

Class Name : **Lacoste College Algebra Fall 2019**Instructor Name : **Master Templates**

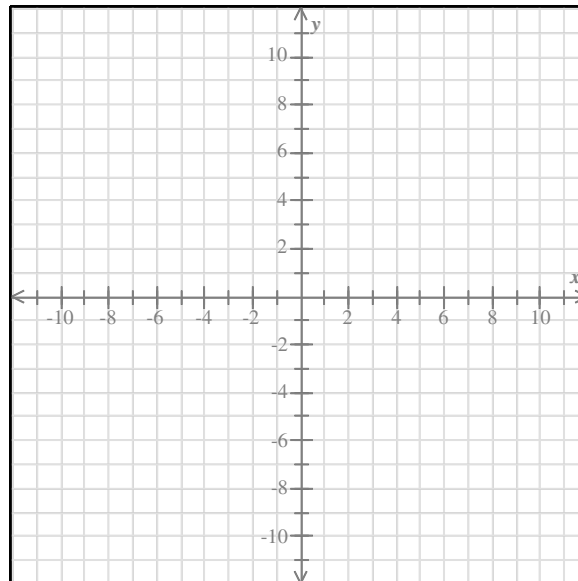
Student Name : \_\_\_\_\_

Instructor Note : **All practice problems for Exam 3.**  
**There are multiple versions so that you can try**  
**challenging problems more than once.**

**Question 1 of 58**

Graph the equation.

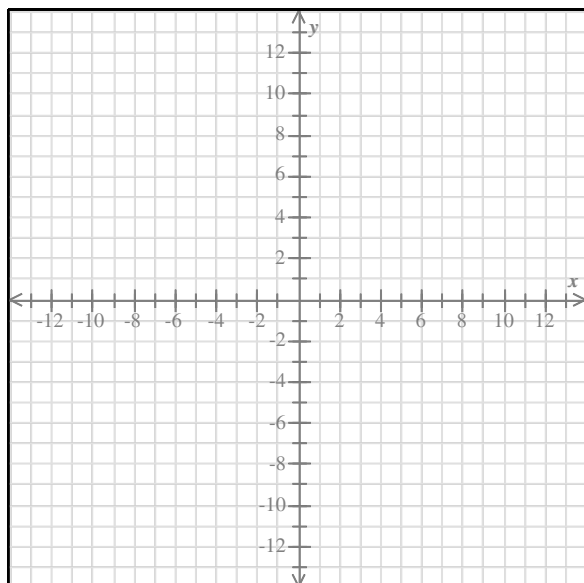
$$y = -5|x|$$



**Question 2 of 58**

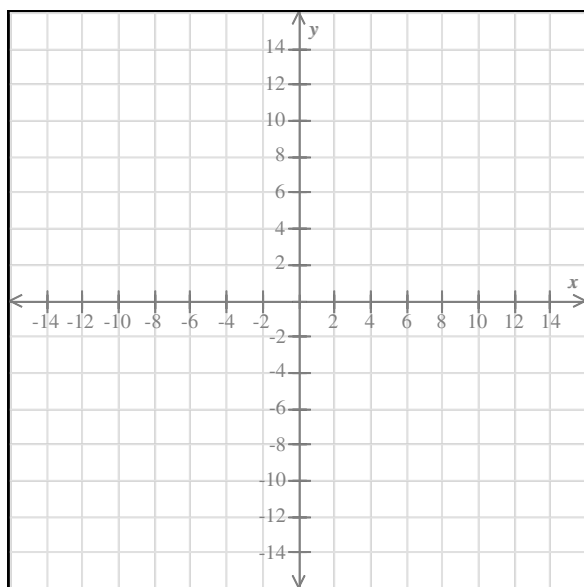
Graph the parabola.

$$y = -3x^2$$

**Question 3 of 58**

Graph

$$y = \frac{1}{2}x^3$$



**Question 4 of 58**

The function  $f$  is defined as follows.

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

Find  $f(27)$  and  $f(-125)$ .

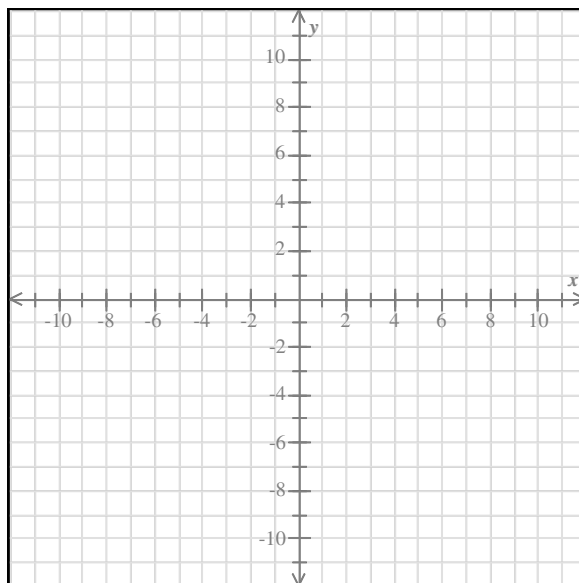
$$f(27) = \square$$

$$f(-125) = \square$$

**Question 5 of 58**

Graph the equation.

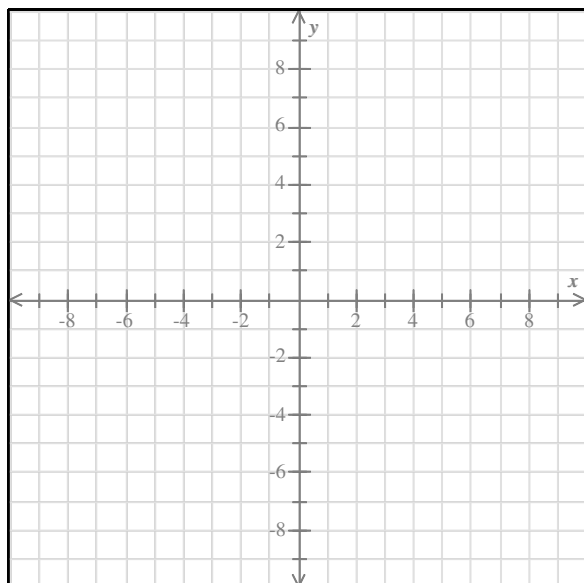
$$y = 4|x + 4| - 5$$



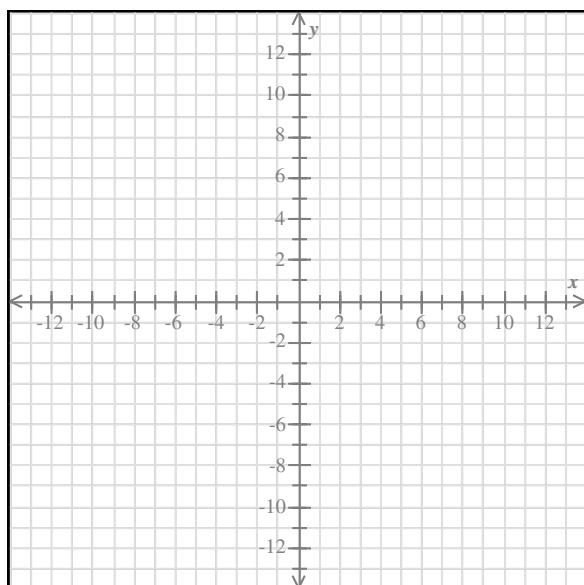
**Question 6 of 58**

Graph the parabola.

$$y = (x - 4)^2 + 2$$

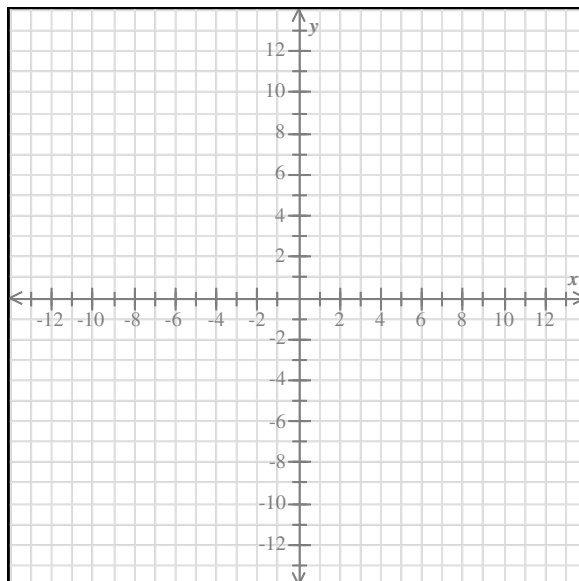
**Question 7 of 58**

Graph the function  $f(x) = \sqrt{x} - 5$ .



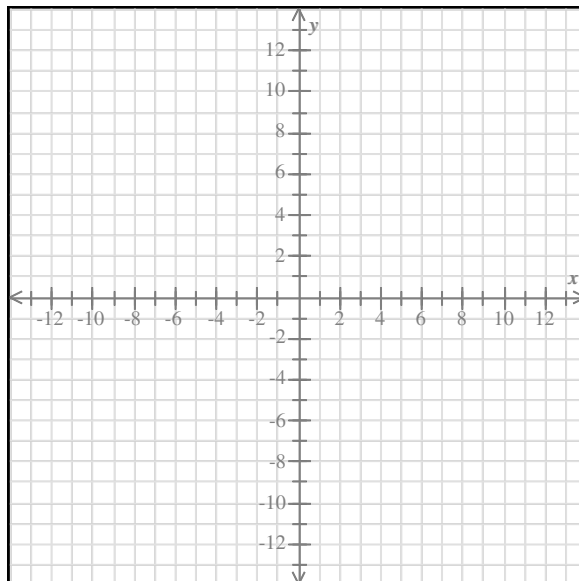
**Question 8 of 58**

Graph the function  $f(x) = \sqrt{x-4} - 3$ .

**Question 9 of 58**

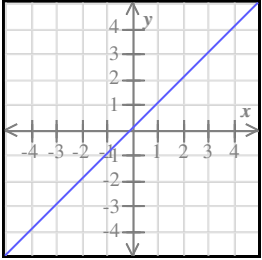
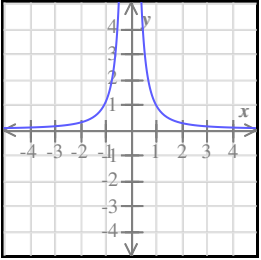
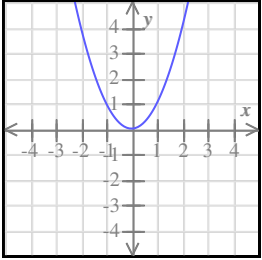
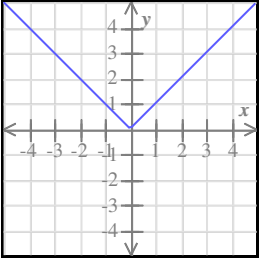
Graph the following function.

$$f(x) = \sqrt[3]{x+5}$$



### Question 10 of 58

For each graph, choose the function that best describes it.

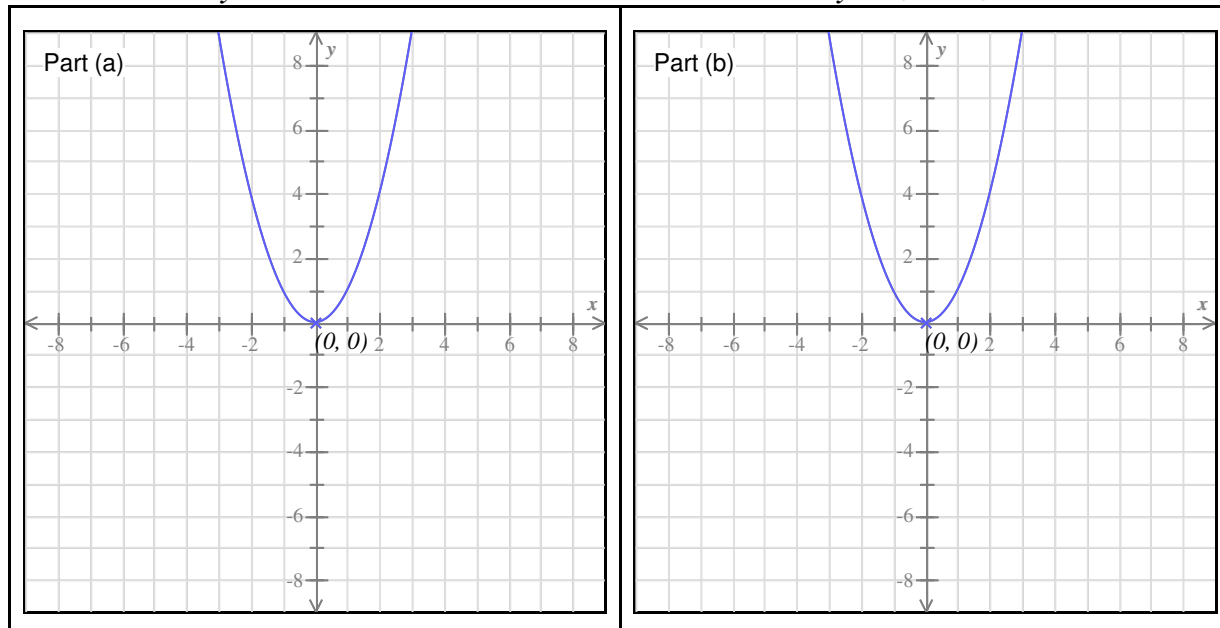
<p>(a) </p> <p> <input type="radio"/> <math>f(x) = 1</math>    <input type="radio"/> <math>f(x) =  x </math>  <input type="radio"/> <math>f(x) = x</math>    <input type="radio"/> <math>f(x) = \frac{1}{x}</math>  <input type="radio"/> <math>f(x) = x^2</math>    <input type="radio"/> <math>f(x) = \frac{1}{x^2}</math>  <input type="radio"/> <math>f(x) = x^3</math>    <input type="radio"/> <math>f(x) = \frac{1}{x^3}</math>  <input type="radio"/> <math>f(x) = \sqrt{x}</math>    <input type="radio"/> <math>f(x) = \frac{1}{\sqrt{x}}</math> </p>	<p>(b) </p> <p> <input type="radio"/> <math>f(x) = 1</math>    <input type="radio"/> <math>f(x) =  x </math>  <input type="radio"/> <math>f(x) = x</math>    <input type="radio"/> <math>f(x) = \frac{1}{x}</math>  <input type="radio"/> <math>f(x) = x^2</math>    <input type="radio"/> <math>f(x) = \frac{1}{x^2}</math>  <input type="radio"/> <math>f(x) = x^3</math>    <input type="radio"/> <math>f(x) = \frac{1}{x^3}</math>  <input type="radio"/> <math>f(x) = \sqrt{x}</math>    <input type="radio"/> <math>f(x) = \frac{1}{\sqrt{x}}</math> </p>
<p>(c) </p> <p> <input type="radio"/> <math>f(x) = 1</math>    <input type="radio"/> <math>f(x) =  x </math>  <input type="radio"/> <math>f(x) = x</math>    <input type="radio"/> <math>f(x) = \frac{1}{x}</math>  <input type="radio"/> <math>f(x) = x^2</math>    <input type="radio"/> <math>f(x) = \frac{1}{x^2}</math>  <input type="radio"/> <math>f(x) = x^3</math>    <input type="radio"/> <math>f(x) = \frac{1}{x^3}</math>  <input type="radio"/> <math>f(x) = \sqrt{x}</math>    <input type="radio"/> <math>f(x) = \frac{1}{\sqrt{x}}</math> </p>	<p>(d) </p> <p> <input type="radio"/> <math>f(x) = 1</math>    <input type="radio"/> <math>f(x) =  x </math>  <input type="radio"/> <math>f(x) = x</math>    <input type="radio"/> <math>f(x) = \frac{1}{x}</math>  <input type="radio"/> <math>f(x) = x^2</math>    <input type="radio"/> <math>f(x) = \frac{1}{x^2}</math>  <input type="radio"/> <math>f(x) = x^3</math>    <input type="radio"/> <math>f(x) = \frac{1}{x^3}</math>  <input type="radio"/> <math>f(x) = \sqrt{x}</math>    <input type="radio"/> <math>f(x) = \frac{1}{\sqrt{x}}</math> </p>

