Lesson QF - 7

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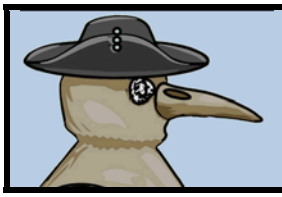
Objective: Properties of Quads Part 2- Roles of a, b, and c

Homework QF-7 – NYA p.553 #10 – 13, 21 – 30, 45

Do Now: Find the axis of symmetry 1. $y = 4x^2 + 5x - 1$ 2. $y = x^2 + 10 + 14$

Exam Prep: Which of the following equations has the widest graph?

A) $y = x^2$ B) $y = -2x^2$ C) $y = 2x^2$ D) $y = \frac{1}{3}x^2$



The journey continues…

You need only your imagination and a TI graphing calculator.

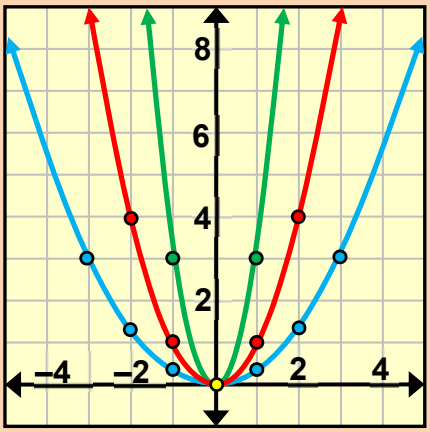
Investigation: Role of "a"

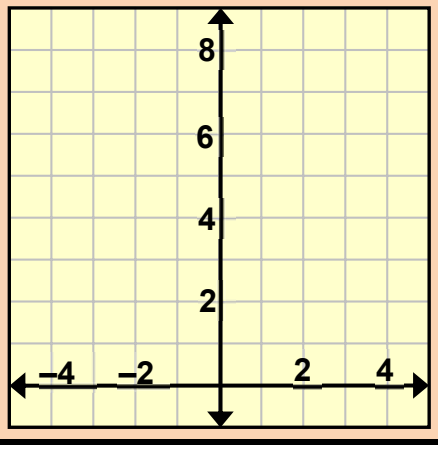
1. Observe $y = x^2$ and $y = 3x^2$ on the graphs below.
2. How are the graphs alike or different?
3. Predict how $y = \frac{1}{3}x^2$ will relate to them, and graph it to check.

