

keep scrolling to get a  
sneak peak!

This set of guided  
notes will walk Algebra  
2 students through how to  
solve quadratic equations  
by square roots.  
All you need to do is print  
& make copies for your  
students!

# SOLVING QUADRATICS BY SQUARE ROOTS

## Algebra 2 Guided Notes

The image shows a collage of handwritten notes and a table. The notes are titled "SOLVING QUADRATIC EQUATIONS" and "SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS". The notes show the following steps:

1. Rewrite the equation in the form \_\_\_\_\_
2. Solve by taking the \_\_\_\_\_ of both sides
3. Put the solution into simplest radical form.

The notes also show the following solutions:

- 1.  $\sqrt{(x-4)^2} = \sqrt{49}$   
 $x-4 = \pm 7$   
 $x = 4+7$     $x = 4-7$   
 $x = 11$     $x = -3$
- 2.  $\sqrt{(x+13)^2}$   
 $x+13 = -13$   
 $x = -13+13$   
 $x = 0$
- 3.  $2(x+2)^2 - 5 = 8$   
 $+5 +5$   
 $2(x+2)^2 = 13$
- 4.  $\frac{1}{5}x^2 + 2 = \frac{3}{5}x^2$

The table has two columns: "One Real Solution" and "No Real Solution".

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 Solving Quadratic Equations By Square Roots

**SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS**

How to Solve by Square Roots

Step 1: Rewrite the equation in the form \_\_\_\_\_

Step 2: Solve by taking the \_\_\_\_\_

Step 3: Put the solution into simplest radical form.

Two Real Solutions	One Real Solution	No Real Solutions

Review: Let's recall how to rationalize the denominator.

a)  $\frac{1}{\sqrt{2}}$       b)  $\sqrt{\frac{21}{5}}$

Directions: Solve the equation using the square roots method.

1.  $3x^2 + 9 = 0$       2.  $4x^2 - 31 = 49$

**SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS**

Directions: Solve the equation using the square roots method.

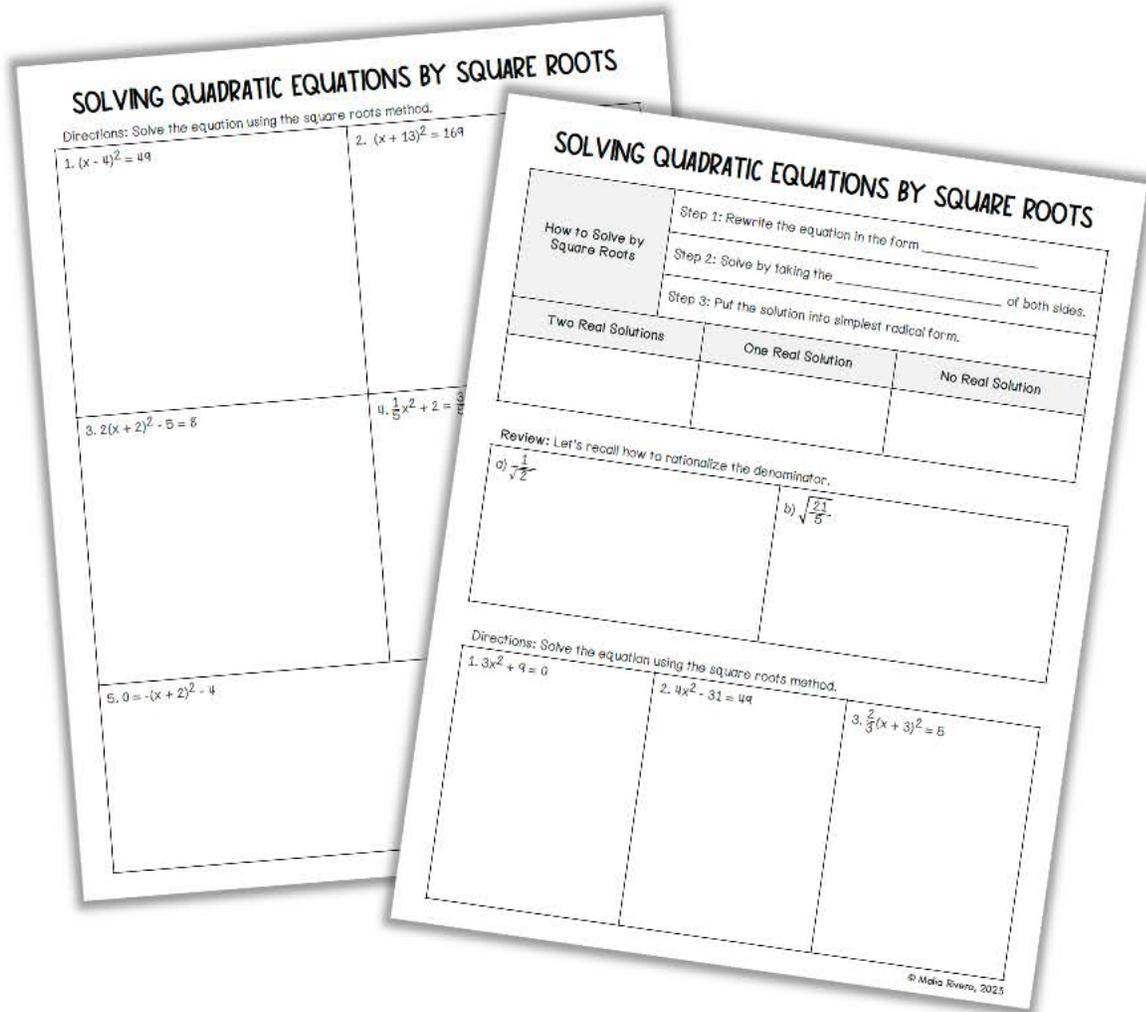
1.  $(x - 4)^2 = 49$       2.  $(x + 13)^2 = 169$

