

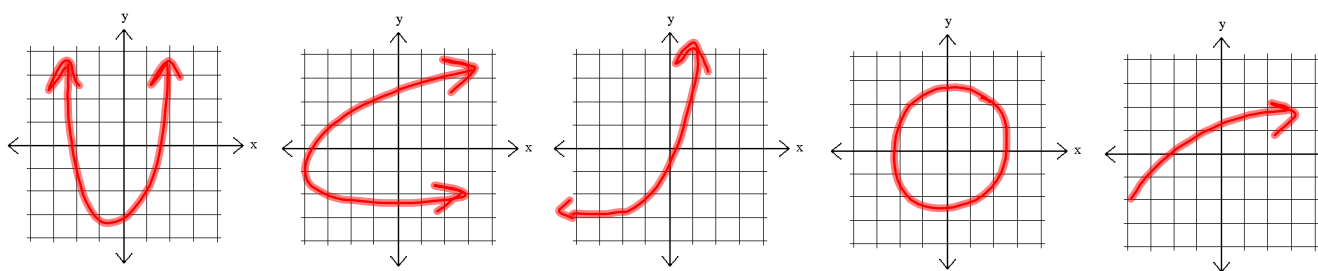
May 7th, 2015

Due Next Class: 12.3 HW

Unit 12: Functions

Lesson 12.3 Function Shifts

Get Ready: Identify the following as a function or a relation, if it is a function, what family is it in?



Late Delta Math is due by 10pm TONIGHT!

SHIFTING A FUNCTION

Original
Function

Shifted
Function

$$y = |x|$$

$$y = |x + a| + b$$

a = HORIZONTAL SHIFTS

OPPOSITE DIRECTION

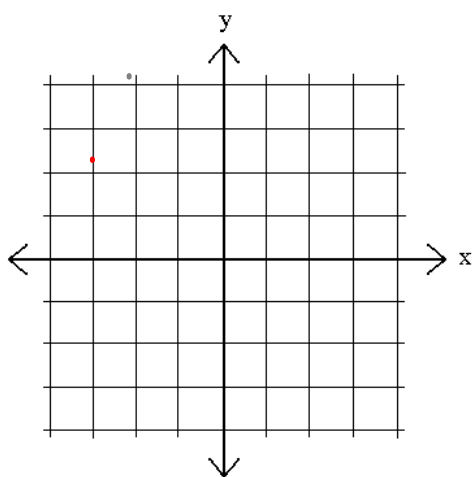
b = VERTICAL SHIFTS

$$y = (x - 2)^2 + 3 \quad \text{right 2, up 3}$$

$$y = |x| - 4 \quad \text{horizontal shift = 0, down 4}$$

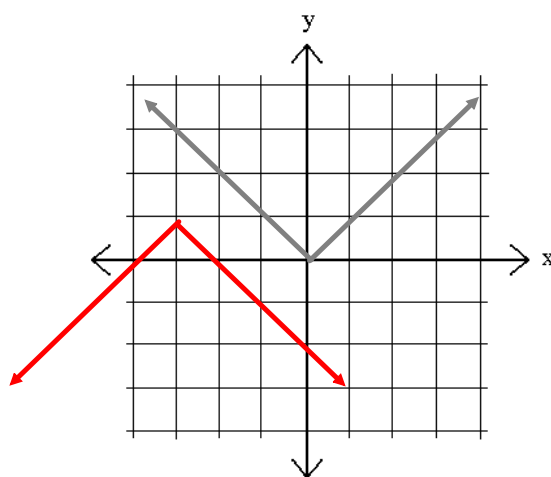
$$y = \sqrt{x + 1} - 2 \quad \text{left 1, down 2}$$

$$y = (x + 1)^2 - 2$$



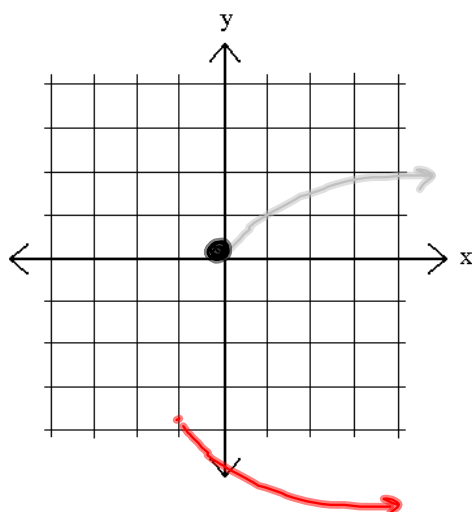
Original Vertex: $(0, 0)$
New Vertex: $(-1, -2)$

