Name: Key

UNIT 8 DAY 2

GROUP PRACTICE – GRAPHING QUADRATICS

What is the big idea again?

If you have a quadratic equation ($y = ax^2$), then if

$a > 1$ it is a vertical stretch and if $0 < a < 1$ it is a vertical shrink

$y = -x^2$, it will reflect over the x-axis and if $y = (-x)^2$, it will reflect over y-axis

In the examples, do the following.

1. Graph the parent function first.
2. Graph the transformed function.
3. Describe in words the transformation. Find the Domain, Range, End Behavior.

Example 1:

Parent Function

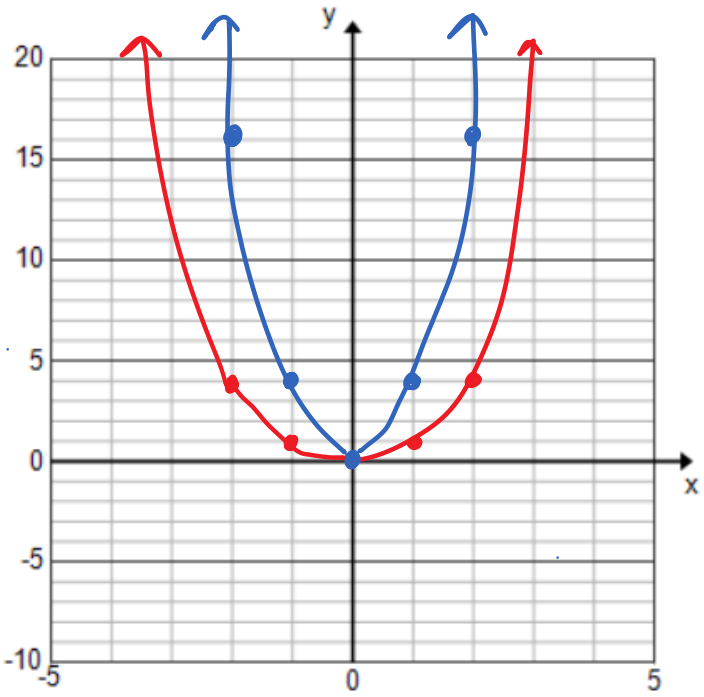
$y = x^2$

x	y
-2	4
-1	1
0	0
1	1
2	4

Transformed Function

$y = 4x^2$

x	y
-2	16
-1	4
0	0
1	4
2	16



What happened? vertical stretch b.a.f.o 2

What is the Domain? $(-\infty, \infty)$

What is the Range? $[0, \infty)$

End Behavior?

As $x \to -\infty, y \to$ ∞ As $x \to \infty, y \to$ ∞

Example 2:

Parent Function

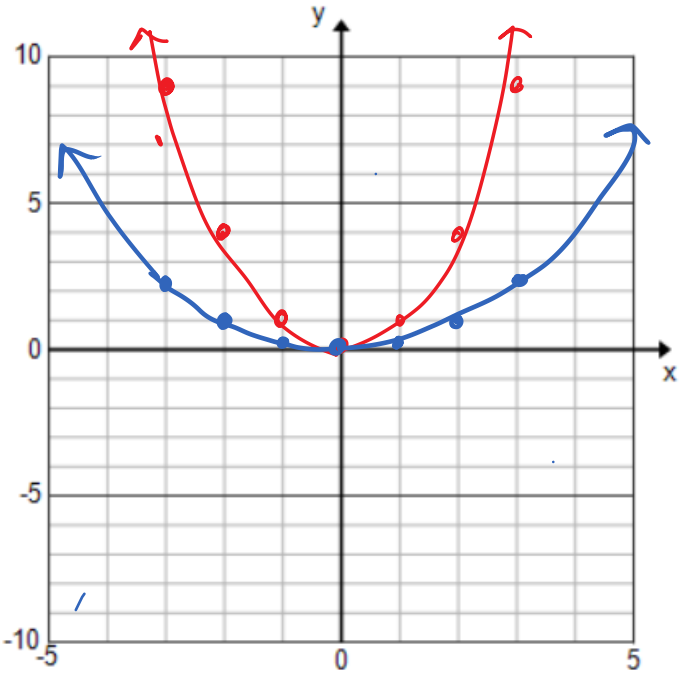
$y = x^2$

x	y
~~-3~~ 3	9
-2	4
-1	1
0	0
1	1
2	4
3	9

Transformed Function

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

x	y
-3	2.25
-2	1
-1	.25
0	0
1	1
2	.25
3	2.25



What happened? vertical shrink, b.a.f.o $\frac{1}{4}$

What is the Domain? $(-\infty, \infty)$

What is the Range? $[0, \infty)$

End Behavior?

As $x \to -\infty, y \to$ ∞ As $x \to \infty, y \to$ ∞

Example 3:

Given the equations, describe the transformation that would take place on the parent function.

$y = (-x)^2$ reflect over y-axis

$y = -x^2$ reflect over x-axis

$y = 5x^2$ vertical stretch b.a.f.o 5

$y = \frac{1}{8}x^2$ vertical shrink b.a.f.o. $\frac{1}{8}$

$y = -9x^2$ reflect over x-axis vertical stretch b.a.f.o. 9

$y = \frac{1}{7}(-x)^2$ reflect over y-axis vertical shrink b.a.f.o. $\frac{1}{7}$