3.  $2(x + 2)^2 - 5 = 8$       4.  $\frac{1}{5}x^2 + 2 = \frac{3}{5}x^2$

5.  $0 = -(x + 2)^2 - 4$

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# Algebra 2 Guided Notes: Solving Quadratic Equations by Square Roots *includes:*



- ✓ 2 page of guided notes
- ✓ Steps to Solve a Quadratic Using the Square Roots Method
- ✓ Review Rationalizing the Denominator
- ✓ Multiple Solution Types

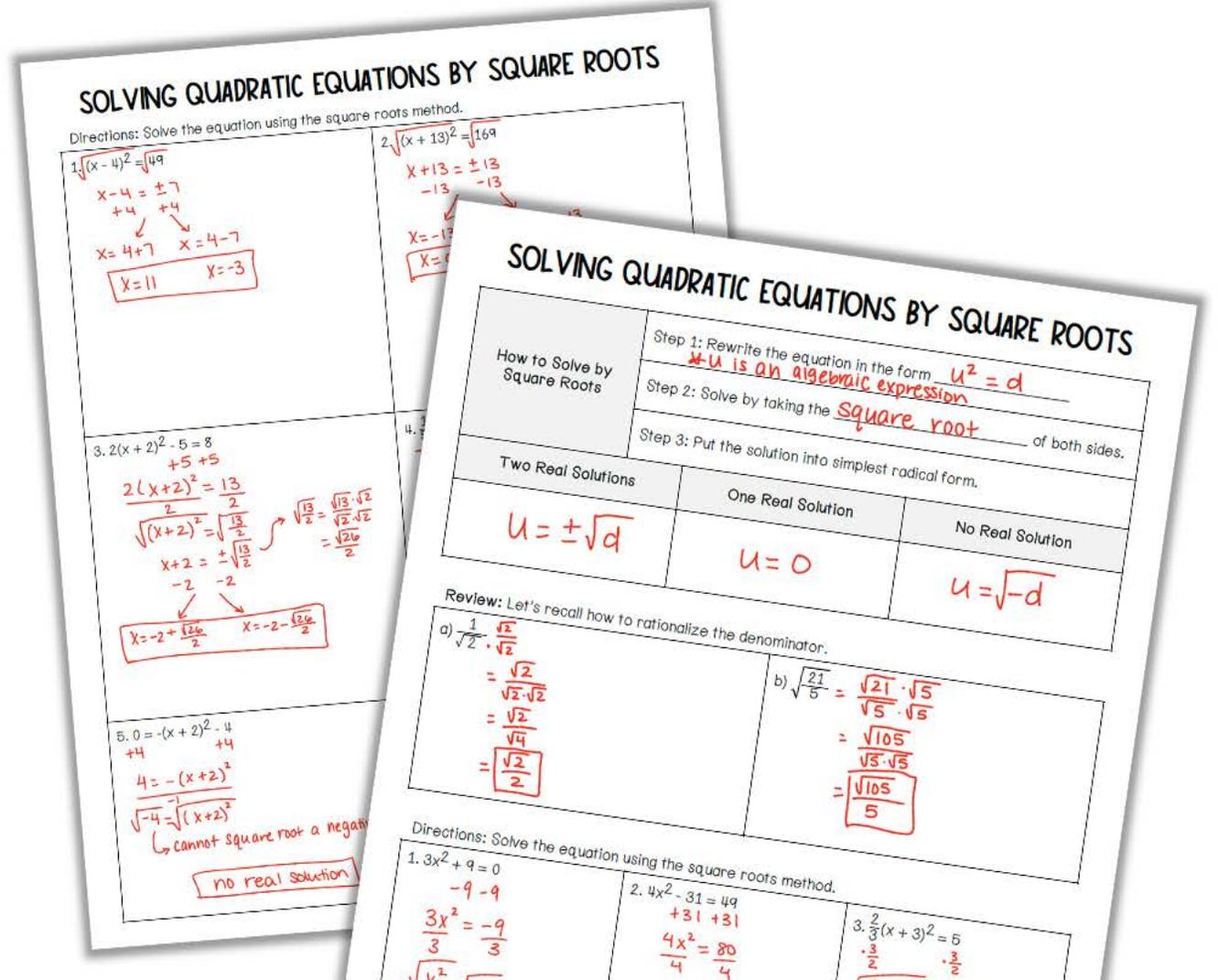
# Algebra 2 Guided Notes: Solving Quadratic Equations by Square Roots *includes:*