### Question 11 of 58

Translate each graph as specified below.

(a) The graph of  $y = x^2$  is shown. Translate it to get the graph of  $y = x^2 - 1$ .

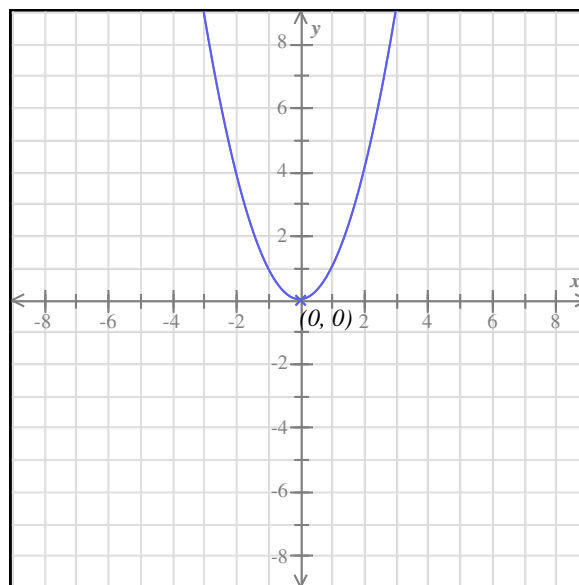
(b) The graph of  $y = x^2$  is shown. Translate it to get the graph of  $y = (x - 4)^2$ .



### Question 12 of 58

Below is the graph of  $y = x^2$ .

Translate it to make it the graph of  $y = (x + 4)^2 - 2$ .

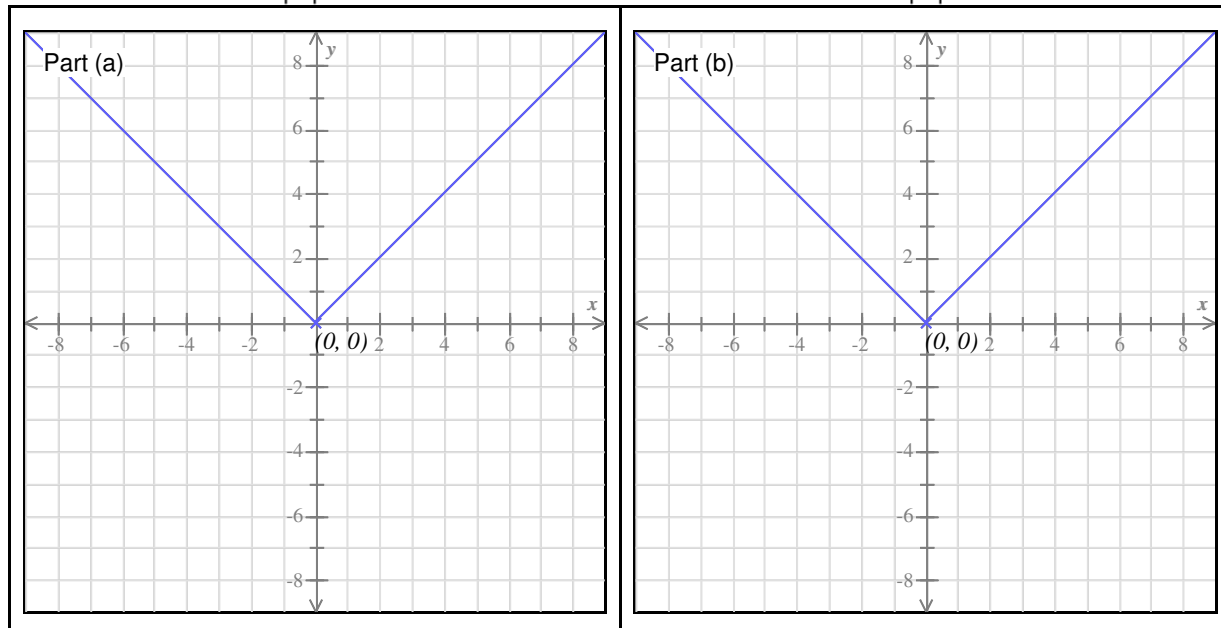


### Question 13 of 58

Translate each graph as specified below.

(a) The graph of  $y = |x|$  is shown. Translate it to get the graph of  $y = |x + 2|$ .

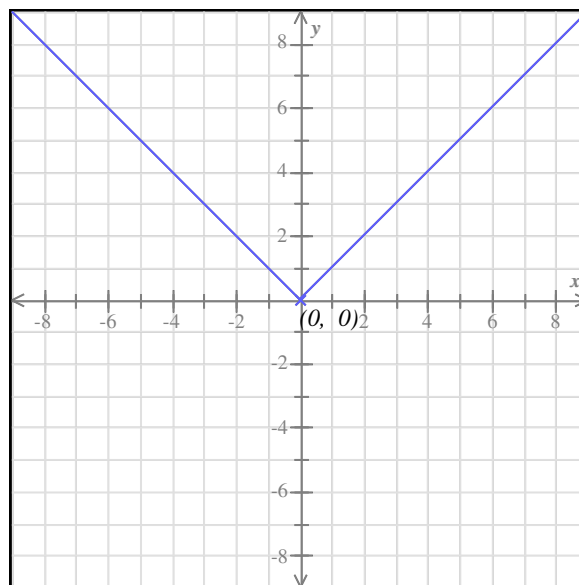
(b) The graph of  $y = |x|$  is shown. Translate it to get the graph of  $y = |x| - 4$ .



### Question 14 of 58

Below is the graph of  $y = |x|$ .

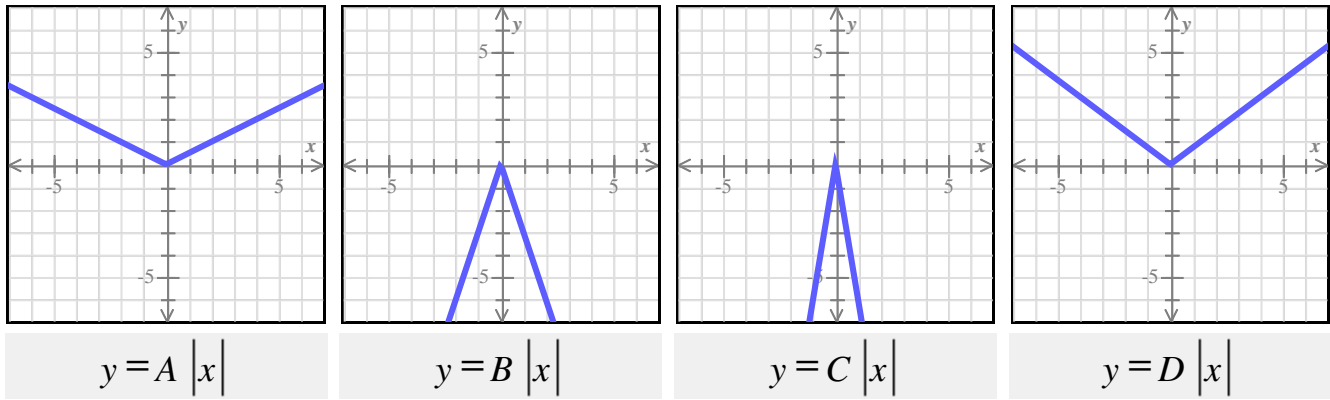
Translate it to make it the graph of  $y = |x + 3| + 2$ .





Question 15 of 58

Look at the graphs and their equations below. Then fill in the information about the coefficients  $A$ ,  $B$ ,  $C$ , and  $D$ .



	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
(a) For each coefficient, choose whether it is positive or negative	- Positive - Negative	- Positive - Negative	- Positive - Negative	- Positive - Negative
(b) Choose the coefficient closest to 0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(c) Choose the coefficient with the greatest value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Question 16 of 58

If the graph of the function  $g$  defined by

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

is translated vertically downward by 3 units, it becomes the graph of a function  $f$ .

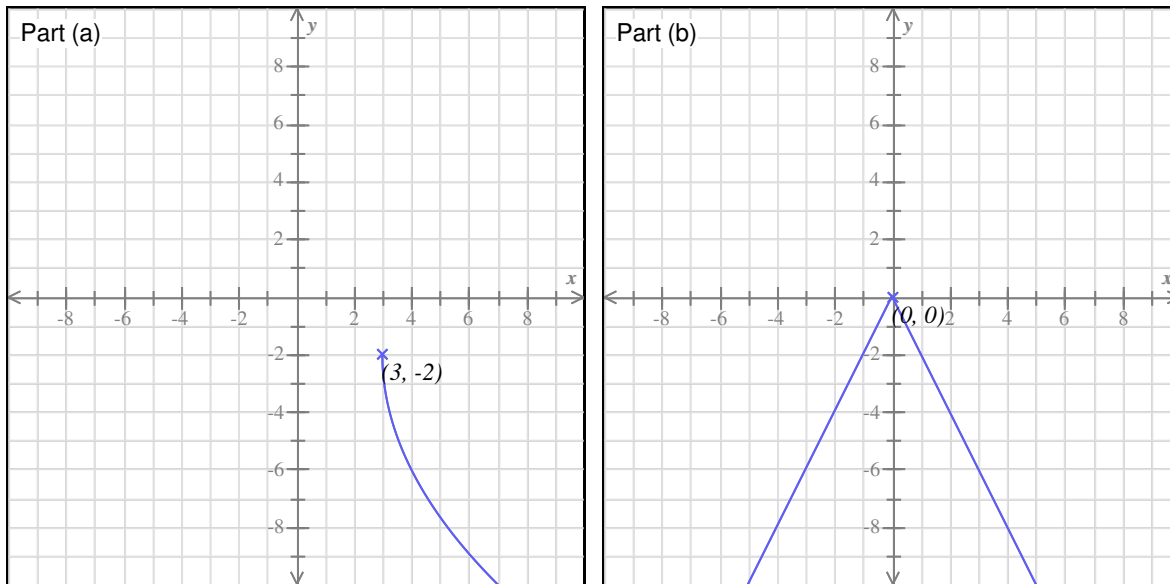
Find the expression for  $f(x)$ .

### Question 17 of 58

Translate each graph as specified below.

(a) The graph of  $y = f(x)$  is shown. Translate it to get the graph of  $y = f(x) - 4$ .

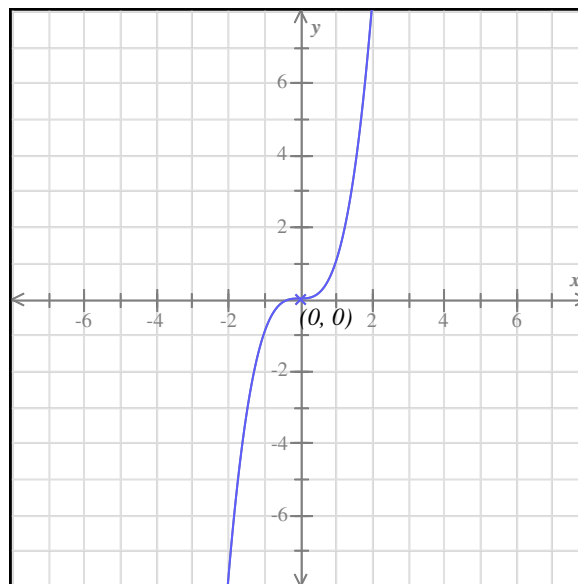
(b) The graph of  $y = g(x)$  is shown. Translate it to get the graph of  $y = g(x + 2)$ .



### Question 18 of 58

Below is the graph of  $y = x^3$ .

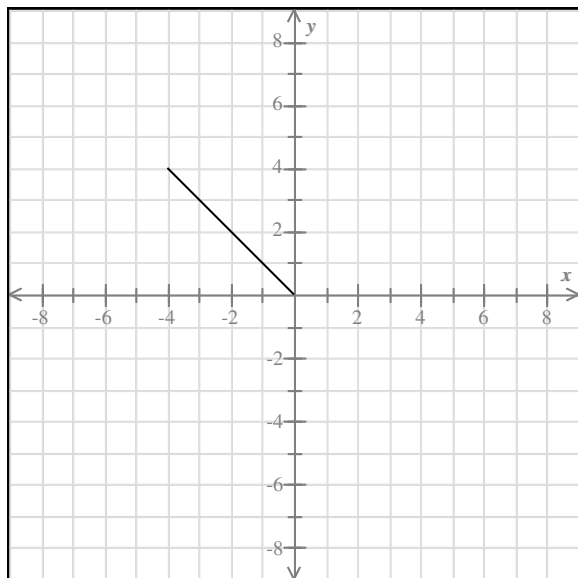
Translate it to make it the graph of  $y = (x - 1)^3 - 3$ .



