

keep scrolling to get a sneak peak!

This set of guided notes will walk Algebra 2 students through graphing and writing equations for quadratic transformations. All you need to do is print & make copies for your students!

# QUADRATIC TRANSFORMATIONS

## Algebra 2 Guided Notes

WRITING QUADRATIC TR

ations: Given each function and transformation set and identify the axis of symmetry and vertex.

Let  $f(x) = x^2$ . Let the graph of  $g(x)$  be a horizontal translation right 3 units and a vertical translation up 1 unit.

Rule: \_\_\_\_\_

Equation: \_\_\_\_\_ Vertex: \_\_\_\_\_

AOS: \_\_\_\_\_

g(x) be a horizontal \_\_\_\_\_ left and a vertical \_\_\_\_\_ units, followed by a \_\_\_\_\_ x-axis of the graph

GRAPHING QUADRATIC TR

Reflection over the x-axis

$f(x) = -x^2$

If  $a$  is negative, there is a reflection over the \_\_\_\_\_

If  $x$  is negative, there is a reflection over the \_\_\_\_\_

Vertical Stretch

Vertical Translation

Order to Graph a Quadratic with Multiple Transformations

Vertex Form	
Vertex	
Order to Graph a Quadratic with Multiple Transformations	1.
	2.
	3.
	4.

Math with Ms. Rivera

Answer key included

# why do you need this?



It's simple and done-for-you! Just print and make copies!



Students can work on essential Algebra 2 skills.



Aligns to CCSS, TEKs, and VA SOLs!



Suggested and detailed answer keys are included for you!

# Algebra 2 Guided Notes Quadratic Transformations

### GRAPHING QUADRATIC TRANSFORMATIONS

Vertex Form	
Vertex	
Order to Graph a Quadratic with Multiple	1.
	2.
	3.

### GRAPHING QUADRATIC TRANSFORMATIONS

Reflection over the x-axis

Reflection over the y-axis

### GRAPHING QUADRATIC TRANSFORMATIONS

Type of Transformation	Coordinate Transformation
Vertical Translation	$(x, y) \rightarrow ( \quad , \quad )$
Horizontal Translation	$(x, y) \rightarrow ( \quad , \quad )$
Reflection over the x-axis	$(x, y) \rightarrow ( \quad , \quad )$
Reflection over the y-axis	$(x, y) \rightarrow ( \quad , \quad )$
Vertical Dilation	$(x, y) \rightarrow ( \quad , \quad )$

Directions: Complete the transformation table and use it to graph the quadratic equation.

Equation	List the Transformation(s)	Transformation(s) Table	Graph														
$y = (x + 4)^2 - 1$		<table border="1"> <tr><th>x</th><th>y</th></tr> <tr><td> </td><td> </td></tr> </table>	x	y													
x	y																
$y = -3(x - 1)^2$		<table border="1"> <tr><th>x</th><th>y</th></tr> <tr><td> </td><td> </td></tr> </table>	x	y													
x	y																

### WRITING QUADRATIC TRANSFORMATIONS

Directions: Given each function and transformation sequence, write the rule for  $g(x)$  in standard form and identify the axis of symmetry and vertex.

1. Let  $f(x) = x^2$ . Let the graph of  $g(x)$  be a horizontal translation right 3 units and a vertical translation up 1 unit.

Rule: \_\_\_\_\_

Equation: \_\_\_\_\_

AOS: \_\_\_\_\_ Vertex: \_\_\_\_\_

2. Let  $f(x) = x^2$ . Let the graph of  $g(x)$  be a vertical stretch by a factor of 2 and a reflection over the x-axis, followed by a vertical translation down 3 units.

Rule: \_\_\_\_\_

Equation: \_\_\_\_\_

AOS: \_\_\_\_\_ Vertex: \_\_\_\_\_

3. Let the graph of  $g(x)$  be a horizontal translation of 5 units left and a vertical translation down 3 units, followed by a reflection over the x-axis of the graph  $f(x) = x^2 - 5x$ .

Rule: \_\_\_\_\_

Equation: \_\_\_\_\_

AOS: \_\_\_\_\_ Vertex: \_\_\_\_\_

4. Let the graph of  $g(x)$  be a vertical shrink by a factor of  $\frac{1}{2}$  followed by a vertical translation up 2 units of the graph of  $f(x) = x^2 + x$ .

