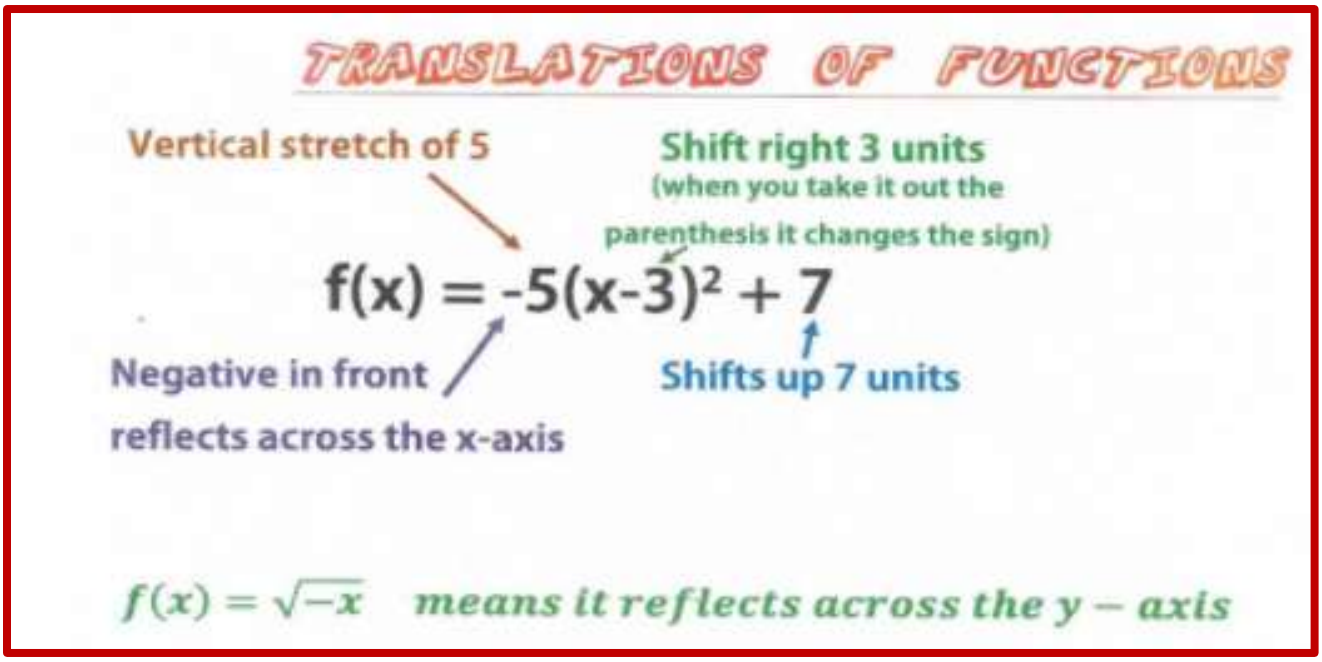
SECTION 2.6 **Families of Functions**



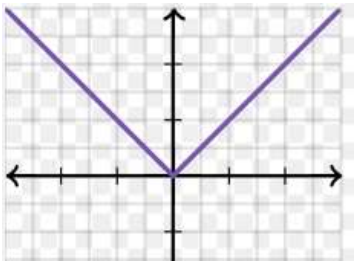
1) Write the function rule for the function shown below reflected in the given axis.

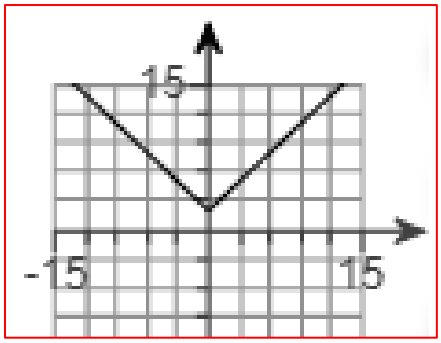
f(x) = − 2x; x-axis negative in front - (-2x) = 2x

2) Begin by graphing the absolute value function, f(x) = |x|. Then use transformations of this graph to determine the graph of the given function.

