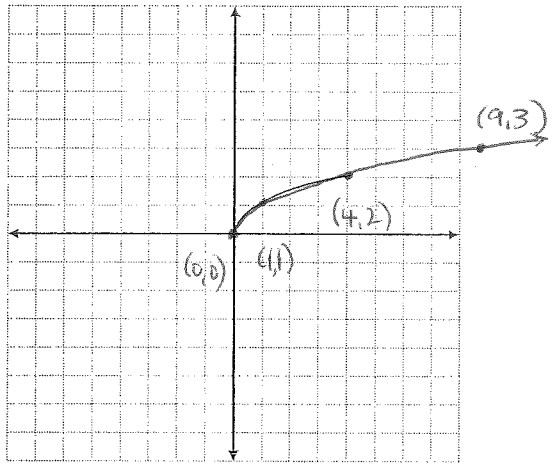
Pre–Calculus 12 Name _____

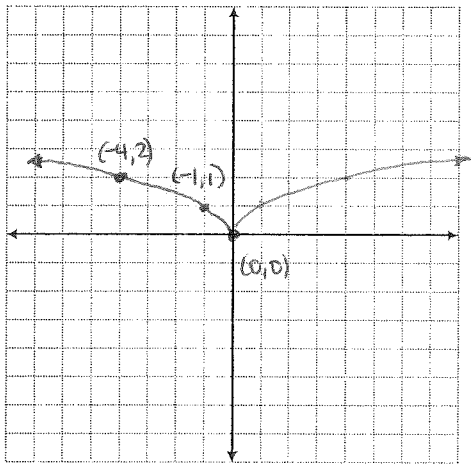
3.2 – Reflecting Graphs of Functions Block _____

Consider the graph of $y=\sqrt{x}$. Label 3 different coordinates.



a) Replace "x" with "$-x$" and re-graph.

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



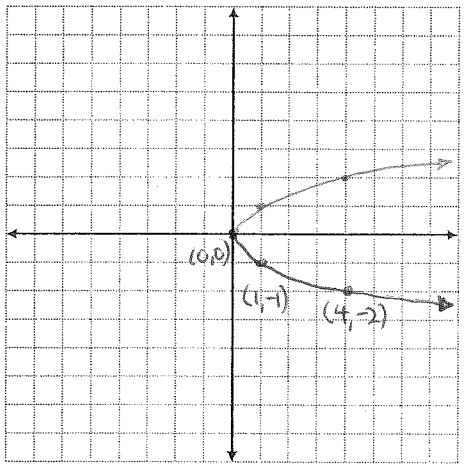
Result (of graph): horizontal reflection in y-axis

Result (of coordinates): all x-values become negative

b) Replace "y" with "$-y$" and re-graph.

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

$$\Rightarrow y=-\sqrt{x}$$

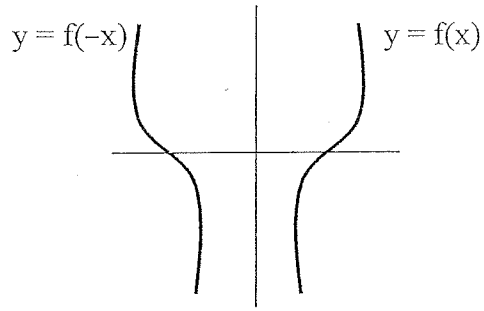


Result (of graph): vertical reflection in x-axis

Result (of coordinates): all y-values become negative

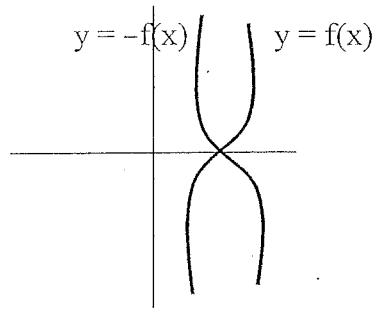
In General:

If you replace x with –x,



there is a **horizontal reflection** in the **y – axis.**

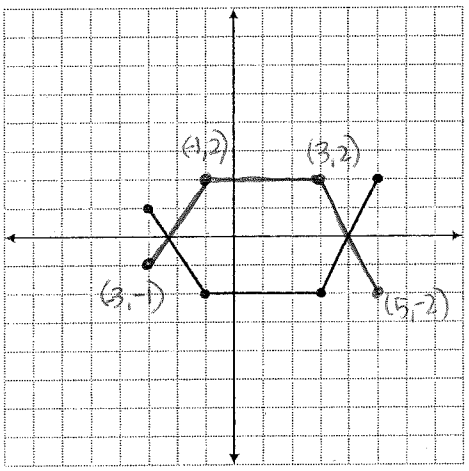
If you replace y with –y,



there is a **vertical reflection** in the **x – axis.**

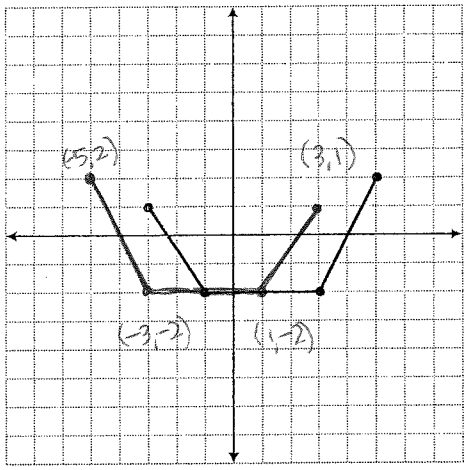
Example #1: Here is the graph of $y = g(x)$. On the same grid, also graph:

a) $y = -g(x)$ y-values change



Result: vertical reflection in x-axis

b) $y = g(-x)$ x-values change



Result: horizontal reflection in y-axis

Example #2: If the point $y = (4, -2)$ is on the graph of $y = g(x)$, find the corresponding point on the graph of:

a) $y = -g(x)$

vertical in x-axis
⇒ y-values change

$\boxed{(4, 2)}$

b) $y = -g(-x)$

vertical and horizontal
⇒ x and y-values change

$\boxed{(-4, 2)}$

Homework: p. 183 #3-13