Rule: \_\_\_\_\_

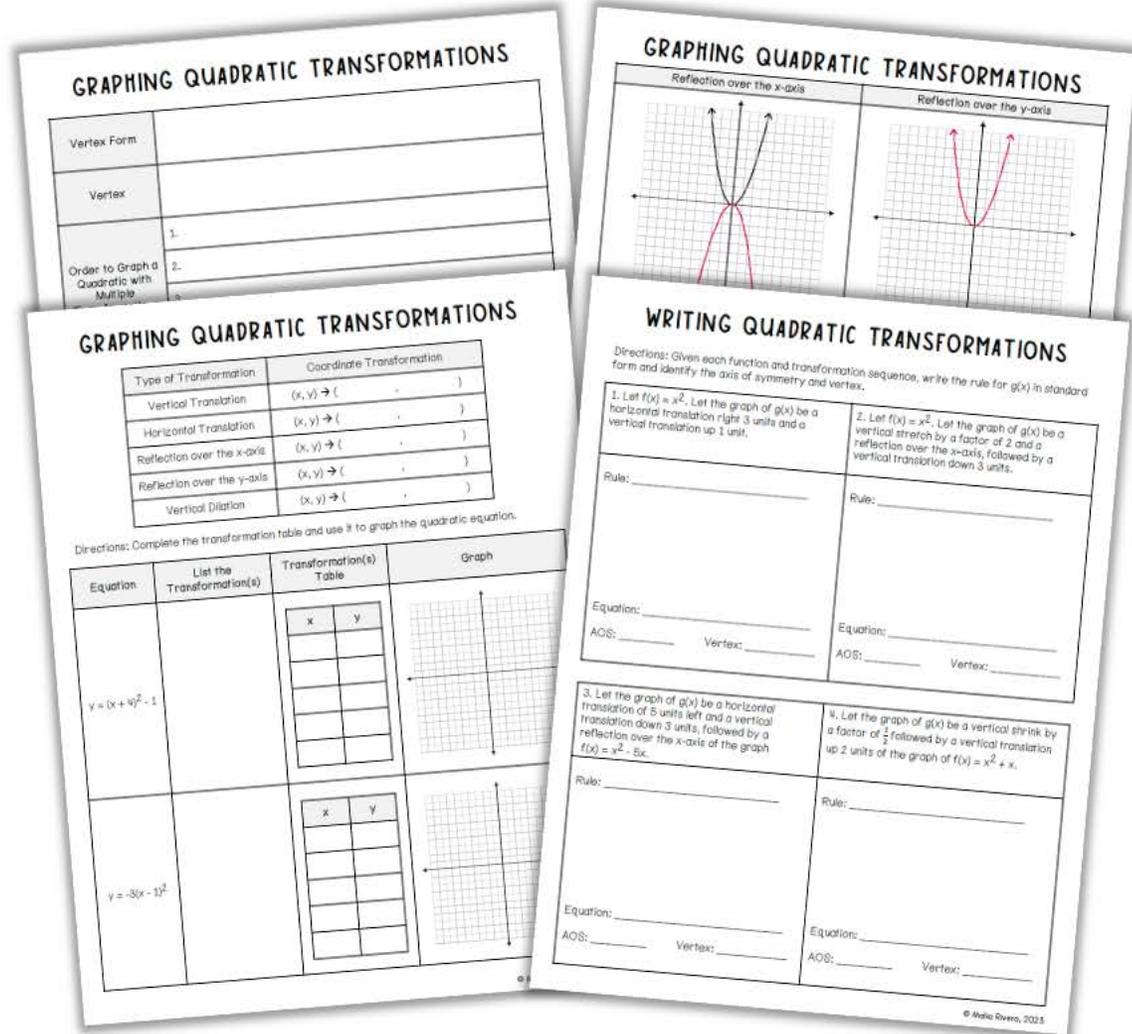
Equation: \_\_\_\_\_

AOS: \_\_\_\_\_ Vertex: \_\_\_\_\_

© Malia Rivera, 2023

© Malia Rivera, 2023

# Algebra 2 Guided Notes: Quadratic Transformations *includes:*



- ✓ 4 pages of guided notes
- ✓ Transformational Rules
- ✓ Graphing Transformations of Quadratic Functions
- ✓ Creating Tables from Quadratic Transformations
- ✓ Writing Quadratic Transformation Equations

# Algebra 2 Guided Notes: Quadratic Transformations includes:

✓ Detailed answer keys

**CCSS:** HSF-BF.B.3

**TEKS:** A1.7.C

**VA SOLs:** F.A1.7.f

**GRAPHING QUADRATIC TRANSFORMATIONS**

Vertex Form	$y = a(x-h)^2 + k$
Vertex	$(h, k)$
Order to Graph a Quadratic with Multiple Transformations	<ol style="list-style-type: none"><li>1. Horizontal Translation</li><li>2. Stretch or Shrink</li><li>3. Reflection</li><li>4. Vertical Translation</li></ol>

**Vertical Translation**

$f(x) = x^2 + k$

+ k means a vertical shift **up** k units  
- k means a vertical shift **down** k units

**Reflection over the x-axis**

$f(x) = -x^2$

If a is negative, there is a reflection over the **x-axis**.

