TRANSLATIONS OF FUNCTIONS

Vertical stretch of 5

Shift right 3 units (when you take it out the parenthesis it changes the sign)

$$f(x) = -5(x-3)^2 + 7$$

Negative in front reflects across the x-axis

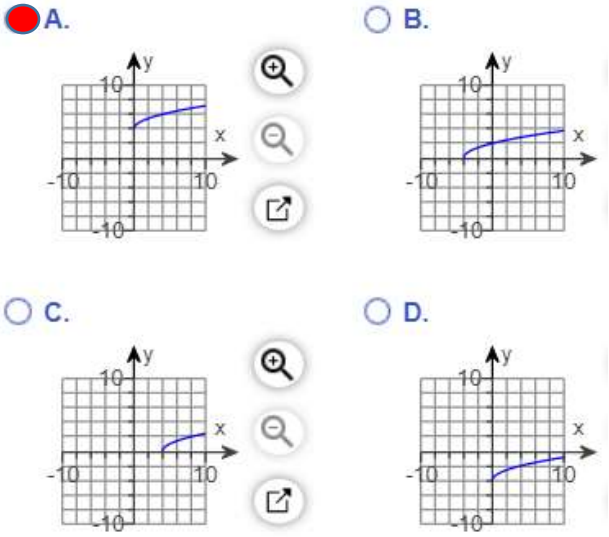
Shifts up 7 units

$f(x) = \sqrt{-x}$ *means it reflects across the* $y-$*axis*

1. Graph the following function.

$y = \sqrt{x} + 4$

Shifts up 4

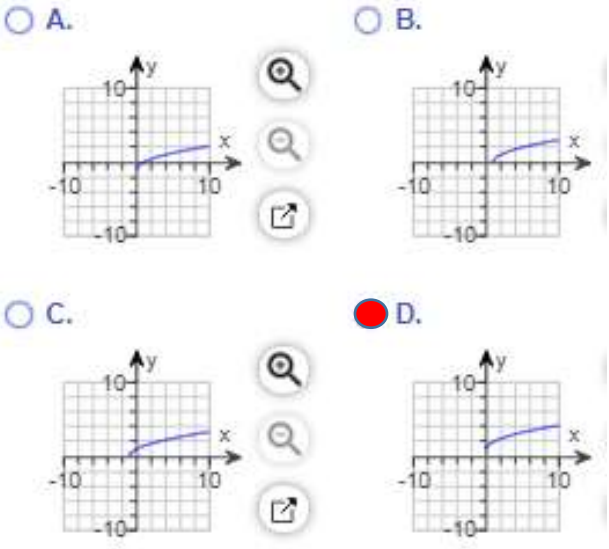


2. Graph the following function.

$y = \sqrt{x} + 1$

Choose the best graph.

Shifts up 1

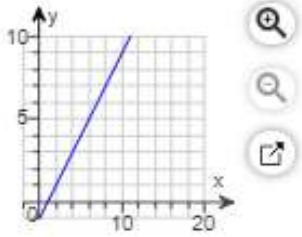


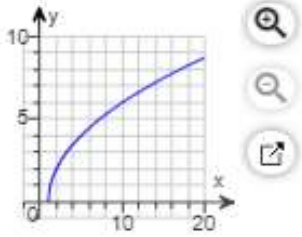
3) Graph the function.

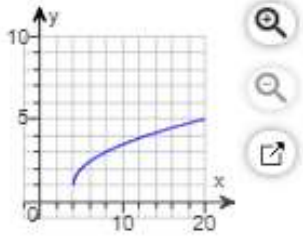
$y = \sqrt{x-4}$

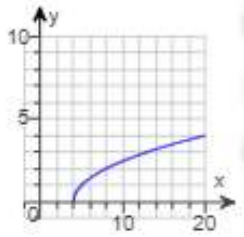
shifts right 4

Choose the correct graph below.

A. 

B. 

C. 

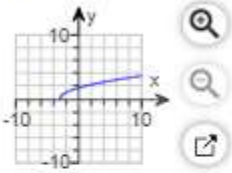
D. 

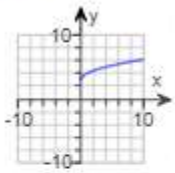
4) Graph the following function.