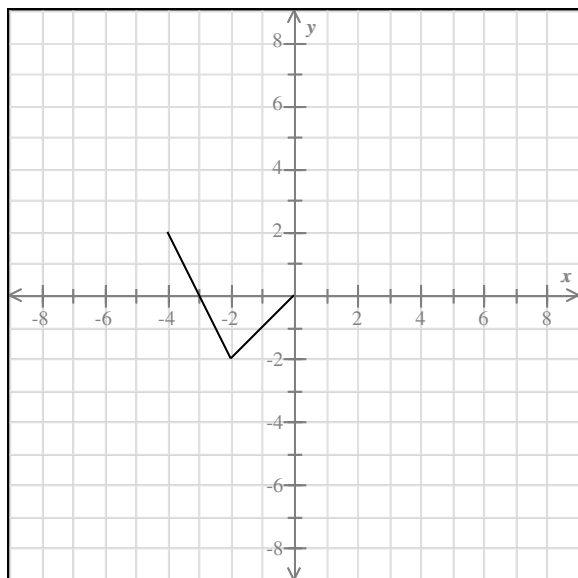
### Question 19 of 58

Transform each graph as specified below.

The graph of  $y = f(x)$  is shown. Graph  $y = \frac{1}{2}f(x)$ .



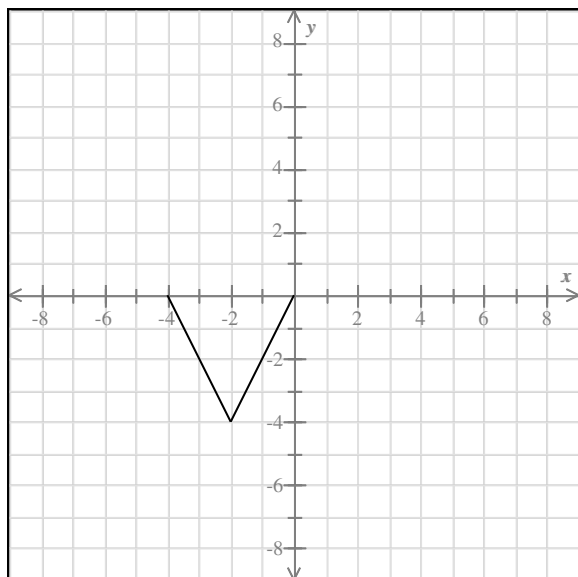
The graph of  $y = g(x)$  is shown. Graph  $y = g\left(\frac{1}{2}x\right)$ .



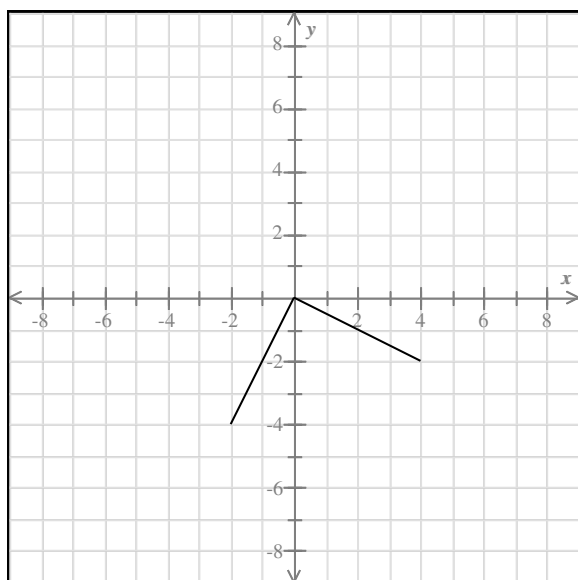
### Question 20 of 58

Complete the following.

The graph of  $y = h(x)$  is shown. Draw the graph of  $y = h(2x) + 1$ .



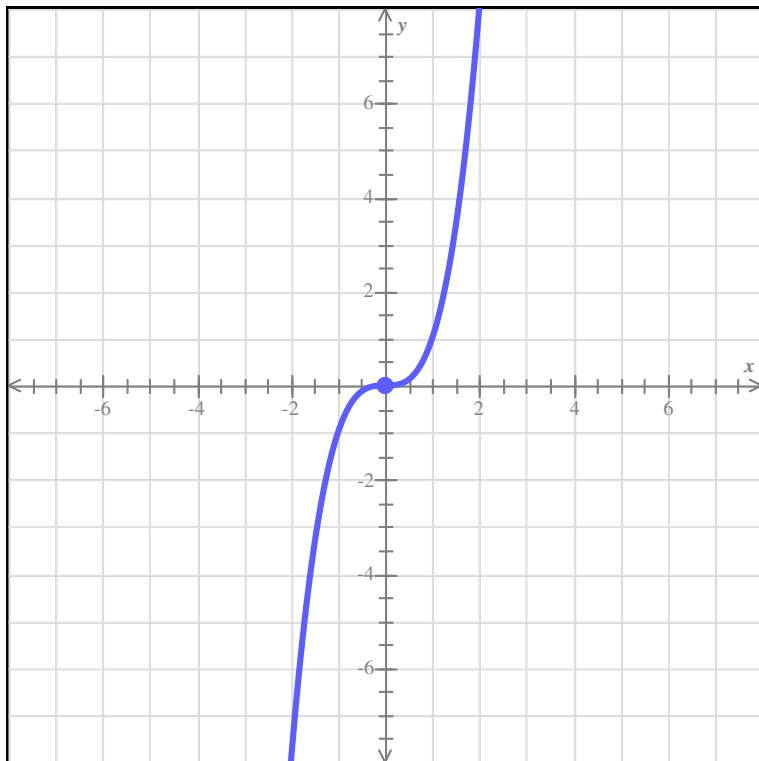
The graph of  $y = g(x)$  is shown. Draw the graph of  $y = -g(x) - 3$ .



### Question 21 of 58

Below is the graph of  $y = x^3$ .

Transform it to make it the graph of  $y = 2(x - 4)^3 + 3$ .

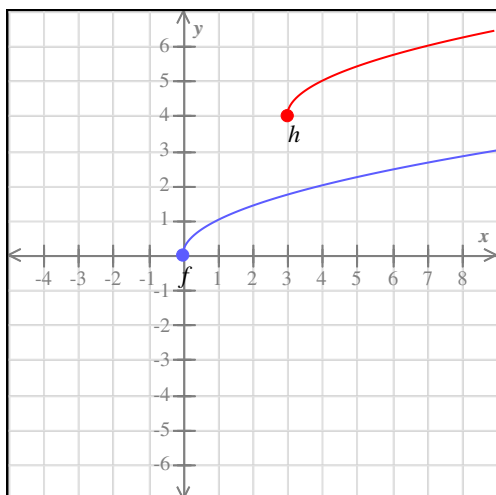


### Question 22 of 58

The graph of  $f$  (in blue) is translated a whole number of units horizontally and vertically to obtain the graph of  $h$  (in red).

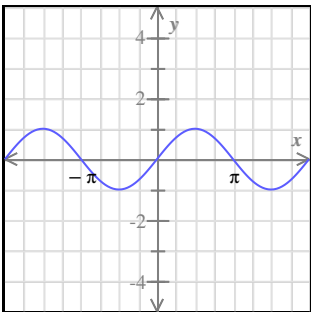
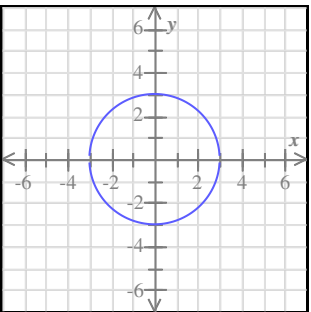
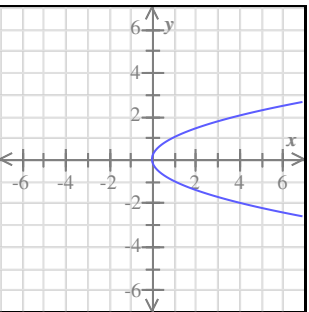
The function  $f$  is defined by  $f(x) = \sqrt{x}$ .

Write down the expression for  $h(x)$ .



### Question 23 of 58

For each graph, select *all* symmetries that apply.

<p>(a)</p>  <p>Symmetry:</p> <p><input type="checkbox"/> <math>x</math>-axis</p> <p><input type="checkbox"/> <math>y</math>-axis</p> <p><input type="checkbox"/> origin</p> <p><input type="checkbox"/> none of these</p>	<p>(b)</p>  <p>Symmetry:</p> <p><input type="checkbox"/> <math>x</math>-axis</p> <p><input type="checkbox"/> <math>y</math>-axis</p> <p><input type="checkbox"/> origin</p> <p><input type="checkbox"/> none of these</p>	<p>(c)</p>  <p>Symmetry:</p> <p><input type="checkbox"/> <math>x</math>-axis</p> <p><input type="checkbox"/> <math>y</math>-axis</p> <p><input type="checkbox"/> origin</p> <p><input type="checkbox"/> none of these</p>
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### Question 24 of 58

For each equation, determine whether its graph is symmetric with respect to the  $x$ -axis, the  $y$ -axis, and the origin.

Check *all* symmetries that apply.

$y = 1 - x^4$ <p style="text-align: center;">Symmetry:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <input type="checkbox"/>  <math>x</math>-axis  <input type="checkbox"/>              none of the above         </div> <div style="text-align: center;"> <input type="checkbox"/>  <math>y</math>-axis         </div> <div style="text-align: center;"> <input type="checkbox"/>              origin         </div> </div>	$25x^4 + 6y^4 = 90$ <p style="text-align: center;">Symmetry:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <input type="checkbox"/>  <math>x</math>-axis  <input type="checkbox"/>              none of the above         </div> <div style="text-align: center;"> <input type="checkbox"/>  <math>y</math>-axis         </div> <div style="text-align: center;"> <input type="checkbox"/>              origin         </div> </div>
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**Question 25 of 58**

Suppose that the function  $g$  is defined, for all real numbers, as follows.

$$g(x) = \begin{cases} -3 & \text{if } x \leq -2 \\ (x+1)^2 & \text{if } -2 < x \leq 1 \\ \frac{1}{2}x + 2 & \text{if } x > 1 \end{cases}$$

Find  $g(0)$ ,  $g(1)$ , and  $g(2)$ .

$$g(0)$$

$$g(1)$$

$$g(2)$$

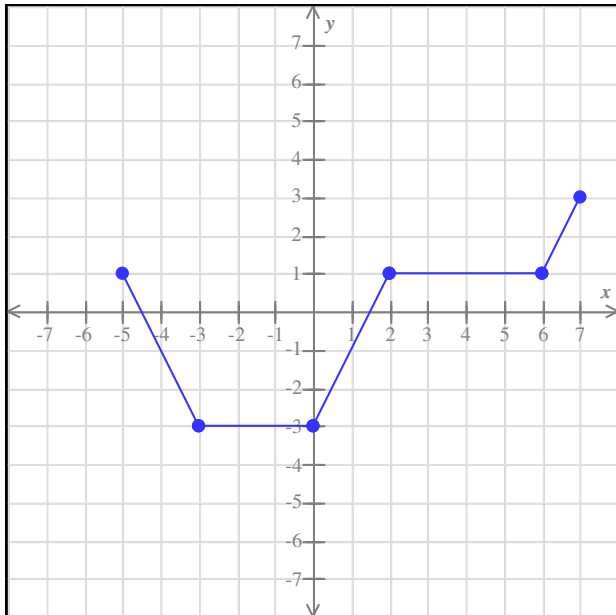
**Question 26 of 58**

Determine the interval(s) on which the function is (strictly) increasing.

Write your answer as an interval or list of intervals.

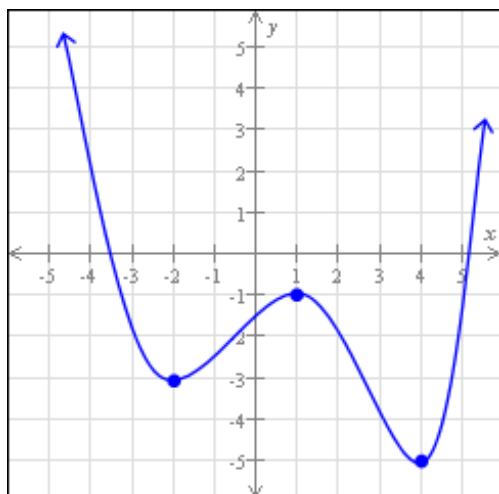
When writing a list of intervals, make sure to separate each interval with a comma and to use as few intervals as possible.

Click on "None" if applicable.



### Question 27 of 58

Here is a graph of the function  $f$ .



Use the graph to find the following.

If there is more than one answer, separate them with commas.

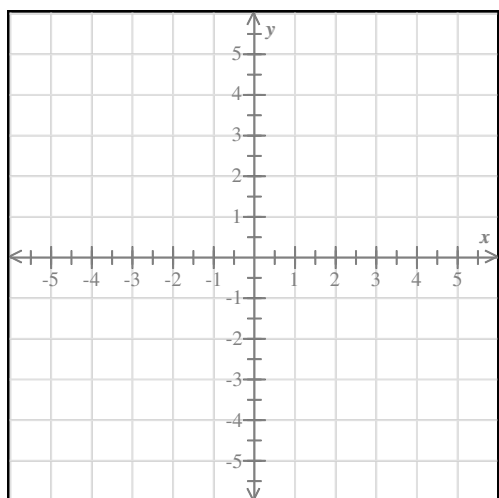
- (a) All local minimum values of  $f$ :
- (b) All values at which  $f$  has a local minimum:

### Question 28 of 58

Suppose that the function  $f$  is defined, for all real numbers, as follows.

$$f(x) = \begin{cases} 1 & \text{if } x \leq -2 \\ x & \text{if } -2 < x < 2 \\ 1 & \text{if } x \geq 2 \end{cases}$$

Graph the function  $f$ .



