

QUESTION 1



Choose the correct answer.

The graph of the function

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

, where

p

is a constant number, intersects the x -axis at two distinct points A and B , situated on the negative and positive sides of the x -axis, respectively.

Which of the following is true?



The x -coordinate of B is greater than 1.



The x -coordinate of A is always less than

-1

.



The x -coordinate of A should be

$-p$

.



The x -coordinate of B should be

p

.

QUESTION 2



Select the correct answer from the drop-down menus.

Find the domain of the function

$$f(x) = \frac{x^2 - 1}{(x + 3)(-x + 2)}$$

.

The denominator of the function

f

is zero if $(x + 3)(-x + 2) = 0$ ✓ ▼, that is

$x = -3$ or $x = 2$ ✓ ▼.

So, the domain of

f

is $(-\infty, -3) \cup (-3, 2) \cup (2, \infty)$ ✓ ▼.

QUESTION 3



Drag and drop the correct answer into the spaces provided.

Find the points of intersection of the parabola

$$y = x^2 - 3x + 2$$

and the line

$$y = 2x - 2$$

.

Set

$$x^2 - 3x + 2 =$$

$$2x - 2$$

$$\begin{aligned} x^2 - 3x + 2 \\ - (2x - 2) \\ = 0 \end{aligned}$$

$$x^2 - 5x + 4 = 0 \quad \checkmark$$

$$(x - 4)$$

$$(x - 1) = 0$$

The solutions are $x = 4$ and $x = 1 \quad \checkmark$. The points of intersection are

$$(4, 6)$$

and $(1, 0) \quad \checkmark$.

$$(4, -2)$$

$$(x - 5)$$

$$x = -4 \text{ and } x = -1$$

$$x^2 - 3x + 2$$

$$x(x - 5)$$

$$(0, 1)$$

$$x^2 - 5x$$

QUESTION 4



Drag and drop the correct answer.

The graph of the function

$$f(x) = kx^2 + 24$$

, where

k

is a constant, intersects the line

$$y = 6$$

at two points. The first point is $A(3,6)$ and the second point is

$$B(-3,6)$$



$$B(-3,3)$$

$$B(9k,6)$$

$$B(3,9k+24)$$

QUESTION 5



Choose the correct answer.

What is the domain of the cube root function

$$f(x) = \sqrt[3]{-x^2 + 9}$$

?

☒ $(-\infty, \infty)$



☐ $[3, \infty)$

☐ $(0, \infty)$

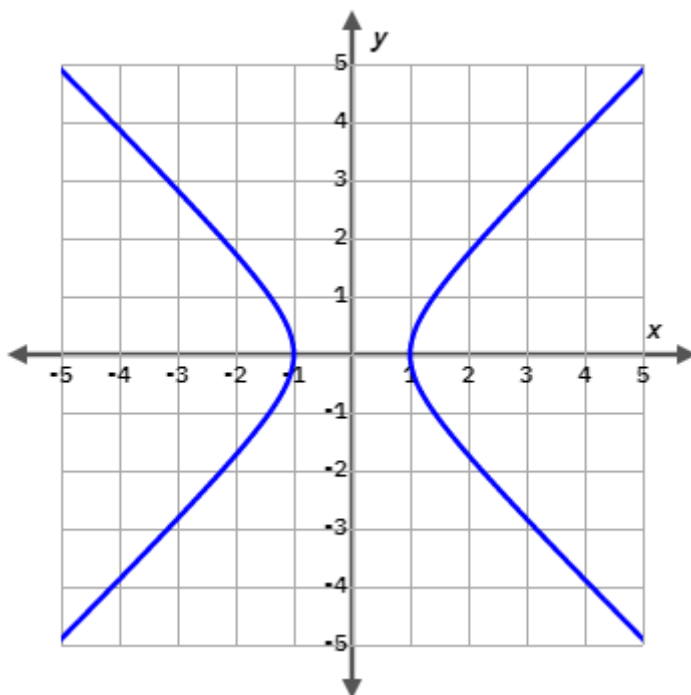
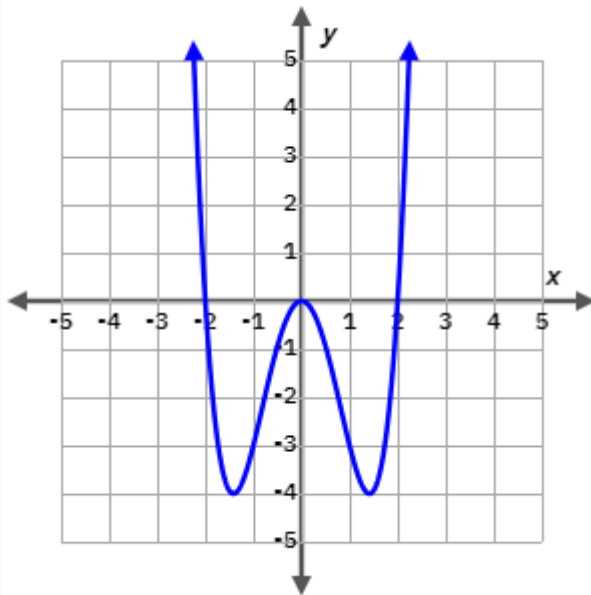
☐ $(-3, 3)$