g(x) = |x| + 2 shifts up 2 units

y = |x|



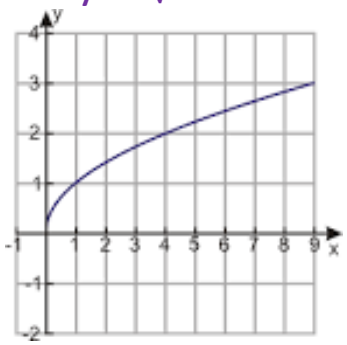


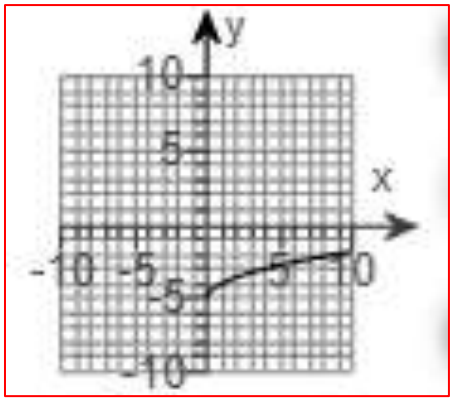
3) Use transformations of $f(x) = \sqrt{x}$ to graph the following function.

shifts down 5 units

$g(x) = \sqrt{x} - 5$

$y = \sqrt{x}$



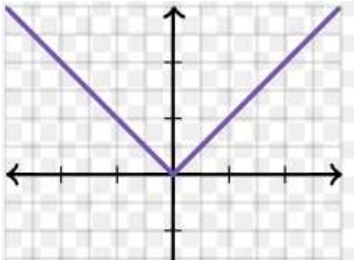


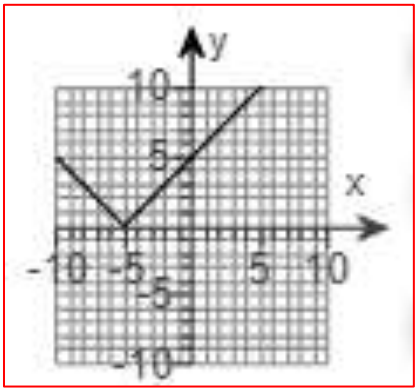
4) Use transformations of $f(x) = |x|$ to graph the following function.

$g(x) = |x + 5|$

shifts left 5 units

$y = |x|$



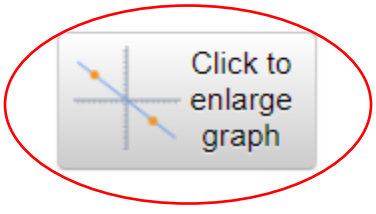


5) Use transformations of $f(x) = x^2$ to graph the following function.

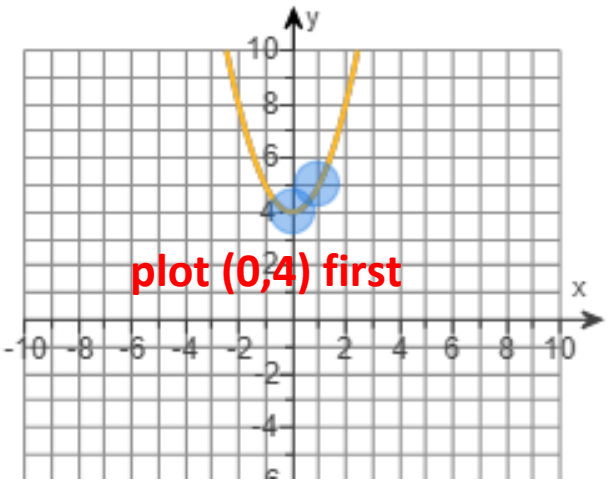
$g(x) = x^2 + 4$

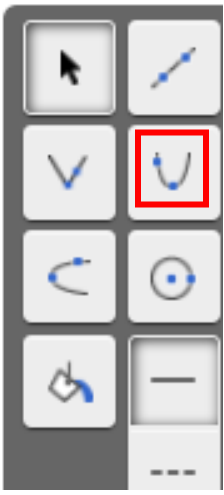
shifts up 4 units

Use the graphing tool to graph the function.



plot (0,4) then up 1 right 1

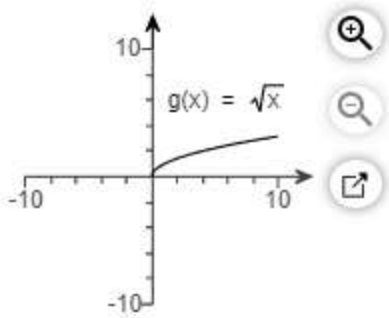




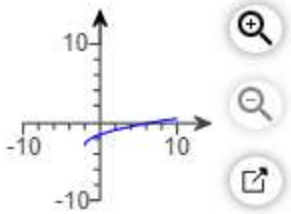
6) Find the graph of the function.