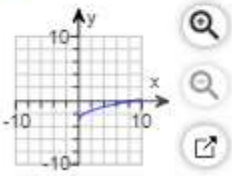
$y = \sqrt{x+3}$

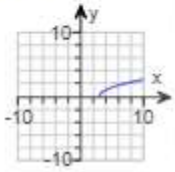
Choose the best graph.

shifts left 3

A. 

B. 

C. 

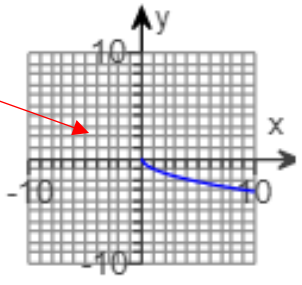
D. 

5) Describe how the graph of the function $h(x) = -\sqrt{x}$ can be obtained from the basic graph. Then graph the function.

Start with the graph of $f(x) = \sqrt{x}$ and

reflect it across the x-axis.

Graph $h(x) = -\sqrt{x}$. Choose the correct graph below.



6) Describe how the graph of the function can be obtained from one of the basic graphs.

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

Start with the graph of $h(x) = x^2$. Shift it [right 2] units. Then reflect it across the [x-axis] and shift it [up 6] units.

7) Describe how the graph of the function can be obtained from one of the basic graphs.

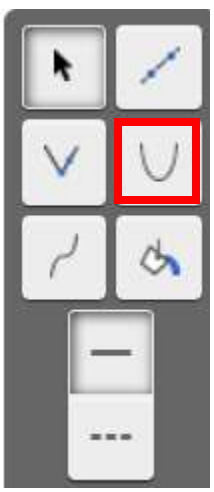
$g(x) = -(x-5)^2 + 4$

Start with the graph of $h(x) = x^2$. Shift it [right 5] units. Then reflect it across the [x-axis] and shift it [up 4] units.

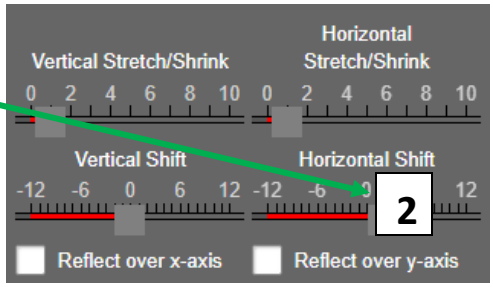
8) Describe how the given function can be obtained from one of the basic graphs. Then graph the function.

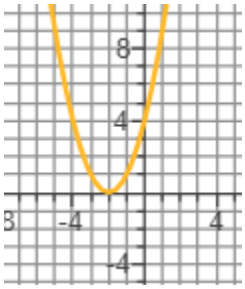
$y = (x-2)^2$

Start with the graph of $y =$ [x^2]. Shift the graph [2 units to the right.]



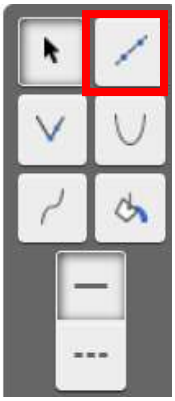
Then click on the graph





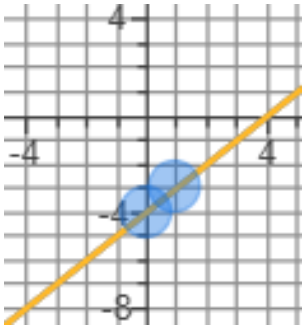
9) Describe how the graph of $g(x) = x - 4$ can be obtained from one of the basic graphs. Then graph the function.

Start with the graph of $y =$ x. Shift it down 4 units.



