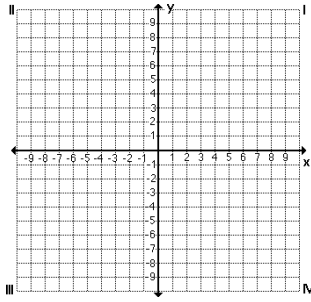


## Precalculus: Section 1.4 Worksheet

### Graph Transformations

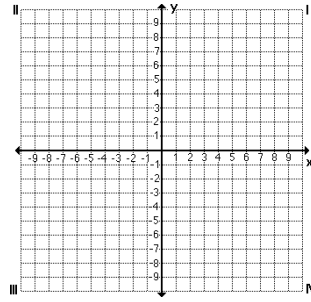
1. Sketch the following four functions on the provided graphs. These are functions that should be in your library of functions, meaning you should know what the graph looks like without having to grab your calculator. Below each graph, state the domain and range of the function.

a.  $y = x^2$



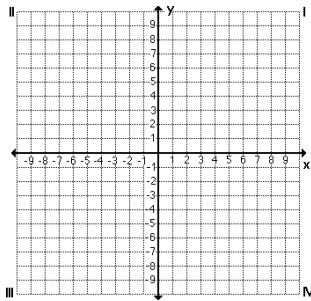
D:                      R:

b.  $y = \sqrt{x}$



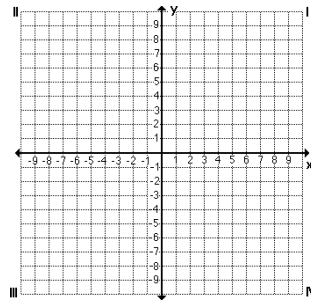
D:                      R:

c.  $y = |x|$



D:                      R:

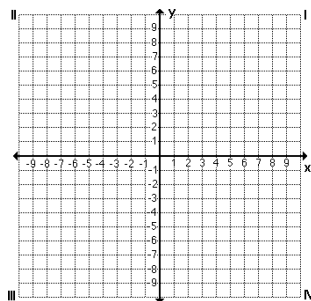
d.  $y = x^3$



D:                      R:

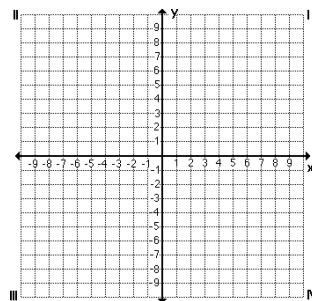
2. Sketch the following three functions on the provided graphs.

a.  $y = x^2$



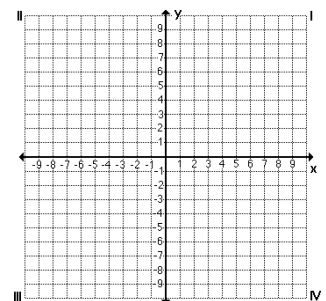
D:                      R:

b.  $y = x^2 + 5$



D:                      R:

c.  $y = x^2 - 3$

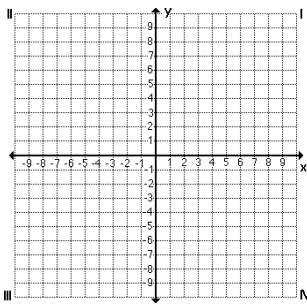


D:                      R:

3. Explain the effect of adding or subtracting a constant on the end of a function.

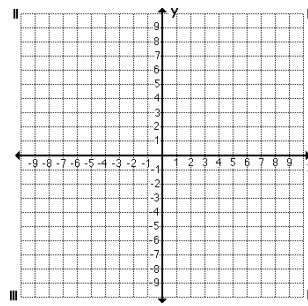
4. Graph the following three functions on the provided graphs and state their domain and range.

a.  $y = \sqrt{x}$



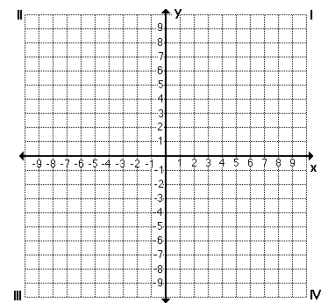
D: R:

b.  $y = \sqrt{x+3}$



D: R:

c.  $y = \sqrt{x-4}$

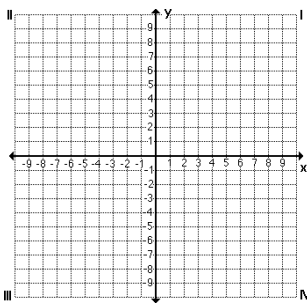


D: R:

5. Explain the effect of adding or subtracting a constant inside the function.

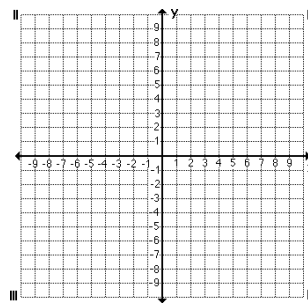
6. Graph the following five functions on the provided graphs and state their domain and range.