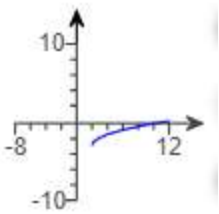
$f(x) = \sqrt{x+2} - 3$

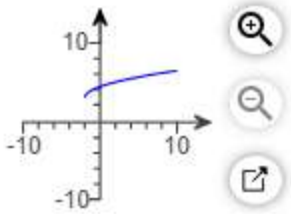
shifts left 2, down 3

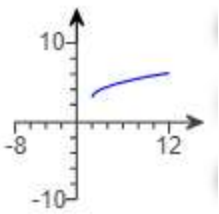


Choose the correct graph of f(x) below.

A. 

B. 

C. 

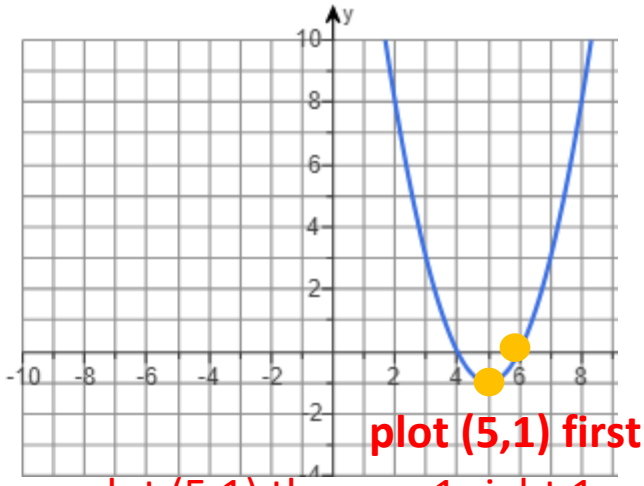
D. 

7) Use transformations of $f(x) = x^2$ to graph the following function.

$g(x) = (x-5)^2 - 1$

shifts right 5, down 1

Use the graphing tool to graph the function.



plot (5,1) first

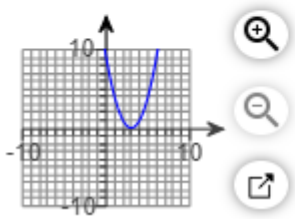
plot (5,1) then up 1 right 1

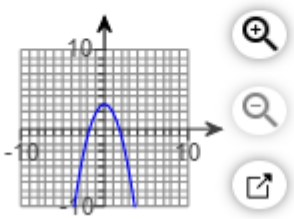
8) Find the graph of the function.

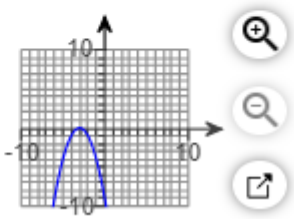
$g(x) = -(x-3)^2$

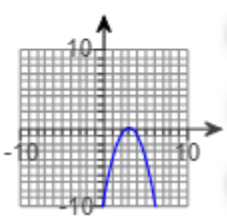
Reflects across the x-axis, shifts right 3

Choose the correct graph below.

A. 

B. 

C. 

D. 

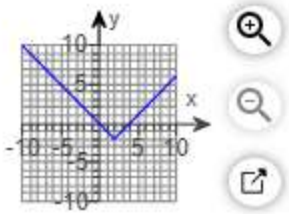
9) Find the graph of the function.

$g(x) = -|x-2|-2$

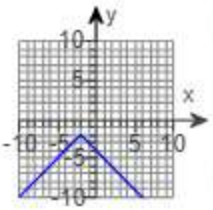
Reflects across the x-axis, shifts right 2, down 2

Choose the correct graph below.

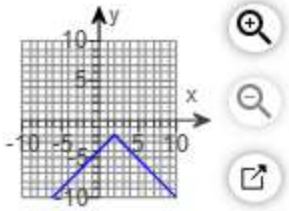
A.