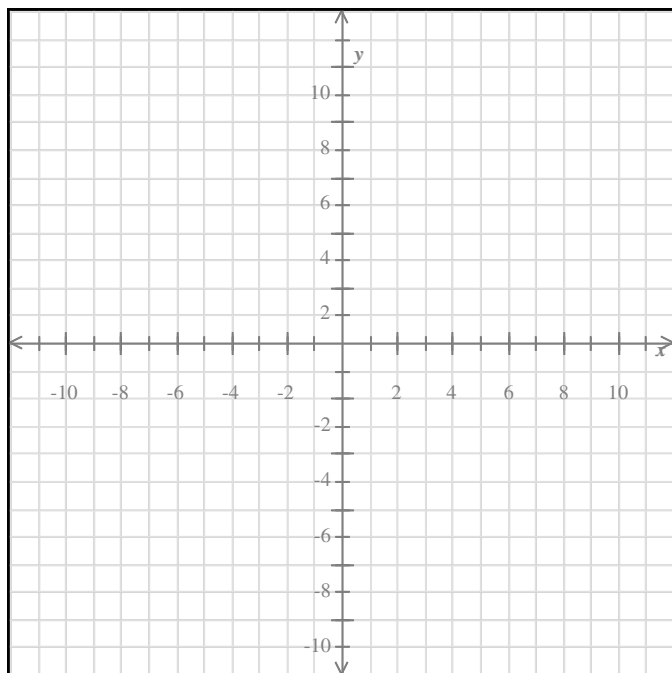


Question 29 of 58

Suppose that the function  $f$  is defined, for all real numbers, as follows.

$$f(x) = \begin{cases} x - 4 & \text{if } x < 2 \\ -2x + 2 & \text{if } x \geq 2 \end{cases}$$

Graph the function  $f$ . Then determine whether or not the function is continuous.



Is the function continuous?

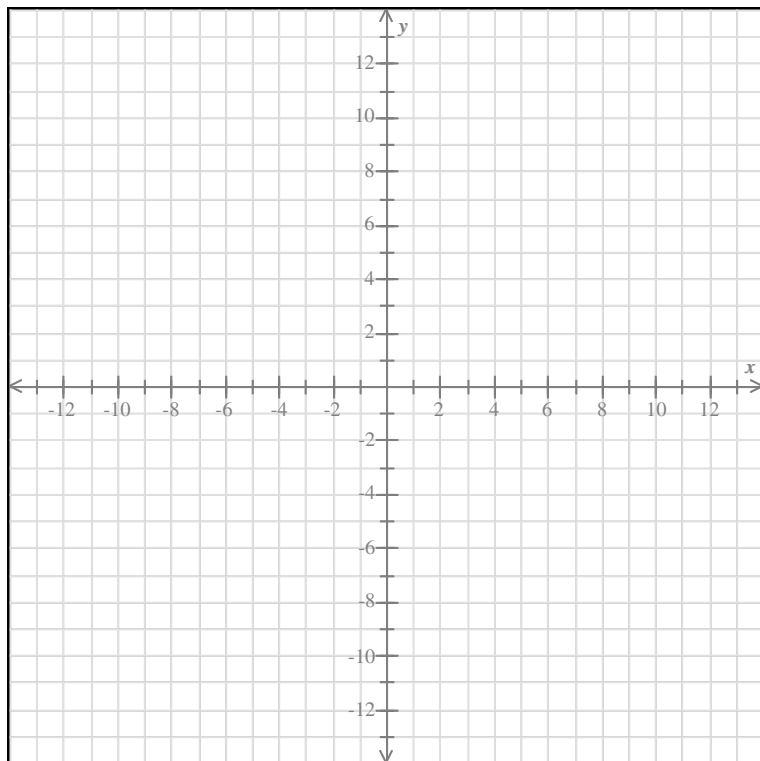
- ☐ Yes  
☐ No

**Question 30 of 58**

Suppose that the function  $f$  is defined for all real numbers as follows.

$$f(x) = \begin{cases} 1 - x^2 & \text{if } x < 1 \\ -2x - 3 & \text{if } x \geq 1 \end{cases}$$

Graph the function  $f$ . Then determine whether or not the function is continuous.

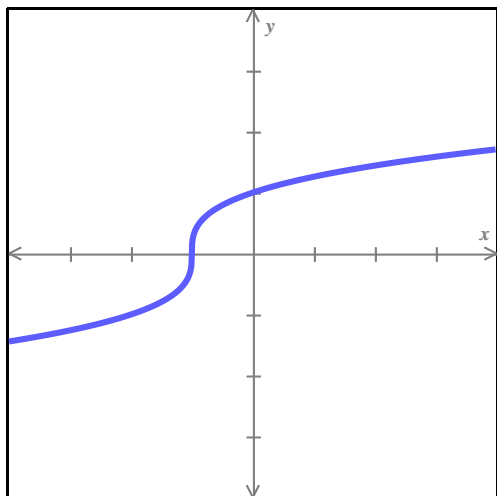


### Question 31 of 58

Four functions are given below. Either the function is defined explicitly, or the entire graph of the function is shown.

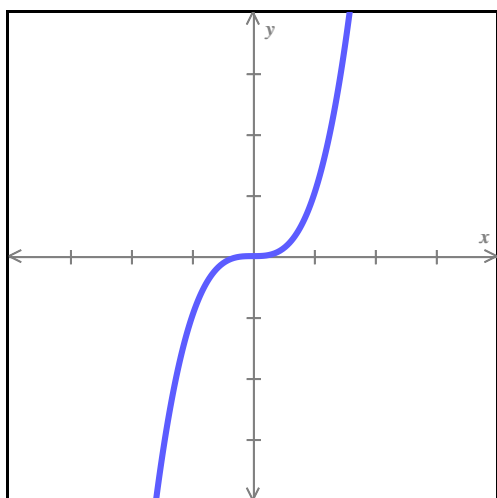
For each, decide whether it is an even function, an odd function, or neither.

The function  $f$



- Even - Odd - Neither

The function  $g$



- Even - Odd - Neither

$$g(x) = 5x^2$$

- Even - Odd - Neither

$$h(x) = -4x^5 + 3x^3$$

- Even - Odd - Neither

**Question 32 of 58**

Three functions are given below.

For each, decide whether it is an even function, an odd function, or neither.

$f(x) = \sqrt{3x^2 + 1}$ <input type="radio"/> Even <input type="radio"/> Odd <input type="radio"/> Neither	$g(x) = x^2  x  + 7$ <input type="radio"/> Even <input type="radio"/> Odd <input type="radio"/> Neither	$h(x) = \frac{1}{x+5}$ <input type="radio"/> Even <input type="radio"/> Odd <input type="radio"/> Neither
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**Question 33 of 58**

A car rental company's standard charge includes an initial fee plus an additional fee for each mile driven. The standard charge  $S$  (in dollars) is given by the function  $S = 14.95 + 0.60M$ , where  $M$  is the number of miles driven.

The company also offers an option to insure the car against damage. The insurance charge  $I$  (in dollars) is given by the function  $I = 5.70 + 0.25M$ .

Let  $C$  be the total charge (in dollars) for a rental that includes insurance. Write an equation relating  $C$  to  $M$ . Simplify your answer as much as possible.

**Question 34 of 58**

Suppose that the functions  $f$  and  $g$  are defined for all real numbers  $x$  as follows.

$$f(x) = x + 5$$

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

Write the expressions for  $(f+g)(x)$  and  $(fg)(x)$  and evaluate  $(f-g)(2)$ .

$$(f+g)(x)$$

$$(fg)(x)$$

$$(f-g)(2)$$

**Question 35 of 58**

Suppose that the functions  $g$  and  $h$  are defined as follows.

$$g(x) = -2x^2 + 7$$

$$h(x) = 9x - 8$$

(a) Find  $\left(\frac{g}{h}\right)(-4)$ .

(b) Find all values that are NOT in the domain of  $\frac{g}{h}$ .

If there is more than one value, separate them with commas.

**Question 36 of 58**

Suppose that the functions  $f$  and  $g$  are defined as follows.

$$f(x) = \frac{x-5}{x+4} \quad g(x) = \frac{x}{x+4}$$

Find  $\frac{f}{g}$ . Then, give its domain using an interval or union of intervals.  
Simplify your answers.

**Question 37 of 58**

Suppose that the functions  $f$  and  $g$  are defined as follows.

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

$$g(x) = \sqrt{5x + 3}$$

Find  $f+g$  and  $f \cdot g$ . Then, give their domains using interval notation.

$$(f+g)(x) = \text{[ ]}$$

$$\text{Domain of } f+g: \text{[ ]}$$

$$(f \cdot g)(x) = \text{[ ]}$$

$$\text{Domain of } f \cdot g: \text{[ ]}$$

**Question 38 of 58**

Suppose that the functions  $u$  and  $w$  are defined as follows.

$$u(x) = -2x - 2$$

$$w(x) = x^2 + 1$$

Find the following.

$$(w \circ u)(-3)$$

$$(u \circ w)(-3)$$

**Question 39 of 58**

Suppose that the functions  $f$  and  $g$  are defined as follows.

$$f(x) = \frac{6}{x}, x \neq 0$$

$$g(x) = x^2 - 7$$

Find the compositions  $f \circ f$  and  $g \circ g$ .

Simplify your answers as much as possible.

(Assume that your expressions are defined for all  $x$  in the domain of the composition. You do *not* have to indicate the domain.)

$$(f \circ f)(x) = \underline{\hspace{2cm}}$$

$$(g \circ g)(x) = \underline{\hspace{2cm}}$$

**Question 40 of 58**

For the real-valued functions  $f(x) = \sqrt{3x+21}$  and  $g(x) = x - 2$ , find the composition  $f \circ g$  and specify its domain using interval notation.

$$(f \circ g)(x) =$$

Domain of  $f \circ g$ :

**Question 41 of 58**

The surface area  $S(r)$  (in square meters) of a spherical balloon with radius  $r$  meters is given by  $S(r) = 4\pi r^2$ .

The radius  $P(t)$  (in meters) after  $t$  seconds is given by  $P(t) = \frac{4}{3}t$ .

Write a formula for the surface area  $N(t)$  (in square meters) of the balloon after  $t$  seconds.

It is not necessary to simplify.

$$N(t) =$$

**Question 42 of 58**

Suppose that  $y$  varies directly with  $x$ , and  $y = 10$  when  $x = 25$ .

(a) Write a direct variation equation that relates $x$ and $y$ .
Equation:
(b) Find $y$ when $x = 6$ .
$y =$

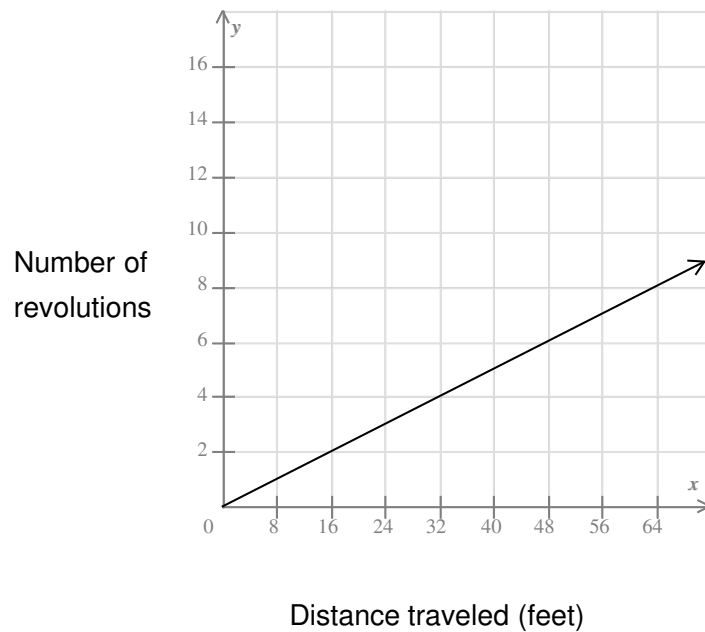
**Question 43 of 58**

For a moving object, the force acting on the object varies directly with the object's acceleration. When a force of 24 N acts on a certain object, the acceleration of the object is  $4 \text{ m/s}^2$ . If the force is changed to 18 N, what will be the acceleration of the object?



**Question 44 of 58**

Karen is riding her bike. The number of revolutions (turns) her wheels make varies directly with the distance she travels. See the graph below.



(a) How far does Karen travel per revolution?

feet

(b) What is the slope of the graph?

**Question 45 of 58**

Suppose that  $y$  varies inversely with  $x$ , and  $y = 4$  when  $x = 3$ .

(a) Write an inverse variation equation that relates $x$ and $y$ .
Equation:
(b) Find $y$ when $x = 16$ .
$y =$

**Question 46 of 58**

When a constant force acts upon an object, the acceleration of the object varies inversely with its mass. When a certain constant force acts upon an object with mass 4 kg, the acceleration of the object is  $13 \text{ m/s}^2$ . If the same force acts upon another object whose mass is 26 kg, what is this object's acceleration?

**Question 47 of 58**

Write an equation that expresses the following relationship.

$w$  varies directly with the cube of  $u$  and inversely with  $d$

In your equation, use  $k$  as the constant of proportionality.

**Question 48 of 58**

The volume  $V$  of a fixed amount of a gas varies directly as the temperature  $T$  and inversely as the pressure  $P$ .