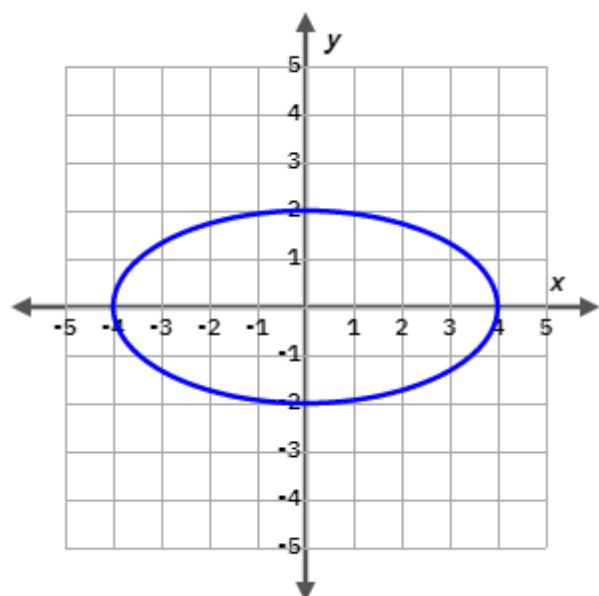
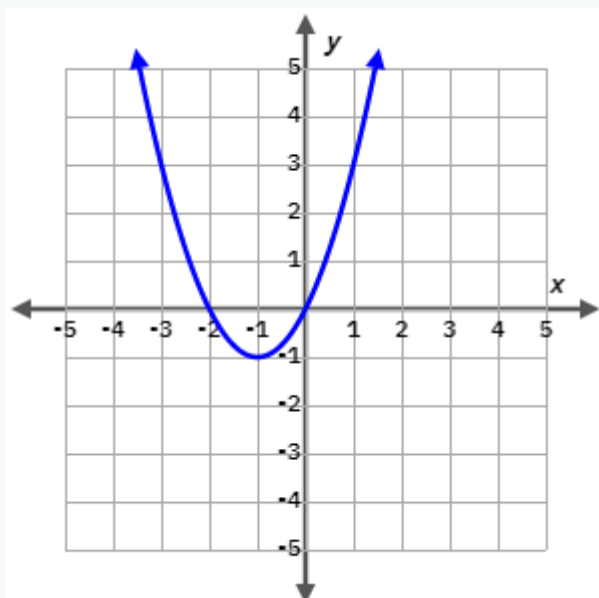
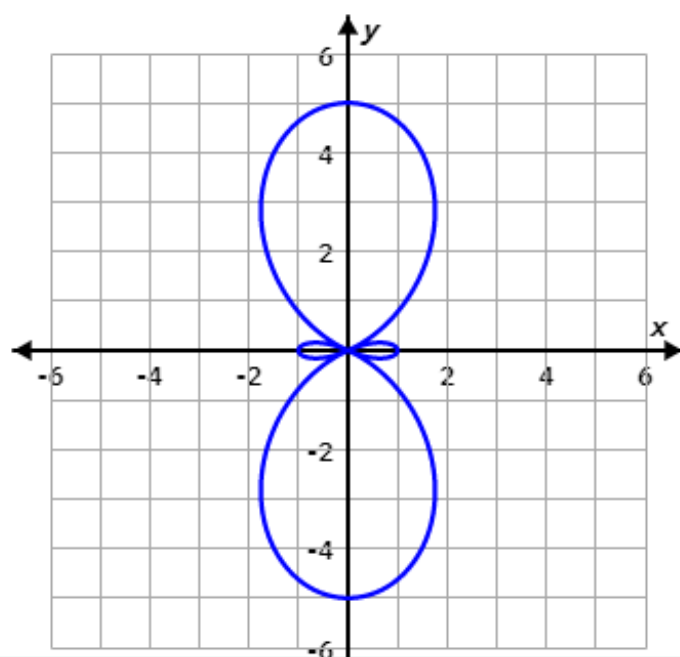
QUESTION 6