Then click on the graph

Plot (0,-4)
then go up 1 right 1
for the other point

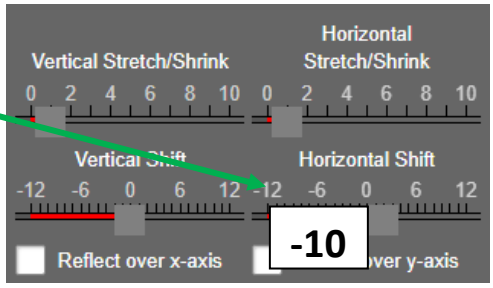


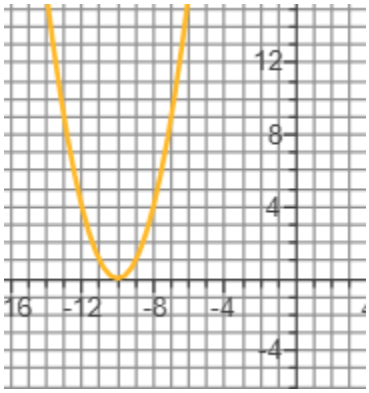
10) Describe how the given function can be obtained from one of the basic graphs. Then graph the function.

$y = (x + 10)^2$

Start with the graph of $y =$ x^2. Shift the graph 10 units to the left.

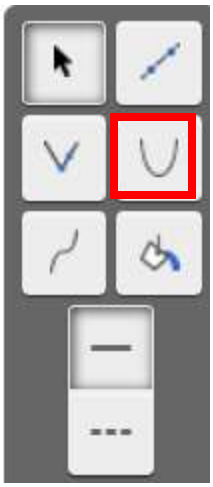
Then click on the graph

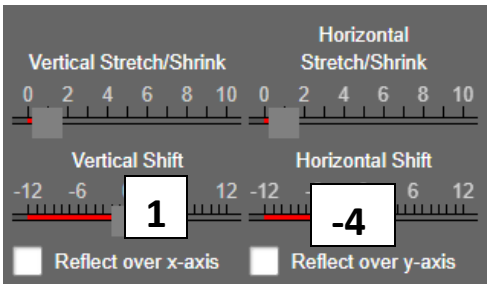




11) Describe how the given function can be obtained from one of the basic graphs. Then graph the function.

$g(x) = (x + 4)^2 + 1$

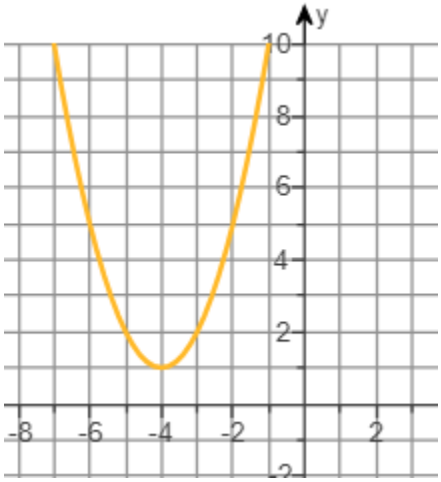




Describe how the given function can be obtained from one of the basic graphs.

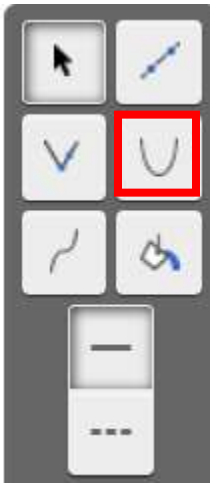
Start with the graph of $f(x) = x^2$. Shift it left 4 units and then shift it up 1 unit.

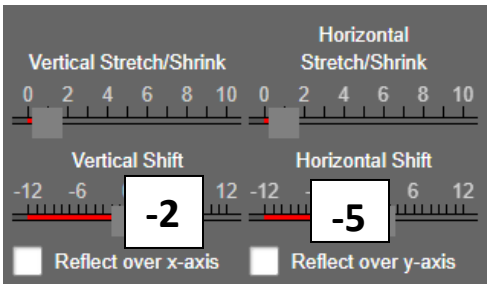
Use the graphing tool to graph the equation.



12) Describe how the given function can be obtained from one of the basic graphs. Then graph the function.

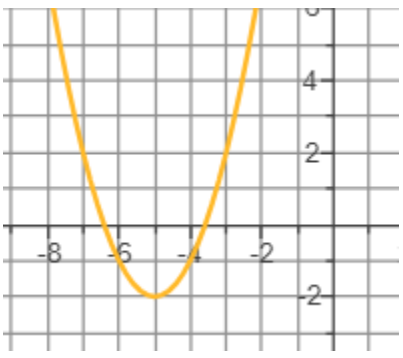
$g(x) = (x + 5)^2 - 2$





Describe how the given function can be obtained from one of the basic graphs.