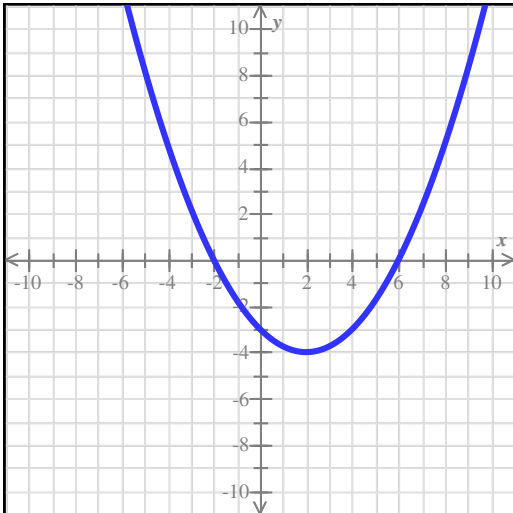
Suppose that  $V = 160 \text{ cm}^3$  when  $T = 320 \text{ kelvin}$  and  $P = 12 \frac{\text{kg}}{\text{cm}^2}$ . Find the temperature when  $V = 90 \text{ cm}^3$  and

$$P = 16 \frac{\text{kg}}{\text{cm}^2}.$$

kelvin

### Question 49 of 58

Use the graph of the parabola to fill in the table.



(a) Does the parabola open upward or downward?



upward



downward

(b) Find the coordinates of the vertex.

vertex: (, )

(c) Find the equation of the axis of symmetry.

equation of axis of symmetry:

(d) Find the intercept(s).

For both the  $x$ - and  $y$ -intercept(s), make sure to do the following.

- If there is more than one, separate them with commas.
- If there are none, select "None".

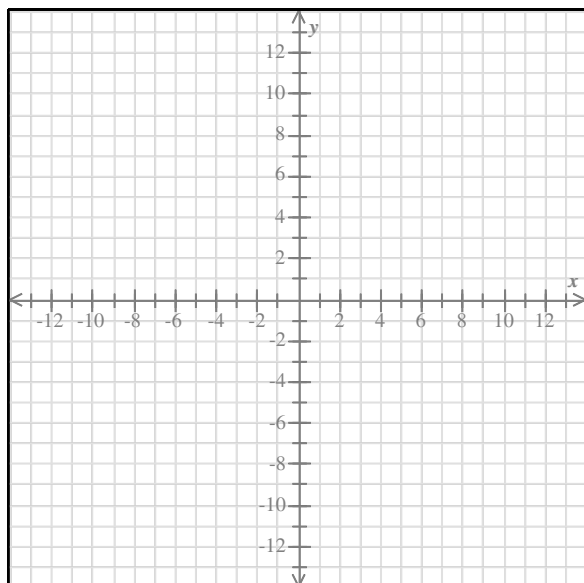
$x$ -intercept(s):

$y$ -intercept(s):

**Question 50 of 58**

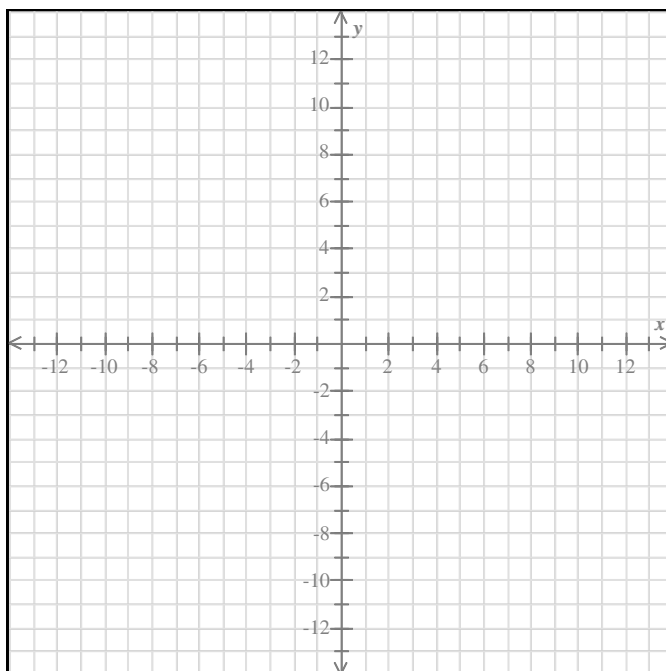
Graph the parabola.

$$y = x^2 - 10x + 27$$

**Question 51 of 58**

Graph the parabola.

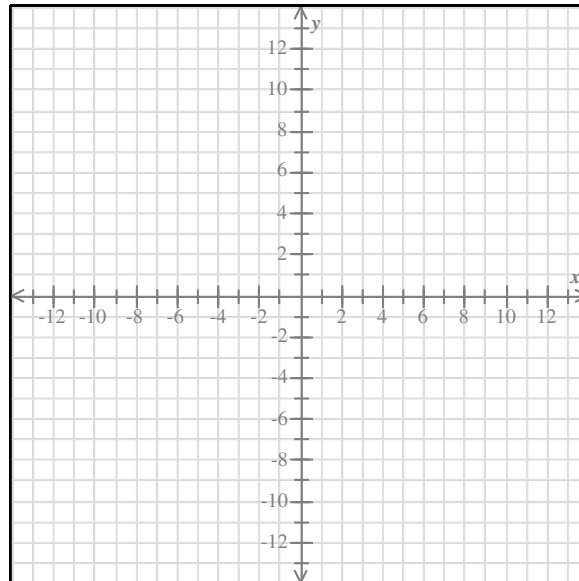
$$y = 2(x - 5)^2 - 3$$



**Question 52 of 58**

Graph the parabola.

$$y = -2x^2 - 4x + 3$$

**Question 53 of 58**

Find the  $x$ -intercept(s) and the coordinates of the vertex for the parabola  $y = x^2 - 2x - 35$ . If there is more than one  $x$ -intercept, separate them with commas.

**Question 54 of 58**

Answer the questions below about the quadratic function.

$$g(x) = 3x^2 - 6x + 6$$

Does the function have a minimum or maximum value?
Where does the minimum or maximum value occur? $x =$
What is the function's minimum or maximum value?

### Question 55 of 58

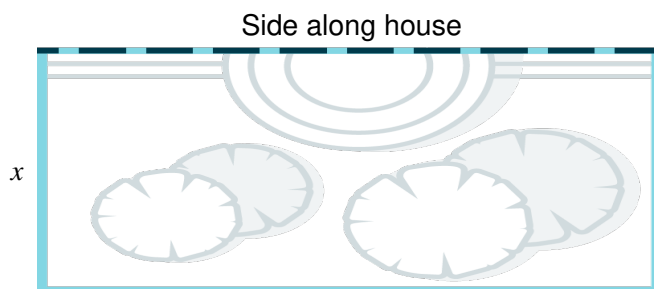
A ball is thrown vertically upward. After  $t$  seconds, its height  $h$  (in feet) is given by the function  $h(t) = 48t - 16t^2$ . What is the maximum height that the ball will reach?

Do not round your answer.

### Question 56 of 58

Kevin has 480 meters of fencing. He will use it to form three sides of a rectangular garden. The fourth side will be along a house and will not need fencing.

As shown below, one of the sides has length  $x$  (in meters).



(a) Find a function that gives the area  $A(x)$  of the garden (in square meters) in terms of  $x$ .

$$A(x) = \square$$

(b) What side length  $x$  gives the maximum area that the garden can have?

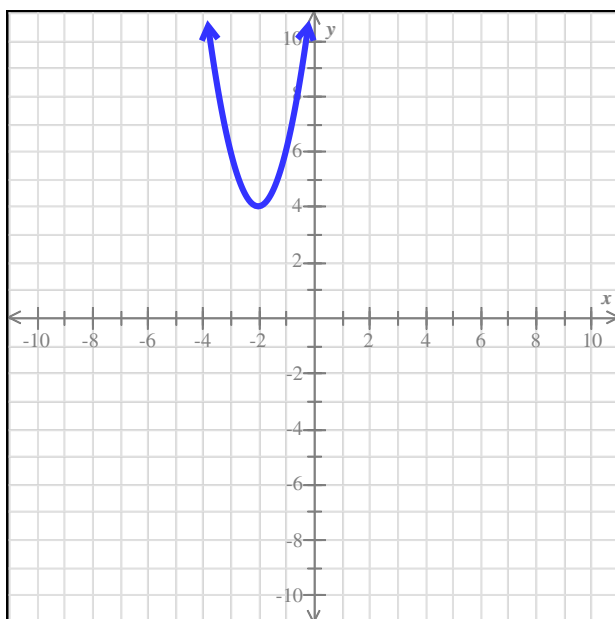
Side length  $x$  :  $\square$  meters

(c) What is the maximum area that the garden can have?

Maximum area:  $\square$  square meters

**Question 57 of 58**

The graph of a quadratic function with vertex  $(-2, 4)$  is shown in the figure below. Find the domain and the range.



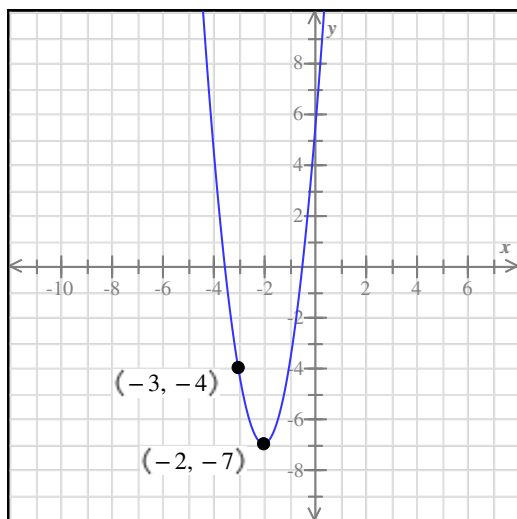
Write the domain and range using interval notation.

domain = \_\_\_\_\_

range = \_\_\_\_\_

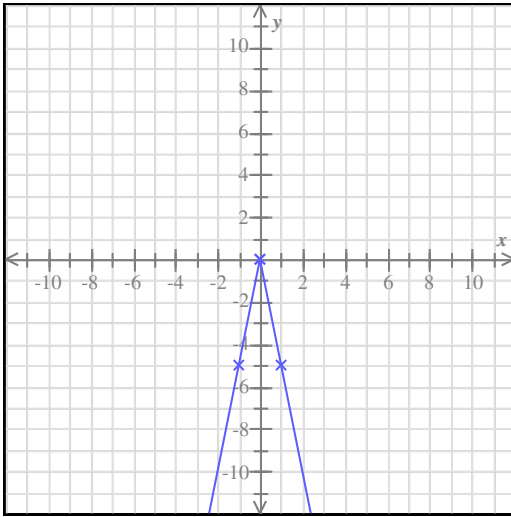
**Question 58 of 58**

Find the equation of the quadratic function  $f$  whose graph is shown below.