**Reflection over the y-axis**

$f(x) = (-x)^2$

\*It's the same function as  $y = x^2$ !  
If x is negative within the function, there is a reflection over the **y-axis**.

**Vertical Stretch**

$f(x) = ax^2$

If  $|a| > 1$

**Vertical Shrink**

$f(x) = ax^2$

If  $|a| < 1$

## Check out what *other teachers* are saying:



"Once again these notes are very well put together and easy for the students us to complete the assignment."

- Nancy Beach (TPT Seller)



"Great resource for what we were currently covering in precalc!"

- Megan M.



"I used this in conjunction with another document, but this would have worked fine on its own. The students found it much easier to understand the concept using these guided notes."

- Cheryl W.



Check out the *year-long bundle!*

# ALGEBRA 2 GUIDED NOTES Year-Long Bundle

**TRANSFORMATIONS OF FUNCTIONS**

Type of Transformation	$f(x)$ Notation
Reflection	$-f(x)$
Vertical Dilation	$af(x)$ $0 <  a  < 1$ $ a  > 1$
Horizontal Dilation	$f(bx)$ $0 <  b  < 1$ $ b  > 1$
Vertical Translation	$f(x) + k$

**LINEAR REGRESSION**

**SCATTER PLOT**  
Definition: A graph of \_\_\_\_\_ points that are \_\_\_\_\_

**SCATTER PLOT RELATIONSHIPS**

**LINE OF BEST FIT**  
Definition: A line that \_\_\_\_\_ as close as possible to all \_\_\_\_\_

**LINEAR REGRESSION**  
Definition: A linear model that is used to \_\_\_\_\_ between two variables.

**LINEAR INTERSECTIONS**  
Estimating Slope: \_\_\_\_\_  
Slope: \_\_\_\_\_  
Y-intercept: \_\_\_\_\_

**GRAPHING QUADRATIC TRANSFORMS**

Reflection over the x-axis: \_\_\_\_\_

**COMPOSITION OF FUNCTIONS**

Definition: To make the \_\_\_\_\_ another function.

Things to remember:

- Always start with the \_\_\_\_\_ the function on the \_\_\_\_\_
- Tag does not always equal \_\_\_\_\_

$(f \circ g)(x) = \dots$  is \_\_\_\_\_

$g(x) = 2x + 3$  and  $f(x) = x^2$ , find  $(f \circ g)(x)$

**COMPOUND INEQUALITIES**

A compound inequality has two separate inequalities joined by \_\_\_\_\_

The graph of the \_\_\_\_\_ is the \_\_\_\_\_

$x > 3$

**POLYNOMIAL FUNCTION CHARACTERISTICS**

Characteristics	Graph
Intercepts	
Touch	
Inflection	

**RELATIVE EXTREMA (Minimum or Maximum)**  
Points on the graph that help to describe the \_\_\_\_\_ of a function. They are also called \_\_\_\_\_

**INCREASING INTERVALS**  
The interval between \_\_\_\_\_ y-values as the x-value \_\_\_\_\_

**DECREASING INTERVALS**  
The interval between \_\_\_\_\_ y-values as the x-value \_\_\_\_\_

**POSITIVE INTERVALS**  
Intervals where \_\_\_\_\_

**PROPERTIES OF RATIONAL EXPONENTS & RADICALS**

Property	Properties of Rational Exponents
Product of Powers	Definition: _____
Power of a Power	_____
Power of a Product	_____
Negative Exponent	_____
Zero Exponent	_____
Quotient of Powers	_____
Power of a Quotient	_____

Directions: Use the properties of rational exponents to simplify:  $1. (y^{1/2} \cdot y^{1/3})^2$

**ANSWER KEY INCLUDED**

Math with Ms. Rivera



hey there!

My name is Malia and I'm passionate about making learning and practicing math fun. I love creating engaging math resources for my students and I hope your students enjoy these Quadratic Function Transformations guided notes for Algebra 2 that can be used all year long!

Did you know you could get **FREE** money from TPT??

All you need to do is leave feedback on the product after you purchase. [Click here](#) to leave reviews and earn credits towards your next TPT purchase!

let's connect!



Follow my TPT store



Follow my Instagram



Join my FB group