$$y = -|x + 3| + 1$$



Original Vertex: $(0, 1)$
New Vertex: $(-3, 1)$

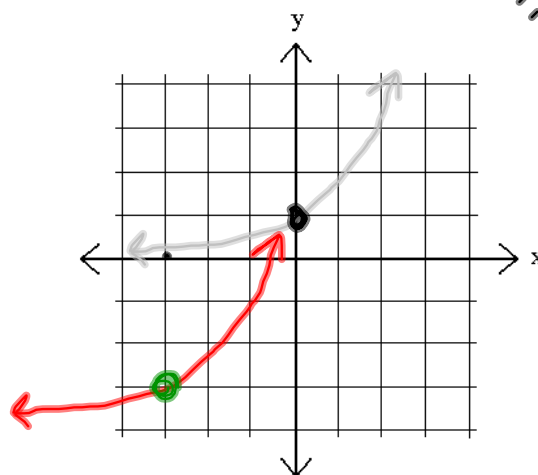
$$y = -\sqrt{x+1} - 4$$



Original "origin" $(0,0)$
 New Origin $(-1, -4)$

$$y = 2^{x+3} - 4$$

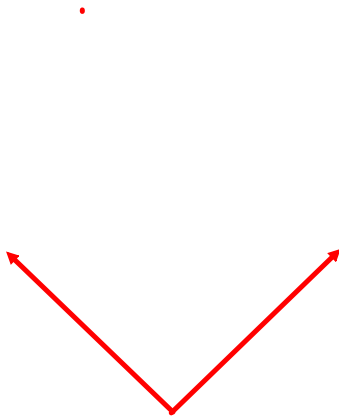
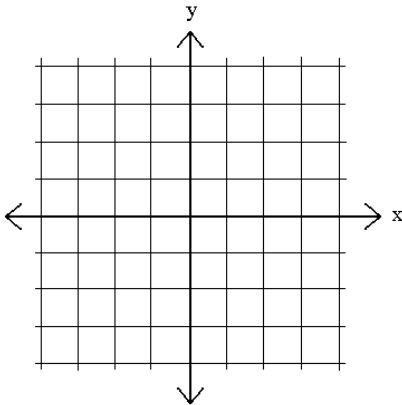
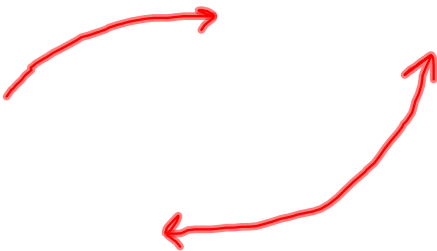
Handwritten notes: $y = 2^x$
 $\therefore 2^0 = 1$



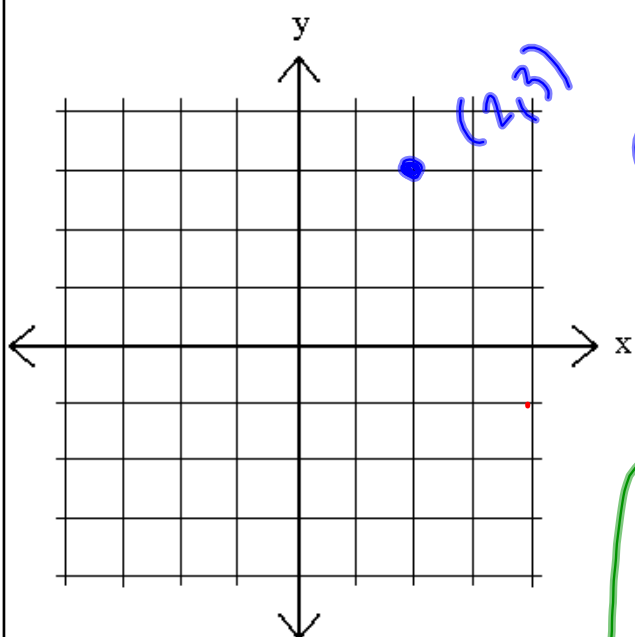
Original "origin" $(0,1)$
 New Origin $(-3, -3)$

Use the Axis and the clear cards you were given to graph the following:

For each of the functions, copy down the function and the new vertex or origin!



What is the equation of this graph?



Quadratic: $y = x^2$

h: Right 2 $\rightarrow -2$

v: up 3 $\rightarrow +3$

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

Write the equation

$$y = |x-1| - 2$$

$$y = (x+1)^2 + 2$$

$$y = \sqrt{x+3} - 3$$

$$y = \sqrt{-x-4} - 3$$

$$y = (x+1)^3 + 2$$

$$y = (x+2)^2 - 2$$

Graph the function!

Recap

Key Points

By shifting functions we can graph easier!

Next Class:

Domain + Range

Quiz Monday!

Due Next Time:

hw 12.3

+ Delta Math