Start with the graph of $f(x) = x^2$. Shift it left 5 units and then shift it down 2 units.



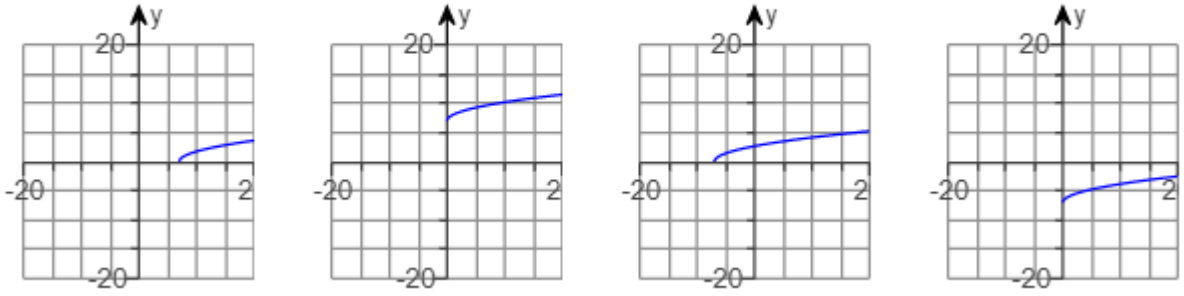
13) Describe how the graph of the function can be obtained from the basic graph. Then graph the function.

$f(x) = \sqrt{x+7}$

Start with the graph of $g(x) = \sqrt{x}$. Then shift it left 7 unit(s).

(Type an integer or a simplified fraction.)

A. B. C. D.



14) Describe how the graph of the function can be obtained from the basic graph. Then graph the function.

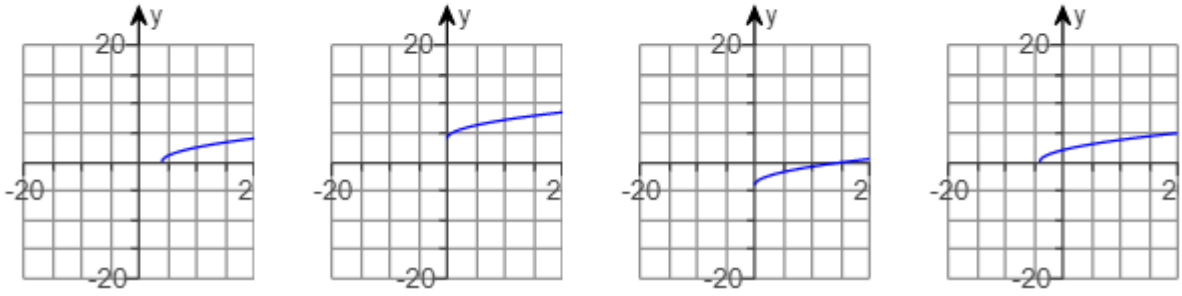
$f(x) = \sqrt{x-4}$

Start with the graph of $g(x) = \sqrt{x}$. Then shift it right 4 unit(s).

(Type an integer or a simplified fraction.)

Choose the correct graph below.

A. B. C. D.



15) Write an equation for a function that has a graph with the given characteristics.

The shape of $y = x^2$, but upside-down and shifted right 2 units and up 7 units.

Which of the following is the equation of the function?

A. $y = -(x-2)^2 + 7$

16) Write an equation for a function that has a graph with the given characteristics.

The shape of $y = x^2$, but upside-down and shifted right 9 units and up 2 units.

D. $y = -(x-9)^2 + 2$

17) Write an equation for a function that has a graph with the given characteristics.

The shape of $y = |x|$, but shifted left 5 units and up 6 units.

D. $y = |x+5| + 6$

18) Write an equation for a function that has a graph with the given characteristics.

The shape of $y = x^2$, but upside-down and shifted right 5 units

A. $y = -(x-5)^2$

19) Write an equation for a function that has a graph with the given characteristics.

The shape of $y = |x|$, but shifted left 6 units and up 8 units.

A. $y = |x+6| + 8$

20) Write an equation for a function that has a graph with the given characteristics.

The shape of $y = x^2$, but upside-down and shifted right 6 units

A. $y = -(x-6)^2$