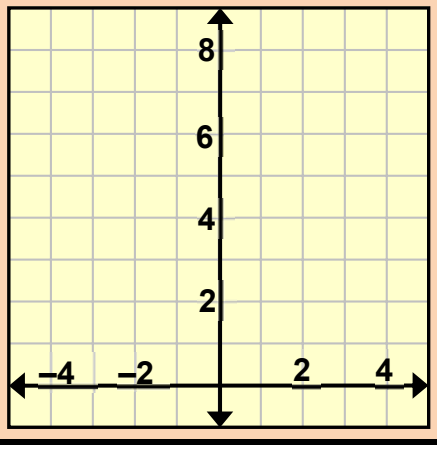
Red
$y = x^2$

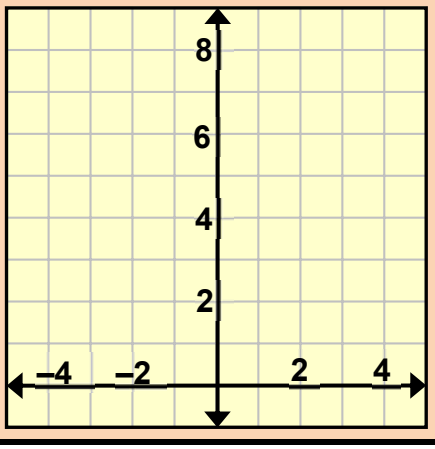
Green
$y = 3x^2$

Blue
$y = \frac{1}{3}x^2$







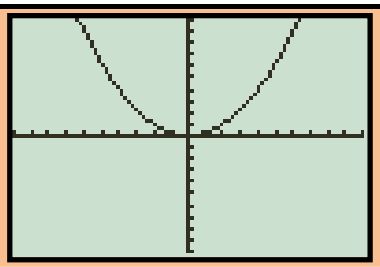


Match Quadratic Functions with Parabolic Curves

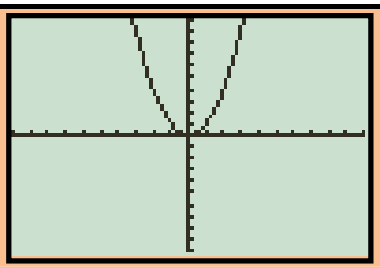
A) $y = -4x^2$

B) $y = \frac{1}{4}x^2$

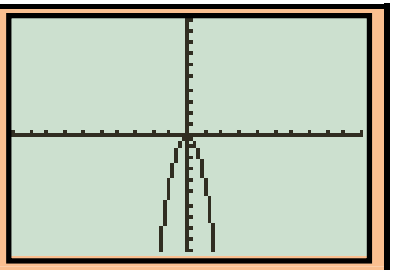
C) $y = x^2$



1. _____



2. _____

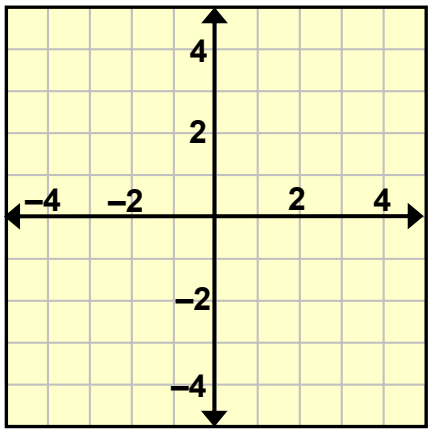


3. _____

Investigation: Role of "c"

Fill in the table and graph the functions.
Describe how they relate to each other.

x	$y = 2x^2$	$y = 2x^2 + 2$	$y = 2x^2 - 3$
–2			
–1			
0	0	2	–3
1			
2			

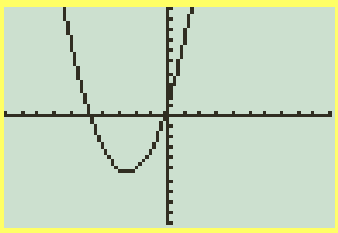


Investigation: Role of "b"

The "b" values shifts the graph left and right, but it's not as exact as "a" or "c". In earlier shifts (square root and absolute value equations), movement occurs in the opposite direction as expected.

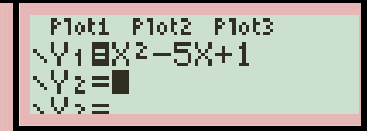
POSITIVE "b"

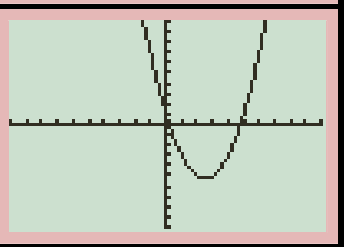
LEFT SHIFT (negative)



NEGATIVE "b"

RIGHT SHIFT (positive)





Describe the Shift and Direction

1. $y = 2x^2 - 5x + 6$	2. $y = 3x^2 + 7x - 10$	3. $y = -\frac{1}{2}x^2 + 3x - 1$
Concave: **UP** or **DOWN**	Concave: **UP** or **DOWN**	Concave: **UP** or **DOWN**
H-Shift: **L** or **R**	H-Shift: **L** or **R**	H-Shift: **L** or **R**
V-Shift: **UP** or **DOWN**	V-Shift: **UP** or **DOWN**	V-Shift: **UP** or **DOWN**