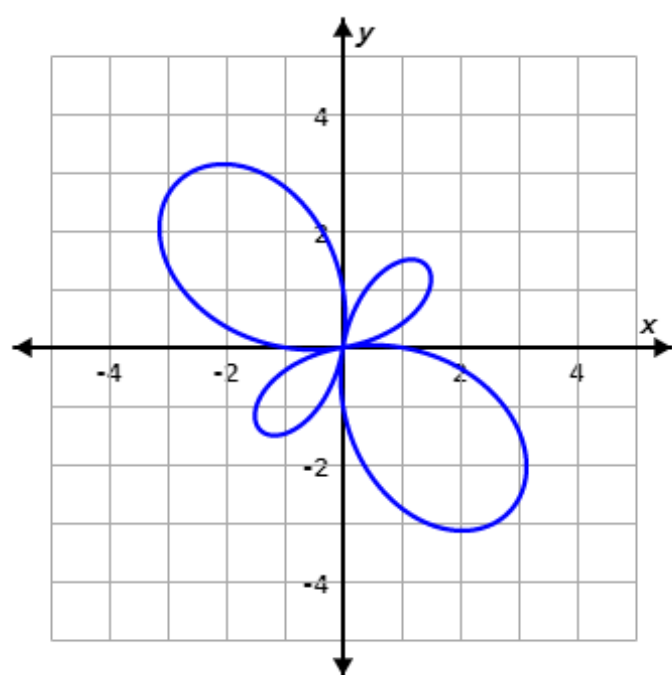
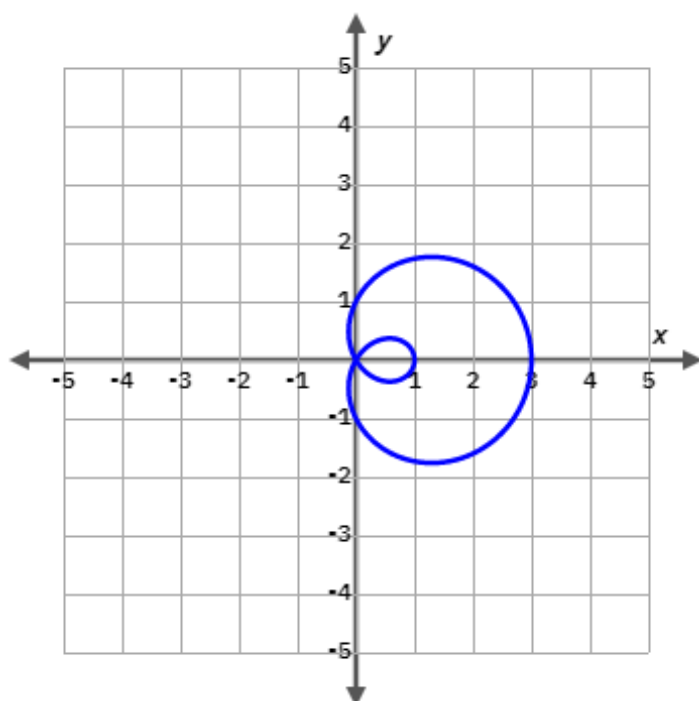


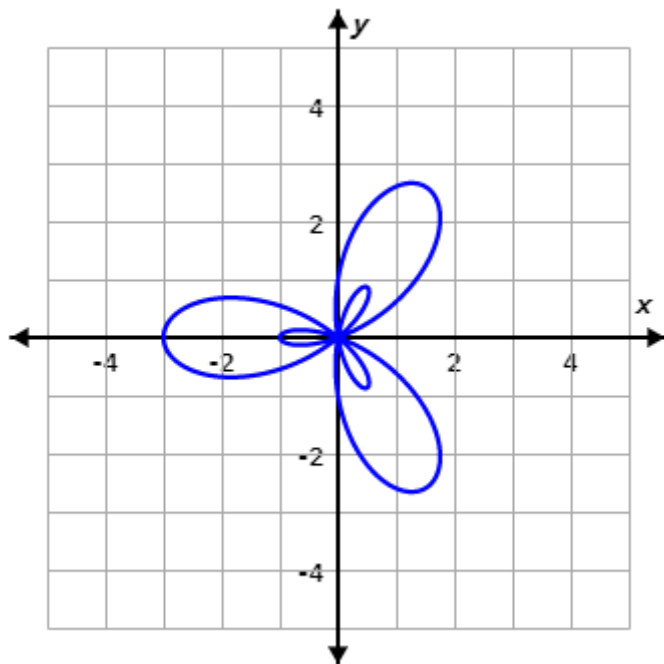
Select the correct answer.

Which one of these graphs represents a function?









QUESTION 7



Fill in the blank(s) with the correct answer.

The graph of the function

$$h(x) = x^2 + 3x + k$$

(
 k

is a constant) and the line

$$y = g(x) = 3x + 2$$

intersect at two distinct points.

All the possible values of

k

are:

$k <$

2



QUESTION 8



Fill in the blanks with the correct answer.