a.  $y = |x|$



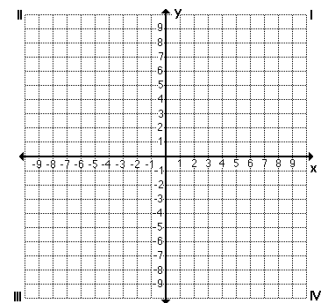
D: R:

b.  $y = 3|x|$



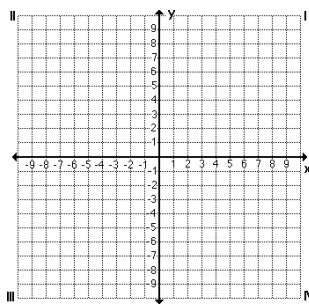
D: R:

c.  $y = |5x|$



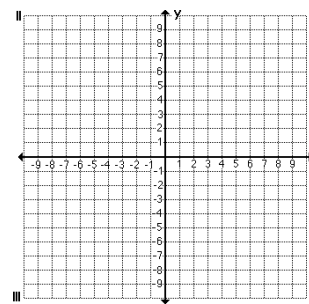
D: R:

d.  $y = \frac{1}{3}|x|$



D: R:

e.  $y = \frac{2}{3}|x|$

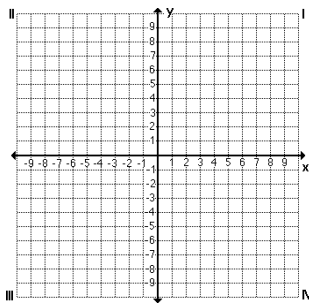


D: R:

7. Explain the effect of multiplying a function by a constant.

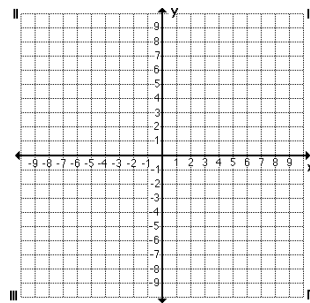
8. Graph the following six functions on the provided graphs and state their domain and range.

a.  $y = x^2$



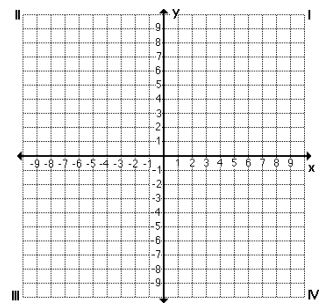
D:                      R:

b.  $y = -x^2$



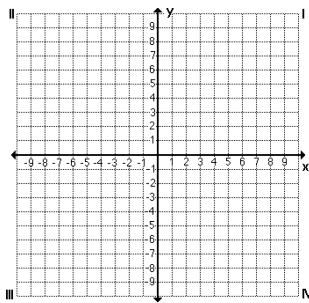
D:                      R:

c.  $y = (-x)^2$



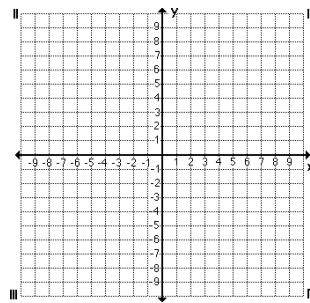
D:                      R:

d.  $y = \sqrt{x}$



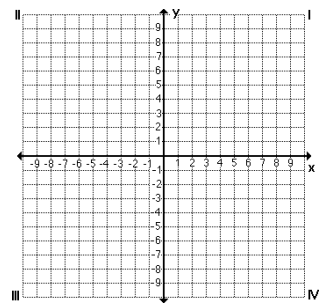
D:                      R:

e.  $y = -\sqrt{x}$



D:                      R:

f.  $y = \sqrt{-x}$

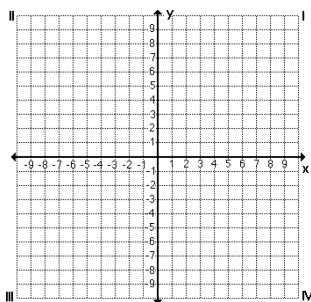


D:                      R:

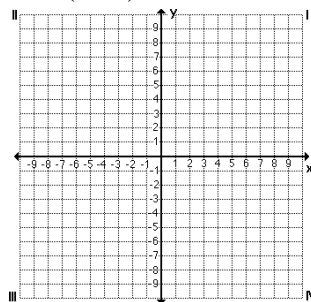
9. Explain the effect of multiplying a function by a negative number. Does it make a difference if the negative is inside parentheses or root?

10. Graph the following four functions on the provided graphs. Explain the shift from the corresponding basic function that you graphed in problem #1.

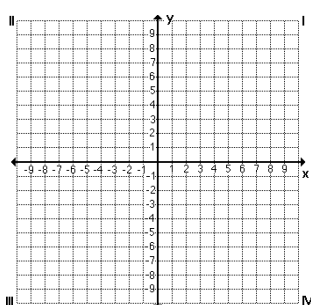
a.  $y = -\sqrt{x+2} + 4$



b.  $y = (x+3)^3 - 2$



c.  $y = -3|x| + 2$



d.  $y = (x-3)^3$