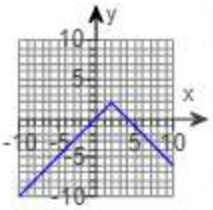
B.



C.



D.

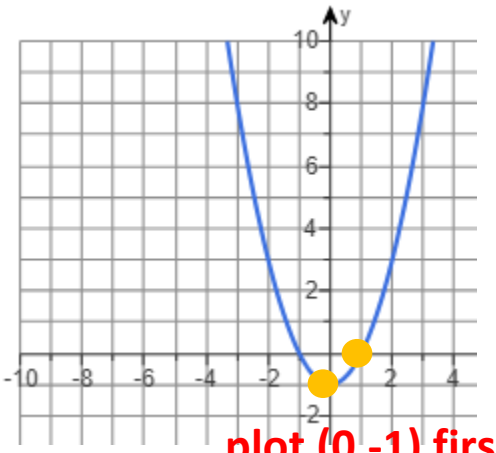


10) Use transformations of $f(x) = x^2$ to graph the following function.

$g(x) = x^2 - 1$

shifts right 5, down 1

Use the graphing tool to graph the function.



plot (0,-1) first

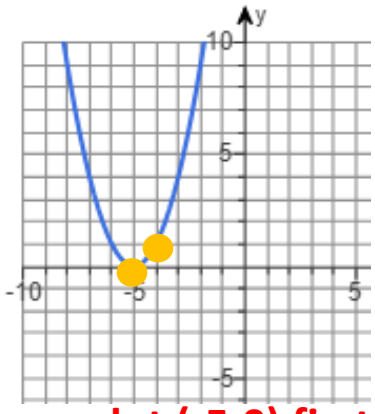
plot (0,-1) then up 1 right 1

11) Use transformations of the graph of $f(x) = x^2$ to determine the graph of the given function.

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

shifts left 5

Use the graphing tool to graph the function.



plot (-5,0) first

plot (-5,0) then up 1 right 1

12) Use transformations of the graph of $f(x) = x^2$ to determine the graph of the given function.

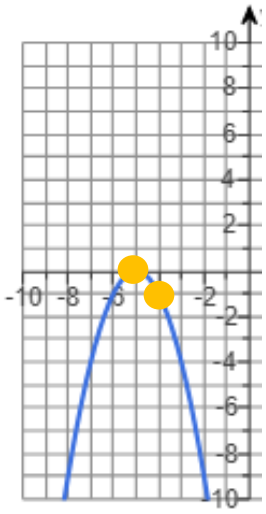
$h(x) = -(x+5)^2$ Reflects across x-axis

shifts right 5, down 1

Use the graphing tool to graph the function.

plot (0,-5) first

plot (0,-5) then **down** 1 right 1



13) Use transformations of $f(x) = x^2$ to graph the following function.

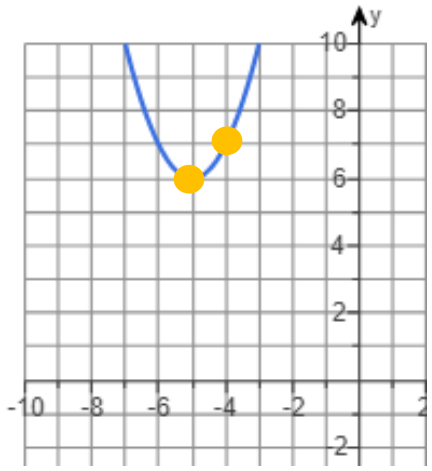
$g(x) = (x+5)^2 + 6$

shifts left 5, up 6

Use the graphing tool to graph the function.

plot (-5,6) first

plot (-5,6) then up 1 right 1



14) Use transformations of $f(x) = x^2$ to graph the following function.

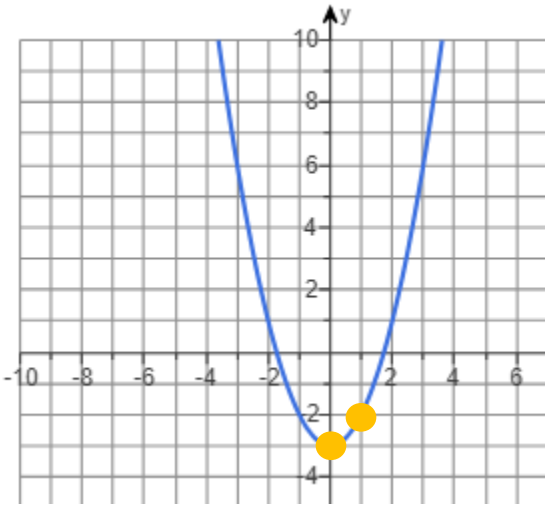
$g(x) = x^2 - 3$

Shifts down 3

Use the graphing tool to graph the function.

plot (0,-3) first

plot (0,-3) then up 1 right 1



15) Use transformations of the graph of $f(x) = x^2$ to determine the graph of the given function.