Let

$$p(x) = 3x^3 - 2x^2 + 5x - 6$$

be a polynomial of degree 3.

Because

$$p(1)$$

= ✓, the value

$x =$

✓ is one zero of this function, and $(x-1)$ is a factor. This polynomial function has at most 3 distinct zeros.

QUESTION 9



Drag and drop the correct answer to complete the statement.

The domain of the function

$$f(x) = \frac{2x - 4}{-x^2 + 4x - 3}$$

is ✓.

$(-\infty, 1) \cup (1, 2) \cup (2, 3) \cup (3, \infty)$

$(-\infty, 2) \cup (2, \infty)$

$(-\infty, 1) \cup (3, \infty)$

QUESTION 10



What are the x -intercepts of the function

$$f(x) = 2x^2 - 3x - 4$$

?



$$x = \frac{3 - \sqrt{41}}{4}$$



$$x = \frac{3 - \sqrt{41}}{2}$$



$$x = \frac{3 + \sqrt{41}}{4}$$



$$x = \frac{-3 - \sqrt{41}}{4}$$



0



$$x = \frac{3 - \sqrt{23}}{4}$$

QUESTION 11



Select the correct answer from the drop-down menu.

The function

$$f(x) = 3x^2 - 5x + 1$$

is a quadratic ✓ ▼ function and is defined for all real numbers.

The function

$$f(x) = \frac{3x^2 - 1}{x + 1}$$

is a rational function and is defined for all x such that

$x + 1 \neq 0$ ✓ ▼

QUESTION 12



Fill in the blanks with the correct answer.

The figure shown is the graph of the function

$$g(x) = x^2 - 4x$$

.

The function

$$f(x) = \sqrt{x^2 - 4x}$$

is defined only if

$$x^2 - 4x$$

$\geq$

0

.

From the graph:

The curve of

$$g(x) = x^2 - 4x$$

is on or above the x-axis for

$x \leq$

0



or

$x \geq$

4



So, the domain of

f

is

(

$-\infty$

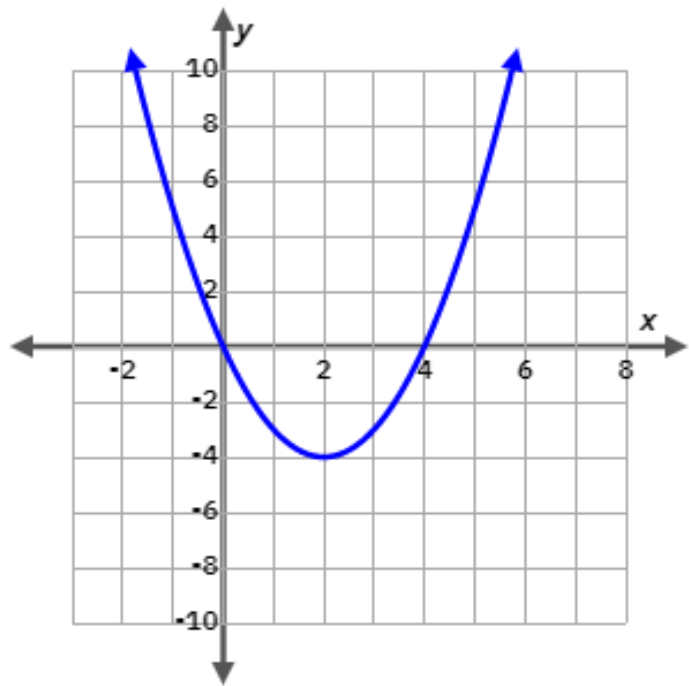
, 0

) $\cup$ [

4



$+\infty$)



QUESTION 13



Fill in the blanks with the correct answer. (Use lowercase letters only)

Find the domain of the function

$$f(x) = \sqrt{x^2 - 9}$$

.

The function

f

is defined if

$$x^2 - 9$$



≥ 0

, which occurs only when

$$x \leq$$

-3



, or

$$x \geq$$

3



So, the domain of

f

is

$$(-\infty, -3] \cup [3, \infty)$$

.

QUESTION 14



Choose the correct answer.

The domain of definition of the function

$$f(x) = \frac{x-2}{\sqrt{x^2-b}}$$

, where

b

is a constant number, is

$$(-\infty, +\infty)$$

only when:



$$b = 2$$



$$b < 0$$



$$b > 2$$



$b > 0$

QUESTION 15



Choose the correct answer.

What is the domain of the function

$$f(x) = \frac{x+2}{x-3}$$

?



$(-\infty, -3) \cup (-3, +\infty)$



$(-\infty, 3) \cup (3, +\infty)$



$(-\infty, -2) \cup (-2, +\infty)$



$(-\infty, -2) \cup (-2, 3) \cup (3, +\infty)$