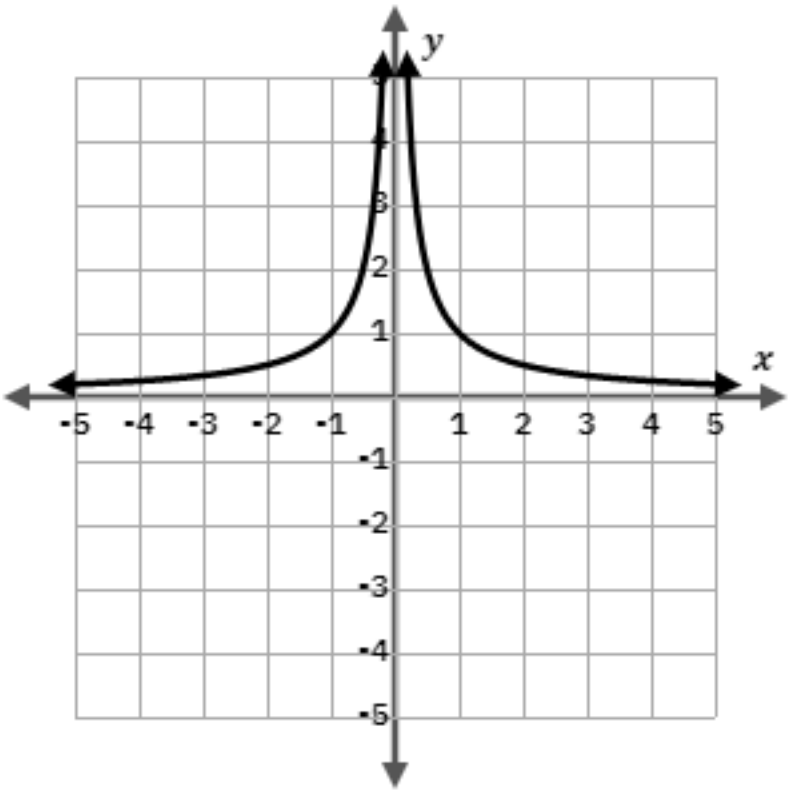
- [ ] The inverse of $f(x) = (x+2)^2$ is $f^{-1}(x) = \sqrt{x} - 2$.

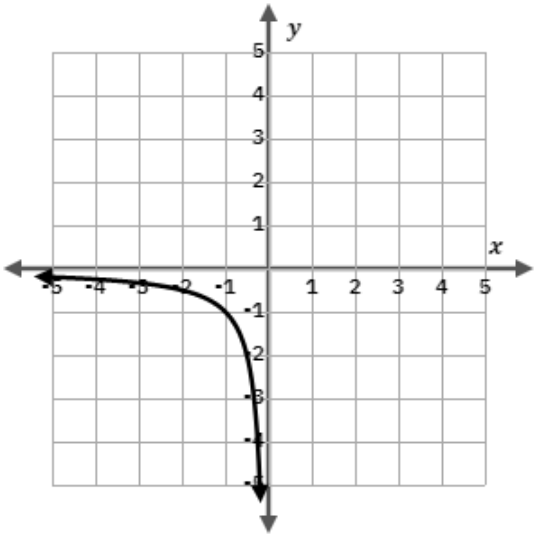
QUESTION 16

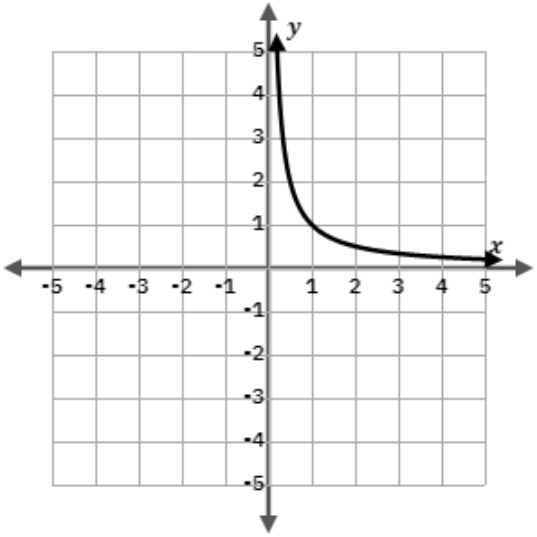
Choose the correct answer.

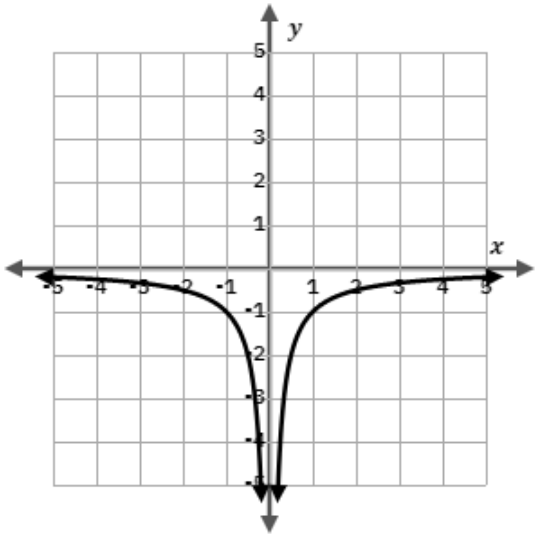
The graph of the function $f(x)$ is given.

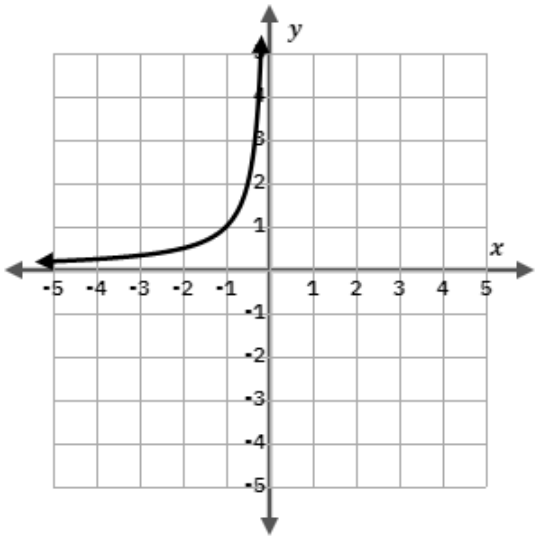
What is the graph of f^{-1} when f is restricted to the domain $x > 0$?


y
x
-5 -4 -3 -2 -1 1 2 3 4 5
5 4 3 2 1 -1 -2 -3 -4 -5


y
x
-5 -4 -3 -2 -1 1 2 3 4 5
5 4 3 2 1 -1 -2 -3 -4 -5


y
x
-5 -4 -3 -2 -1 1 2 3 4 5
5 4 3 2 1 -1 -2 -3 -4 -5


y
x
5
4
3
2
1
-5 -4 -3 -2 -1 1 2 3 4 5
-1
-2
-3
-4
-5


y
x
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-2
-3
-4
-5