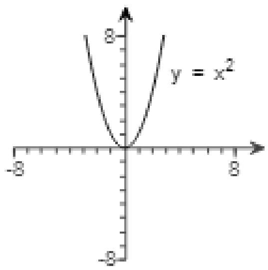
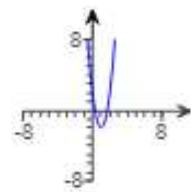
Quiz 4 MATH 161 THOMPSON

Graph the function using the techniques of shifting, compressing, stretching, and/or reflecting. Start with the graph of the basic function shown below.

$f(x) = 4(x-1)^2 - 2$



Vertical stretch of 4, shifts right 1 and down 2 units



Find the function that is finally graphed after the following transformations are applied to the graph of $y = \sqrt{x}$ in the order listed.

(1) Reflect about the x − axis
(2) Shift up 7 units
(3) Shift left 8 units

$y = -\sqrt{x+8} + 7$

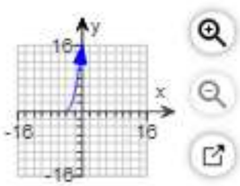
Graph the relation. Determine the domain and range, and whether the relation is a function.

$y = \sqrt{x} - 4$

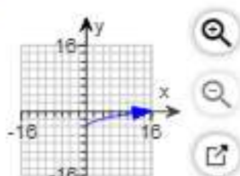
Down 4 units

Choose the graph that represents $y = \sqrt{x} - 4$.

○ A.

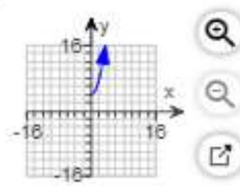


◉ B.



(0,-4)

○ C.



The domain of the relation is $[0,\infty)$. X value
(Type your answer in interval notation.)

The range of the relation is $[-4,\infty)$. Y value
(Type your answer in interval notation.)

Is y a function of x?

◉ Yes
○ No

Find the function that is finally graphed after the following transformations are applied to the graph of $y = \sqrt{x}$ in the order listed.

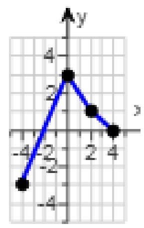
(1) Reflect about the x − axis
(2) Shift up 9 units
(3) Shift right 7 units

$y = -\sqrt{x-7} + 9$

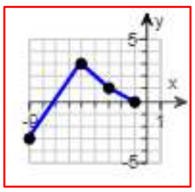
The graph of a function f is illustrated. Use the graph of f as the first step toward graphing each of the following functions.

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

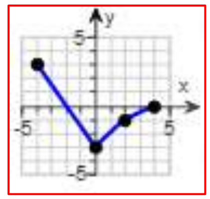
(b) $P(x) = -f(x)$



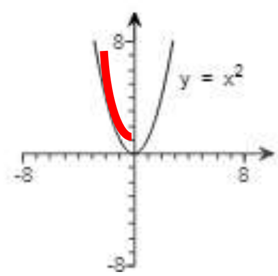
Shifts left 5 units



Reflects across the x-axis



The function $f(x) = x^2$ is decreasing on the interval ______.



The function $f(x) = x^2$ is decreasing on the interval:

◉ **A.** $(-\infty, 0)$

Find the domain and range of the function.

$f(x) = \sqrt{x-6} + 3$

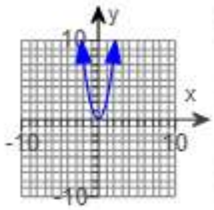
The domain is $[6, \infty)$. Right 6

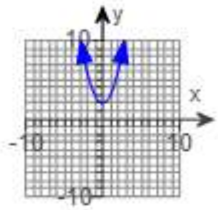
(Type your answer in interval notation.)

The range is $[3, \infty)$. Up 3

(Type your answer in interval notation.)

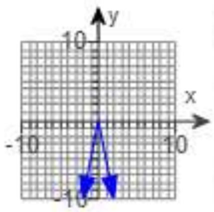
Drag the function given above into the appropriate area belo
the graph.

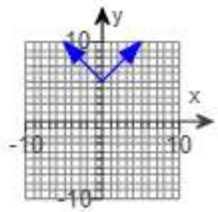




$y = 2x^2$

$y = x^2 + 2$



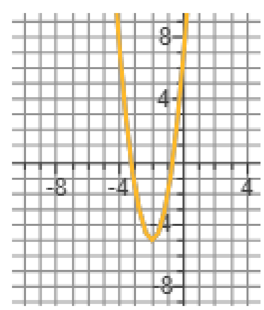


$y = -5|x|$

$y = |x| + 5$

Graph the following function by starting with a function from the library of functions and then combining shifting, compressing, stretching, and/or reflecting techniques.

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

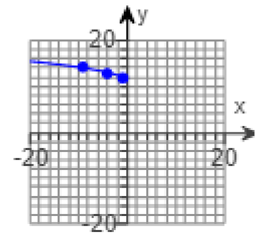


- [ ] **C.** Stretch the graph horizontally by a factor of 3.
- [x] **D.** Stretch the graph vertically by a factor of 3.
- [x] **E.** Shift the graph 5 units down.
- [ ] **F.** Reflect the graph about the x-axis.
- [x] **G.** Shift the graph 2 units to the left.

Vertical Stretch or Compression	Horizontal Stretch or Compression
3	1
Vertical Shift	Horizontal Shift
−5	−2
☐ Reflection about the	☐ Reflection about the

Graph the following function using the techniques of shifting, compressing, stretching, and/or reflecting. Start with the graph of the basic function $y = \sqrt{x}$ and show all stages. Be sure to show at least three key points. Find the domain and the range of the function.

$h(x) = \sqrt{-x} + 11$



◉ C. The graph of $y = \sqrt{x}$ should be vertically shifted up by 11 units, reflected about the y-axis.

reflects across the y-axis, up 11 units

The domain of h(x) is $(-\infty, 0]$. left to 0

(Type your answer in interval notation.)

The range of h(x) is $[11, \infty)$. 11 and up

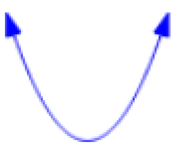
(Type your answer in interval notation.)

Write the function whose graph is the graph of $y = x^3$, but is shifted to the left 9 units.

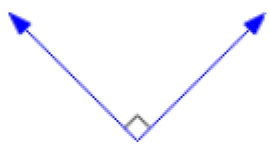
$y = (x+9)^3$

(Simplify your answer.)

Drag the function to the appropriate area below.

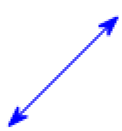


Square function

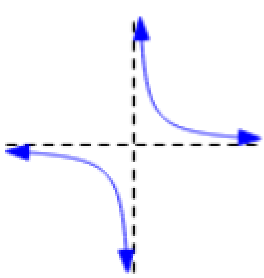


Absolute value function

Constant function

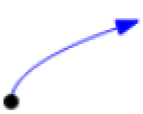


Identity function

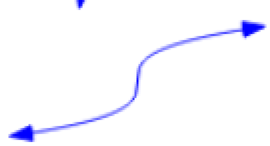


Reciprocal function

Cube function



Square root function



Cube root function