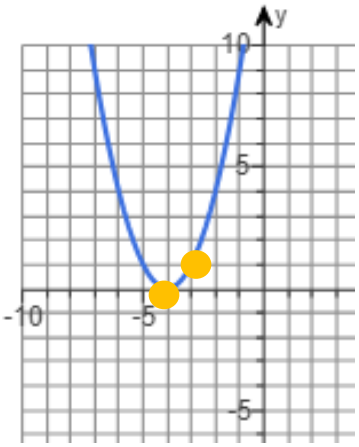
$g(x) = (x + 4)^2$

Shifts left 4

Use the graphing tool to graph the function.

plot (-4,0) first

plot (-4,0) then up 1 right 1



16) Use transformations of the graph of $f(x) = x^2$ to determine the graph of the given function.

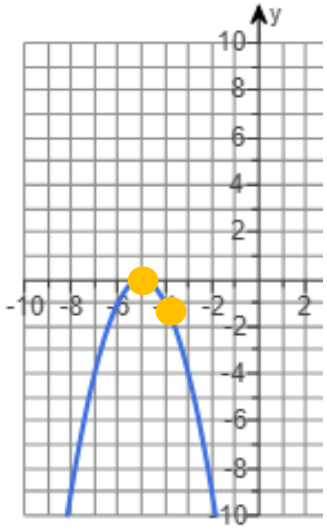
$h(x) = -(x + 5)^2$ Reflects across x-axis

shifts left 5

Use the graphing tool to graph the function.

plot (0,-5) first

plot (0,-5) then **down** 1 right 1



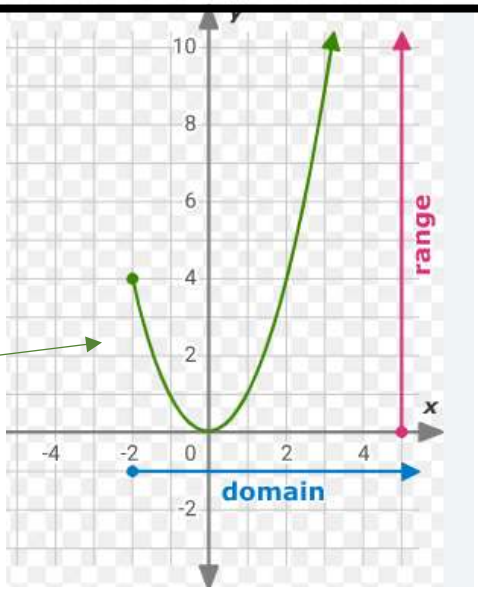
DOMAIN – LEFT TO RIGHT (X VALUES)

RANGE – BOTTOM TO TOP (Y VALUES)

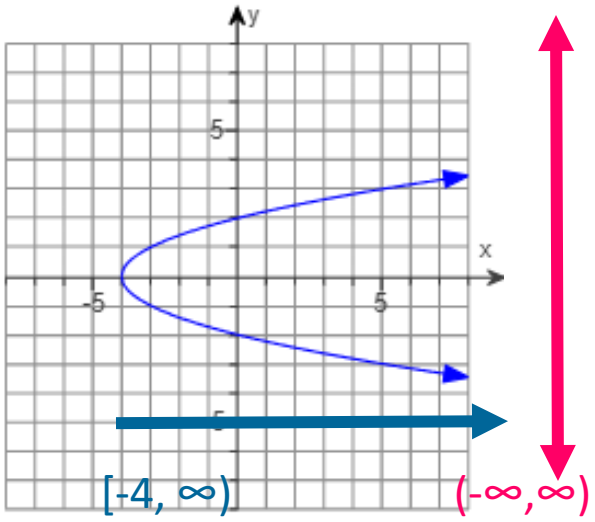
Domain [-2,∞) Range [0,∞)

Closed points use [ ]

Infinity ALWAYS has (-∞,∞)



17) Find the domain and range of the relation.