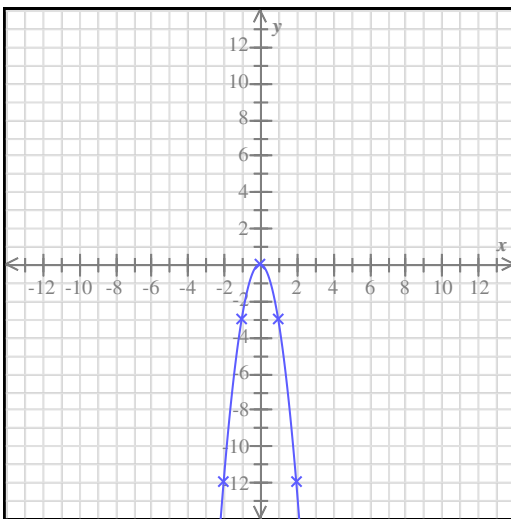


# Practice Problems for Exam 3 Version #2 Answers for class Lacoste College Algebra Fall 2019

## Question 1 of 58

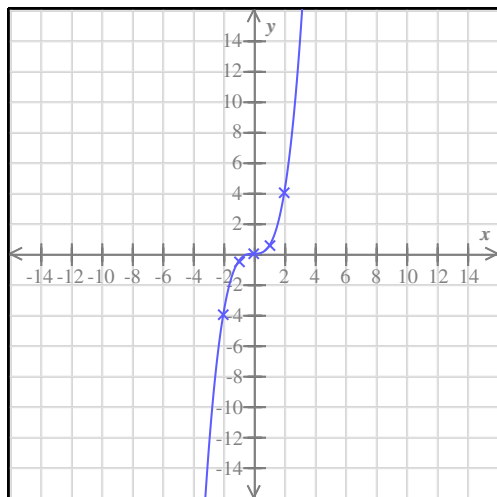


## Question 2 of 58



## Question 3 of 58



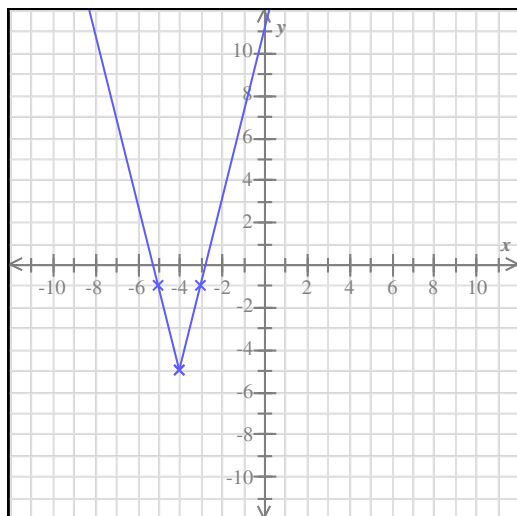


**Question 4 of 58**

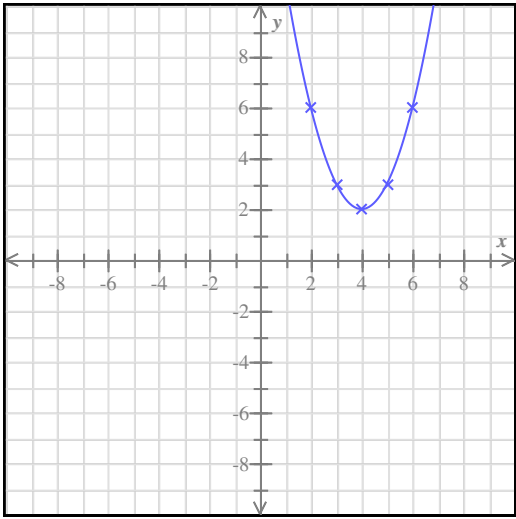
$$f(27) = 4$$

$$f(-125) = -4$$

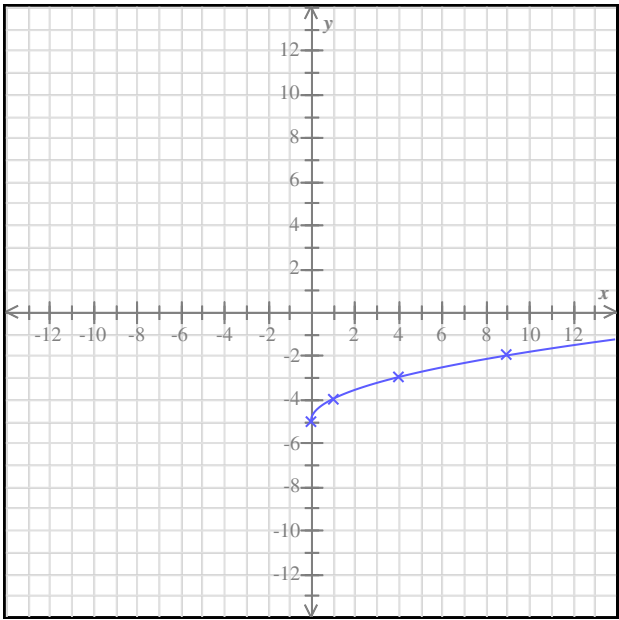
**Question 5 of 58**



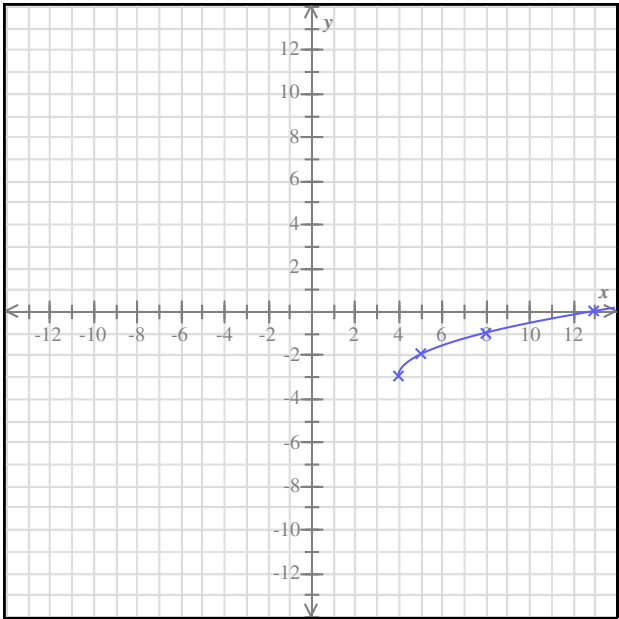
**Question 6 of 58**



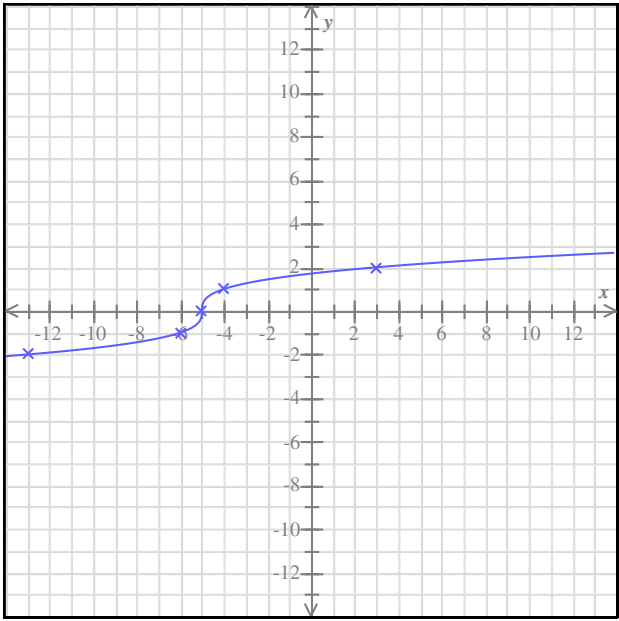
Question 7 of 58



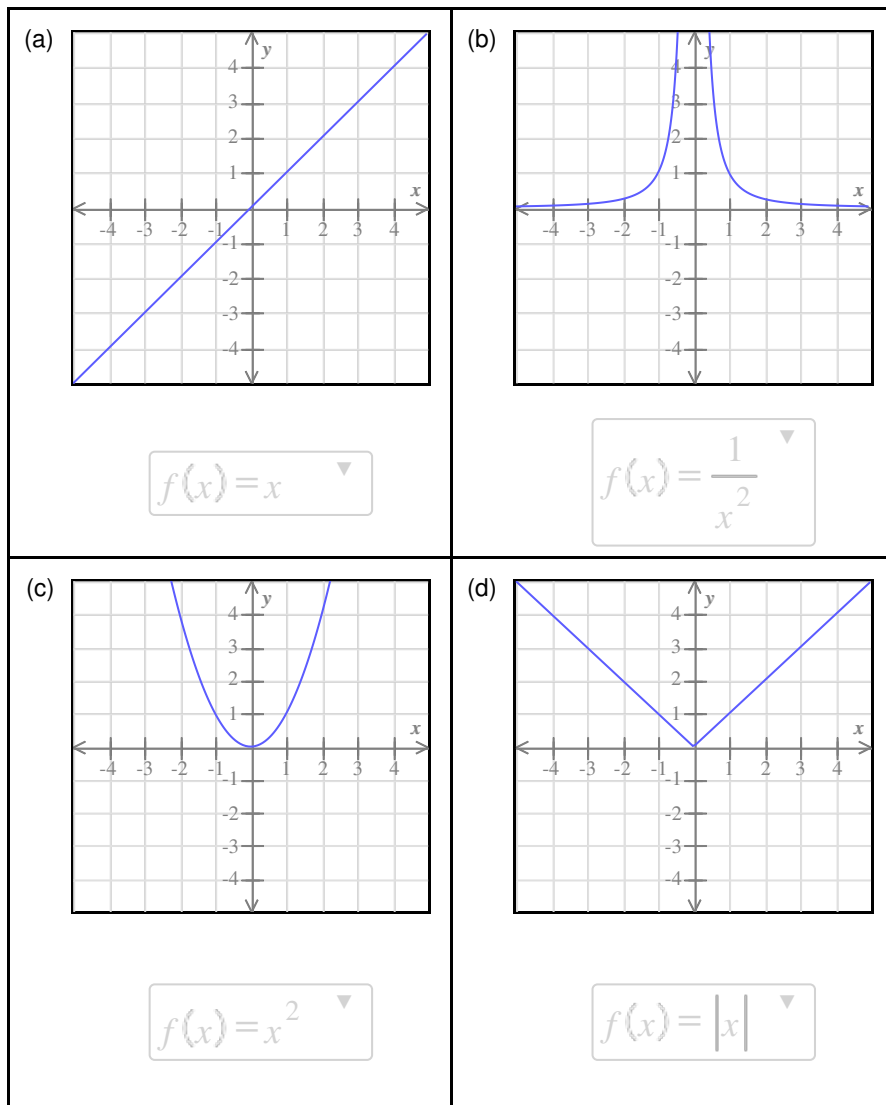
Question 8 of 58



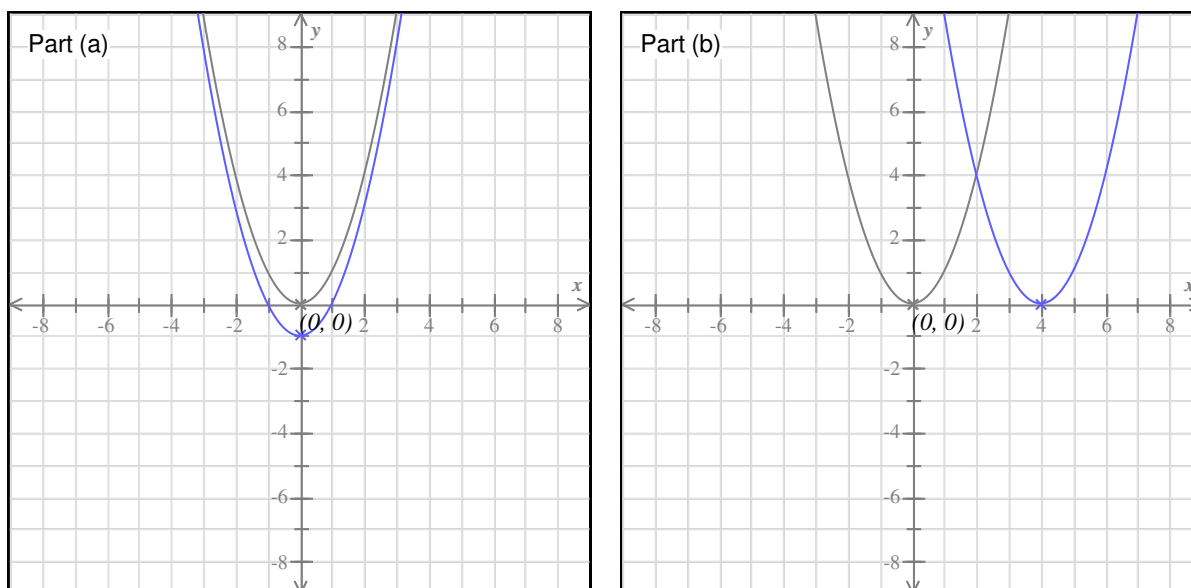
Question 9 of 58



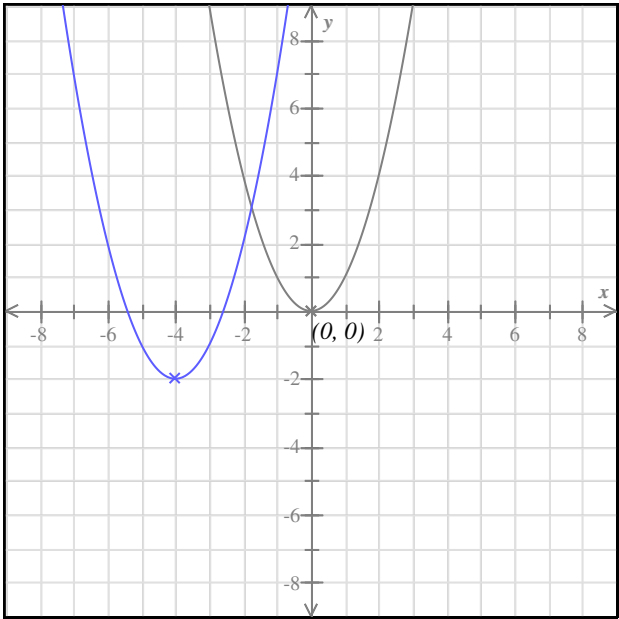
Question 10 of 58



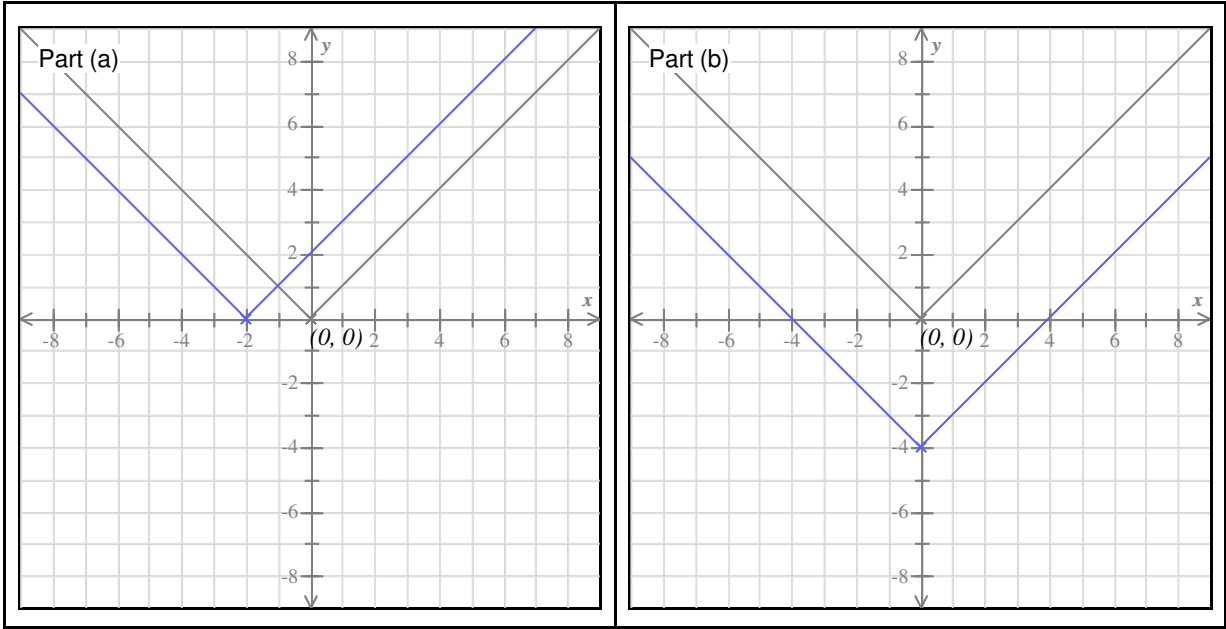
### Question 11 of 58



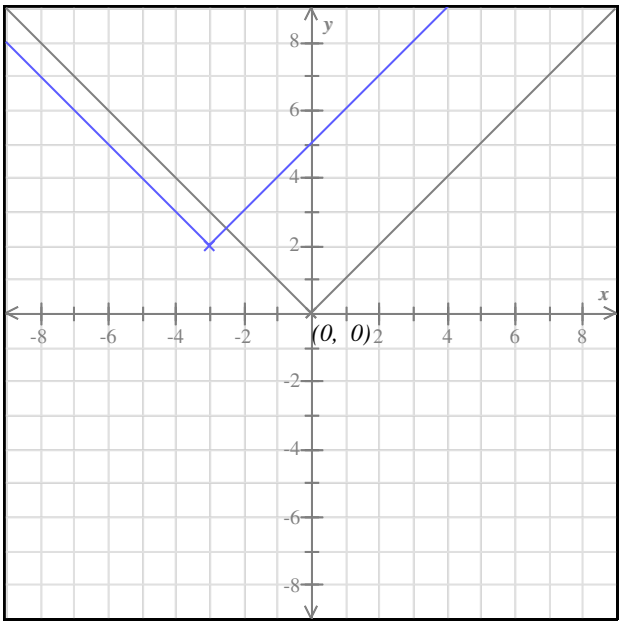
### Question 12 of 58



Question 13 of 58



Question 14 of 58



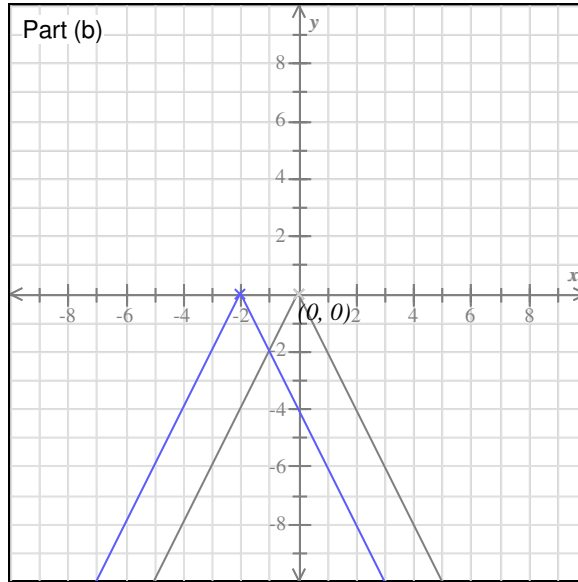
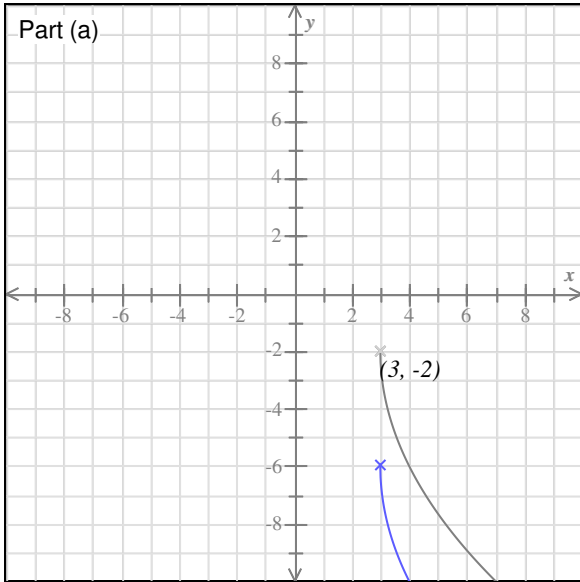
Question 15 of 58

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
(a) For each coefficient, choose whether it is positive or negative	Positive ▾	Negative ▾	Negative ▾	Positive ▾