 Detailed answer keys

**CCSS:** HSA-REI.B.4, HSA-REI.B.4b

**TEKS:** A2.4.F

**VA SOLs:** EI.AII.3.b



**SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS**  
Directions: Solve the equation using the square roots method.

1.  $\sqrt{(x-4)^2} = \sqrt{49}$   
 $x-4 = \pm 7$   
 $x = 4+7$     $x = 4-7$   
 $x = 11$     $x = -3$

2.  $\sqrt{(x+13)^2} = \sqrt{169}$   
 $x+13 = \pm 13$   
 $x = -13+13$     $x = -13-13$   
 $x = 0$     $x = -26$

3.  $2(x+2)^2 - 5 = 8$   
 $2(x+2)^2 = 13$   
 $(x+2)^2 = \frac{13}{2}$   
 $x+2 = \pm \sqrt{\frac{13}{2}}$   
 $x = -2 + \frac{\sqrt{26}}{2}$     $x = -2 - \frac{\sqrt{26}}{2}$

4.  $0 = -(x+2)^2 - 4$   
 $4 = -(x+2)^2$   
 $\sqrt{-4} = \sqrt{-(x+2)^2}$   
cannot square root a negative  
**no real solution**

**SOLVING QUADRATIC EQUATIONS BY SQUARE ROOTS**

How to Solve by Square Roots	Step 1: Rewrite the equation in the form $u^2 = d$ <i>u is an algebraic expression</i>		
	Step 2: Solve by taking the <b>square root</b> of both sides.		
	Step 3: Put the solution into simplest radical form.		
Two Real Solutions	One Real Solution	No Real Solution	
$u = \pm\sqrt{d}$	$u = 0$	$u = \sqrt{-d}$	

Review: Let's recall how to rationalize the denominator.

a)  $\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{\sqrt{2} \cdot \sqrt{2}} = \frac{\sqrt{2}}{\sqrt{4}} = \frac{\sqrt{2}}{2}$

b)  $\sqrt{\frac{21}{5}} = \frac{\sqrt{21} \cdot \sqrt{5}}{\sqrt{5} \cdot \sqrt{5}} = \frac{\sqrt{105}}{\sqrt{5 \cdot 5}} = \frac{\sqrt{105}}{5}$

Directions: Solve the equation using the square roots method.

1.  $3x^2 + 9 = 0$   
 $-9 -9$   
 $3x^2 = -9$   
 $x^2 = -3$   
**no real solution**

2.  $4x^2 - 31 = 49$   
 $+31 +31$   
 $4x^2 = 80$   
 $x^2 = 20$   
 $x = \pm\sqrt{20} = \pm 2\sqrt{5}$

3.  $\frac{2}{3}(x+3)^2 = 5$   
 $\cdot \frac{3}{2} \cdot \frac{3}{2}$   
 $(x+3)^2 = \frac{15}{2}$   
 $x+3 = \pm\sqrt{\frac{15}{2}}$   
 $x = -3 \pm \frac{\sqrt{30}}{2}$

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



"This was great practice for my Algebra II students after I presented the lesson. Next Year, I may use them as notes."

- Vonda B.



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

- Megan M.