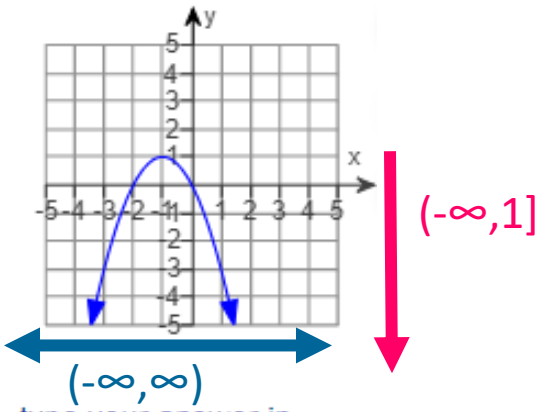
Choose the correct domain.

- (●) **A.** $[-4,\infty)$
- ( ) **B.** $(-\infty,\infty)$
- ( ) **C.** $[0,\infty)$
- ( ) **D.** $(-4,\infty)$

Choose the correct range.

- ( ) **A.** $(-4,\infty)$
- ( ) **B.** $[-4,\infty)$
- ( ) **C.** $[0,\infty)$
- (●) **D.** $(-\infty,\infty)$

18) Find the domain and range of the relation.

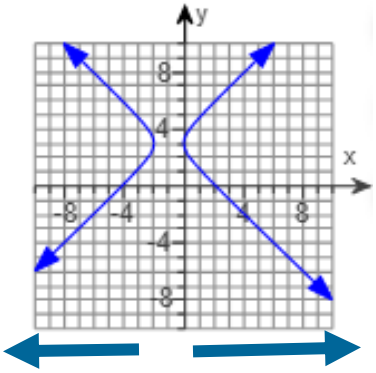


The domain is $(-\infty,\infty)$.
(If the solution is an interval or union of intervals, type your answer in interval notation.)

The range is $(-\infty,1]$.
(If the solution is an interval or union of intervals, type your answer in interval notation.)

19)

Find the domain and range of the relation.



(-∞,∞)

(-∞,-2] U [0,∞)

Choose the correct domain below.

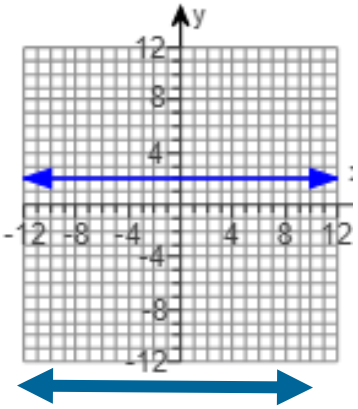
- A. $(-\infty,\infty)$
- ★ B. $(-\infty,-2]\cup[0,\infty)$
- C. $[-2,0]$
- D. None of the above

Choose the correct range below.

- A. $(-\infty,-2]\cup[0,\infty)$
- ★ B. $(-\infty,\infty)$
- C. $[-2,0]$

20)

Find the domain and the range of the relation.



2

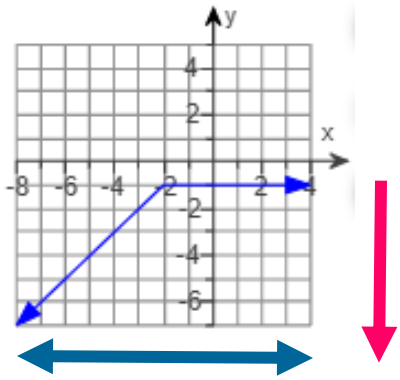
Choose the correct domain.

- A. {2}
- B. $(-\infty,2)\cup(2,\infty)$
- ★ C. $(-\infty,\infty)$
- D. None of the above

Choose the correct range.

- A. $(-\infty,2)\cup(2,\infty)$
- ★ B. {2}
- C. $(-\infty,\infty)$
- D. None of the above

21) Find the domain and range of the relation.



The domain is $(-\infty, \infty)$.

(If the solution is an interval or union of intervals, type your answer in interval notation.)

The range is $(-\infty, -1]$.

(If the solution is an interval or union of intervals, type your answer in interval notation.)