(b) Choose the coefficient closest to 0	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(c) Choose the coefficient with the greatest value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

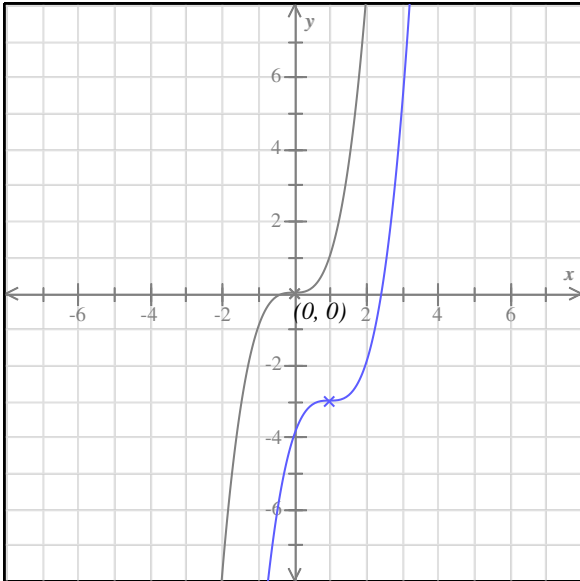
Question 16 of 58

$$f(x) = 2x^2 - 7$$

Question 17 of 58

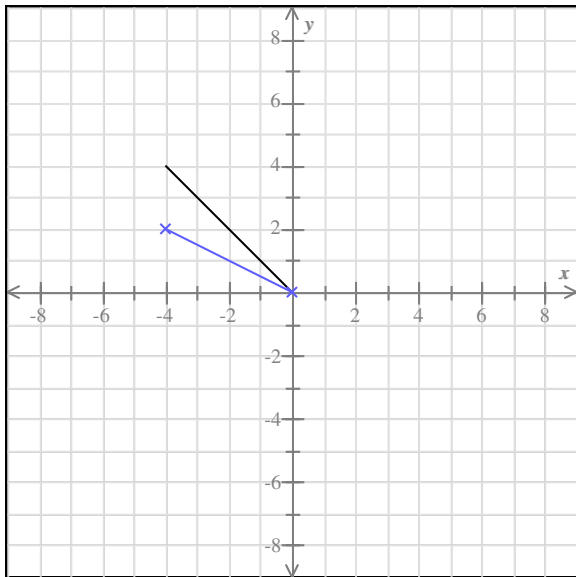


Question 18 of 58

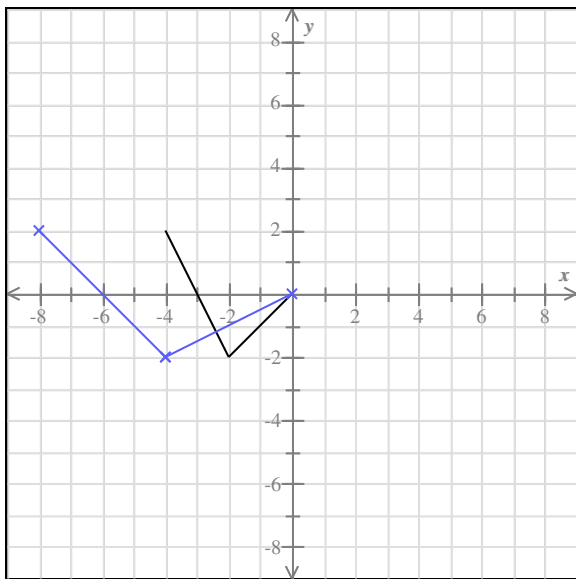


Question 19 of 58

The graph of  $y = f(x)$  is shown. Graph  $y = \frac{1}{2}f(x)$ .



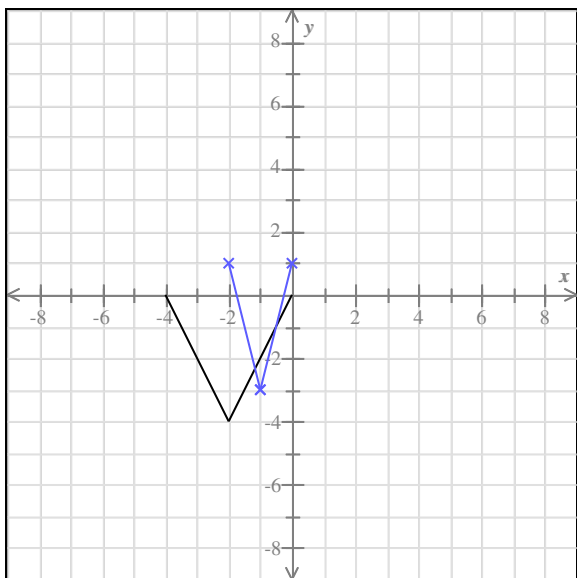
The graph of  $y = g(x)$  is shown. Graph  $y = g\left(\frac{1}{2}x\right)$ .



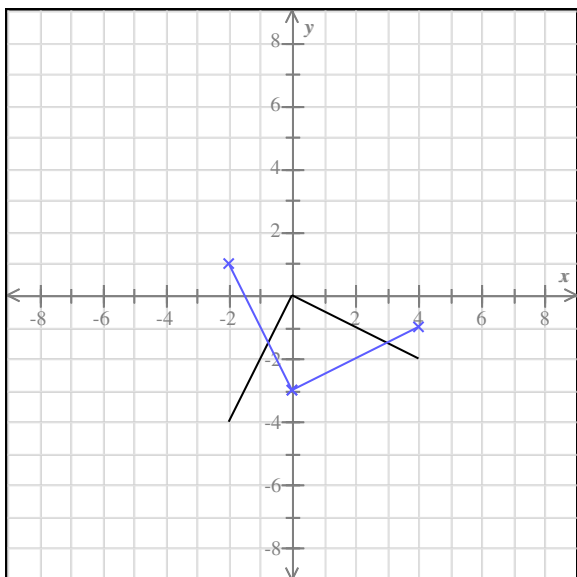
### Question 20 of 58



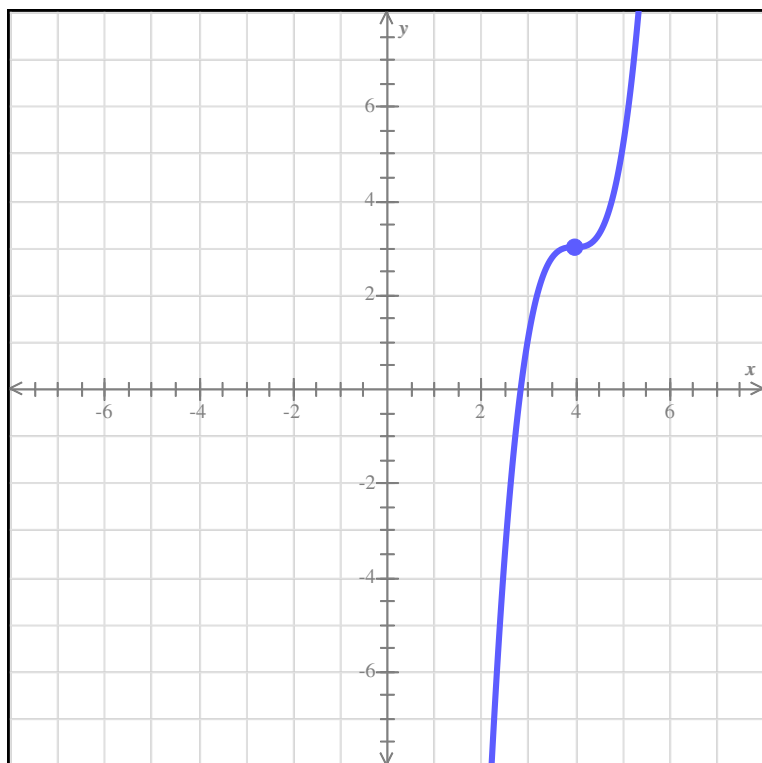
The graph of  $y = h(x)$  is shown. Draw the graph of  $y = h(2x) + 1$ .



The graph of  $y = g(x)$  is shown. Draw the graph of  $y = -g(x) - 3$ .



Question 21 of 58

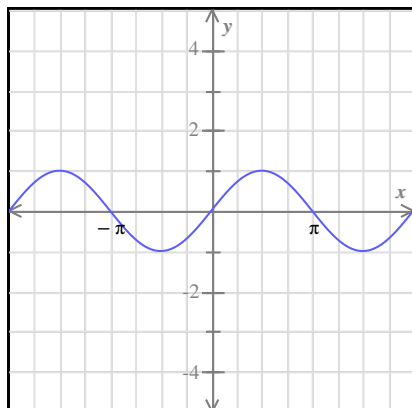


Question 22 of 58

$$h(x) = \sqrt{x-3} + 4$$

Question 23 of 58

(a)



Symmetry:

☐

$x$ -axis

☐

$y$ -axis

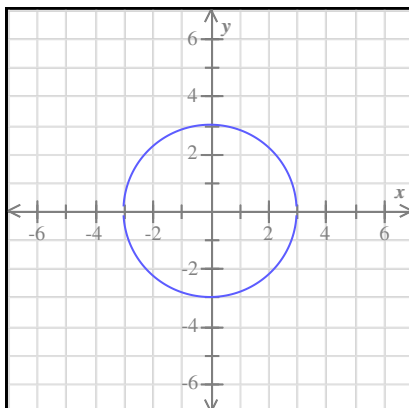
☒

origin

☐

none of these

(b)



Symmetry:

☒

$x$ -axis

☒

$y$ -axis

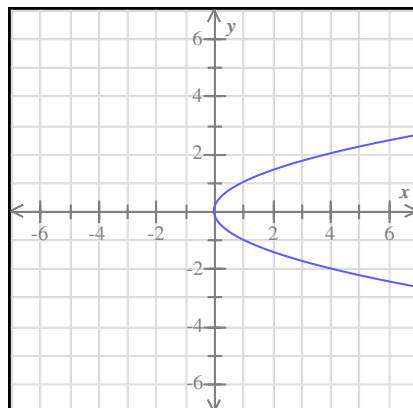
☒

origin

☐

none of these

(c)



Symmetry:

☒

$x$ -axis

☐

$y$ -axis

☐

origin

☐

none of these

Question 24 of 58

$y = 1 - x^4$ <p style="text-align: center;">Symmetry:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <input type="checkbox"/>  <math>x</math>-axis         </div> <div style="text-align: center;"> <input checked="" type="checkbox"/>  <math>y</math>-axis         </div> <div style="text-align: center;"> <input type="checkbox"/>          origin       </div> </div> <div style="text-align: center; margin-top: 10px;"> <input type="checkbox"/>          none of the above       </div>	$25x^4 + 6y^4 = 90$ <p style="text-align: center;">Symmetry:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <input checked="" type="checkbox"/>  <math>x</math>-axis         </div> <div style="text-align: center;"> <input checked="" type="checkbox"/>  <math>y</math>-axis         </div> <div style="text-align: center;"> <input checked="" type="checkbox"/>          origin       </div> </div> <div style="text-align: center; margin-top: 10px;"> <input type="checkbox"/>          none of the above       </div>
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Question 25 of 58

$$g(0) = 1$$

$$g(1) = 4$$

$$g(2) = 3$$

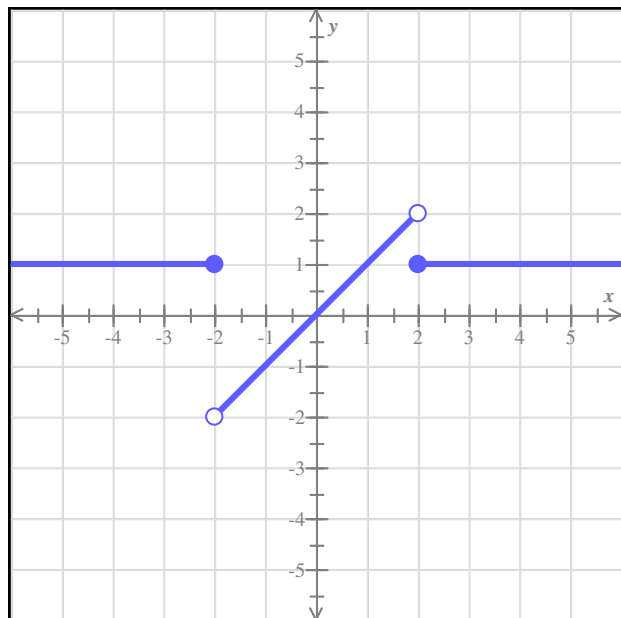
Question 26 of 58

$$(0, 2), (6, 7)$$

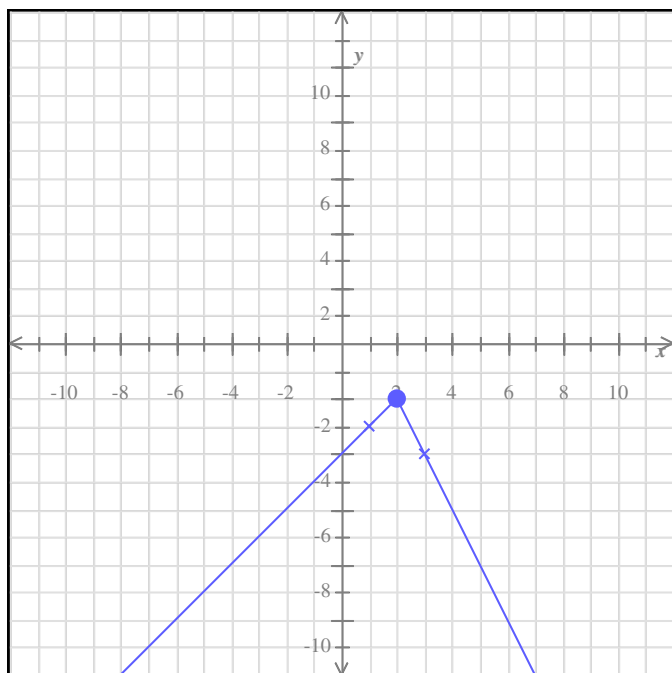
Question 27 of 58

- (a) All local minimum values of  $f$ :  $-3, -5$
- (b) All values at which  $f$  has a local minimum:  $-2, 4$

Question 28 of 58



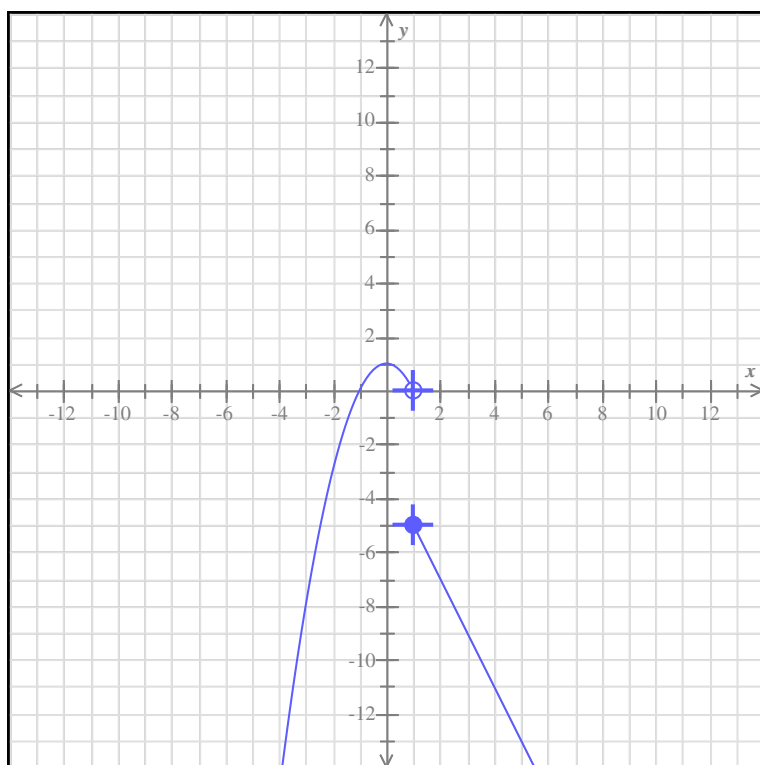
Question 29 of 58



Is the function continuous?

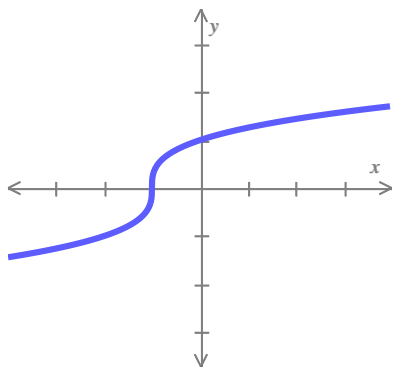
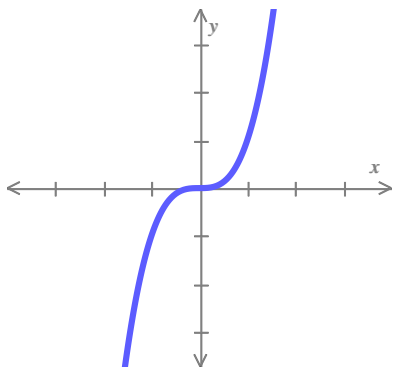
- ☒ Yes  
☐ No

Question 30 of 58



Is the function  $f$  continuous? ☐ Yes ☒ No

Question 31 of 58

<p>The function <math>r</math></p>  <p> <input type="radio"/> Even  <input type="radio"/> Odd  <input checked="" type="radio"/> Neither         </p>	<p>The function <math>s</math></p>  <p> <input type="radio"/> Even  <input checked="" type="radio"/> Odd  <input type="radio"/> Neither         </p>
<p><math>g(x) = 5x^2</math></p> <p> <input checked="" type="radio"/> Even  <input type="radio"/> Odd  <input type="radio"/> Neither         </p>	<p><math>h(x) = -4x^5 + 3x^3</math></p> <p> <input type="radio"/> Even  <input checked="" type="radio"/> Odd  <input type="radio"/> Neither         </p>

Question 32 of 58

<p><math>f(x) = \sqrt{3x^2 + 1}</math></p> <p> <input checked="" type="radio"/> Even  <input type="radio"/> Odd  <input type="radio"/> Neither         </p>	<p><math>g(x) = x^2 x  + 7</math></p> <p> <input checked="" type="radio"/> Even  <input type="radio"/> Odd  <input type="radio"/> Neither         </p>	<p><math>h(x) = \frac{1}{x+5}</math></p> <p> <input type="radio"/> Even  <input type="radio"/> Odd  <input checked="" type="radio"/> Neither         </p>
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Question 33 of 58

$$C = 20.65 + 0.85M$$

Question 34 of 58

$$(f+g)(x) = 4x^2 + x + 5$$

$$(fg)(x) = 4x^3 + 20x^2$$

$$(f-g)(2) = -9$$

Question 35 of 58

$$(a) \left( \frac{g}{h} \right)(-4) = \frac{25}{44}$$

(b) Value(s) that are NOT in the domain of  $\frac{g}{h}$ :  $\frac{8}{9}$

#### Question 36 of 58

$$\left( \frac{f}{g} \right)(x) = \frac{x-5}{x}$$

Domain of  $\frac{f}{g}$ :  $(-\infty, -4) \cup (-4, 0) \cup (0, \infty)$

#### Question 37 of 58

$(f+g)(x) = \frac{1}{2x^2+1} + \sqrt{5x+3}$ <p>Domain of <math>f+g</math>: <math>\left[ -\frac{3}{5}, \infty \right)</math></p>
$(fg)(x) = \frac{\sqrt{5x+3}}{2x^2+1}$ <p>Domain of <math>fg</math>: <math>\left[ -\frac{3}{5}, \infty \right)</math></p>

#### Question 38 of 58

$$(w \circ u)(-3) = 17$$

$$(u \circ w)(-3) = -22$$

#### Question 39 of 58

$$(f \circ f)(x) = x$$

$$(g \circ g)(x) = x^4 - 14x^2 + 42$$

**Question 40 of 58**

$$(f \circ g)(x) = \sqrt{3x + 15}$$

Domain of  $f \circ g$ :  $[-5, \infty)$

**Question 41 of 58**

$$N(t) = 4\pi \left( \frac{4}{3}t \right)^2$$

**Question 42 of 58**

(a) Write a direct variation equation that relates $x$ and $y$ .
Equation: $y = \frac{2}{5}x$
(b) Find $y$ when $x = 6$ .
$y = \frac{12}{5}$

**Question 43 of 58**

$$3 \text{ m/s}^2$$

**Question 44 of 58**

(a) How far does Karen travel per revolution?

8 feet

(b) What is the slope of the graph?

$$\frac{1}{8}$$

**Question 45 of 58**

(a) Write an inverse variation equation that relates  $x$  and  $y$ .

Equation:  $y = \frac{12}{x}$

(b) Find  $y$  when  $x = 16$ .

$$y = \frac{3}{4}$$

**Question 46 of 58**

$$2 \text{ m/s}^2$$

**Question 47 of 58**

$$w = \frac{ku^3}{d}$$

**Question 48 of 58**

The temperature is 240 kelvin.

**Question 49 of 58**



(a) Does the parabola open upward or downward?



upward



downward

(b) Find the coordinates of the vertex.

vertex:  $(2, -4)$

(c) Find the equation of the axis of symmetry.

equation of axis of symmetry:  $x = 2$

(d) Find the intercept(s).

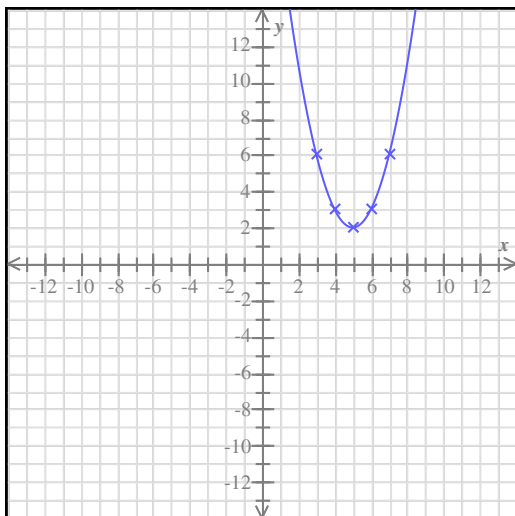
For both the  $x$ - and  $y$ -intercept(s), make sure to do the following.

- If there is more than one, separate them with commas.
- If there are none, select "None".

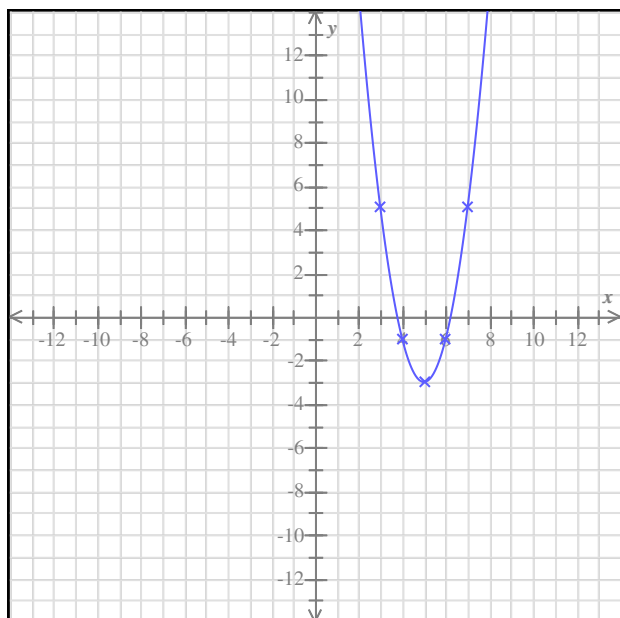
$x$ -intercept(s):  $-2, 6$

$y$ -intercept(s):  $-3$

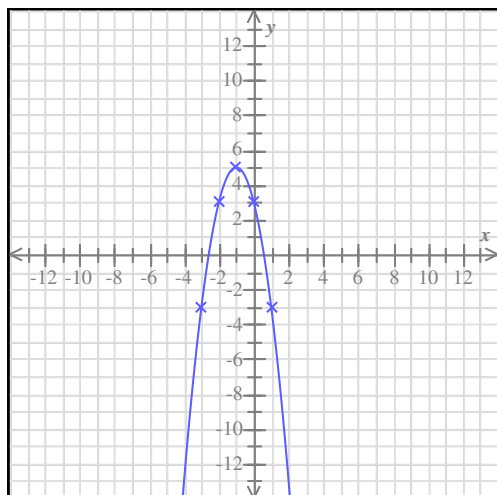
### Question 50 of 58



Question 51 of 58



Question 52 of 58



Question 53 of 58

x-intercept(s):  $-5, 7$

vertex:  $(1, -36)$

Question 54 of 58

Does the function have a minimum or maximum value?	
<input checked="" type="radio"/> Minimum	<input type="radio"/> Maximum
Where does the minimum or maximum value occur?	
$x = 1$	
What is the function's minimum or maximum value?	
3	

**Question 55 of 58**

Height: 36 feet

**Question 56 of 58**

(a) Find a function that gives the area  $A(x)$  of the garden (in square meters) in terms of  $x$ .

$$A(x) = 480x - 2x^2$$

(b) What side length  $x$  gives the maximum area that the garden can have?

Side length  $x$  : 120 meters

(c) What is the maximum area that the garden can have?

Maximum area: 28,800 square meters

**Question 57 of 58**

domain:  $(-\infty, \infty)$

range:  $[4, \infty)$

**Question 58 of 58**

$$f(x) = 3(x+2)^2 - 7$$