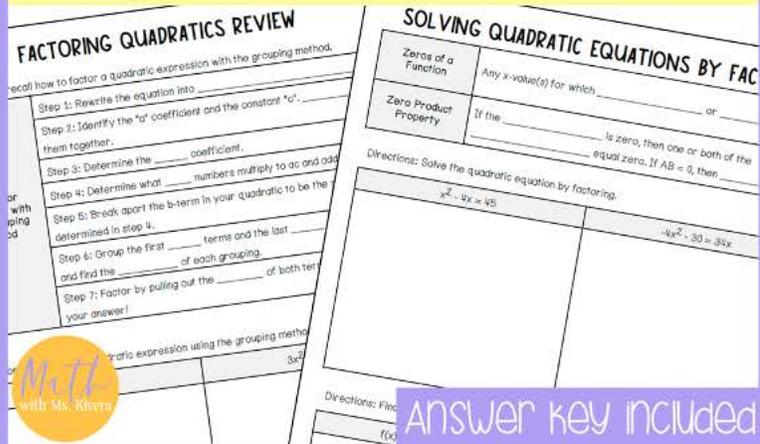
"I used this in conjunction with another document, but this would have worked fine on its own. The students found it much easier to understand the concept using these guided notes."

- Cheryl W.

You may also enjoy ...

# SOLVING QUADRATICS BY FACTORING

Algebra 2 Guided Notes



**FACTORIZING QUADRATICS REVIEW**

Recall how to factor a quadratic expression with the grouping method.

Step 1: Rewrite the equation into \_\_\_\_\_

Step 2: Identify the "a" coefficient and the constant "c". \_\_\_\_\_ them together.

Step 3: Determine the \_\_\_\_\_ coefficient.

Step 4: Determine what \_\_\_\_\_ numbers multiply to ac and add \_\_\_\_\_

Step 5: Break apart the b-term in your quadratic to be the \_\_\_\_\_ determined in step 4.

Step 6: Group the first \_\_\_\_\_ terms and the last \_\_\_\_\_ and find the \_\_\_\_\_ of each grouping.

Step 7: Factor by pulling out the \_\_\_\_\_ of both terms your answer!

**SOLVING QUADRATIC EQUATIONS BY FACTORING**

Zeros of a Function: Any x-value(s) for which \_\_\_\_\_ or \_\_\_\_\_

Zero Product Property: If the \_\_\_\_\_ is zero, then one or both of the \_\_\_\_\_ equal zero. If  $AB = 0$ , then \_\_\_\_\_

Directions: Solve the quadratic equation by factoring.

$x^2 - 6x + 8 = 0$

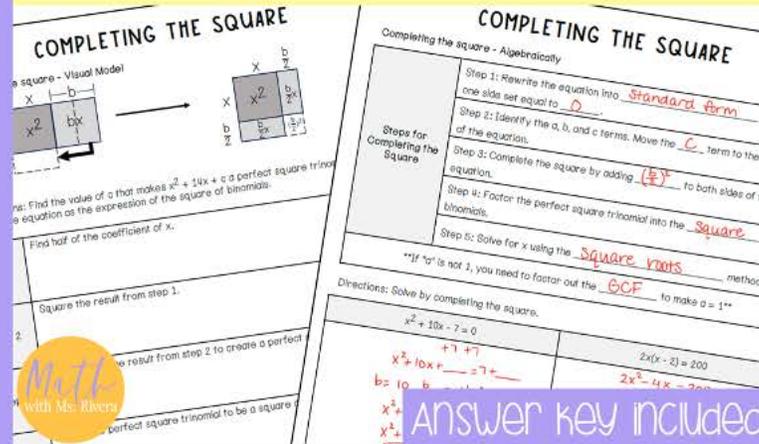
$-4x^2 - 30 = 36x$

Answer key included

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# COMPLETING THE SQUARE

Algebra 2 Guided Notes



**COMPLETING THE SQUARE**

Completing the square - Visual Model

Step 1: Rewrite the equation into \_\_\_\_\_ Standard form \_\_\_\_\_

Step 2: Identify the a, b, and c terms. Move the "c" term to the \_\_\_\_\_ of the equation.

Step 3: Complete the square by adding  $(\frac{b}{2})^2$  to both sides of the equation.

Step 4: Factor the perfect square trinomial into the \_\_\_\_\_ square \_\_\_\_\_

Step 5: Solve for x using the \_\_\_\_\_ square roots \_\_\_\_\_ method.

\*\*If "a" is not 1, you need to factor out the \_\_\_\_\_ GCF \_\_\_\_\_ to make a = 1\*\*

Directions: Solve by completing the square.

$x^2 + 10x - 7 = 0$

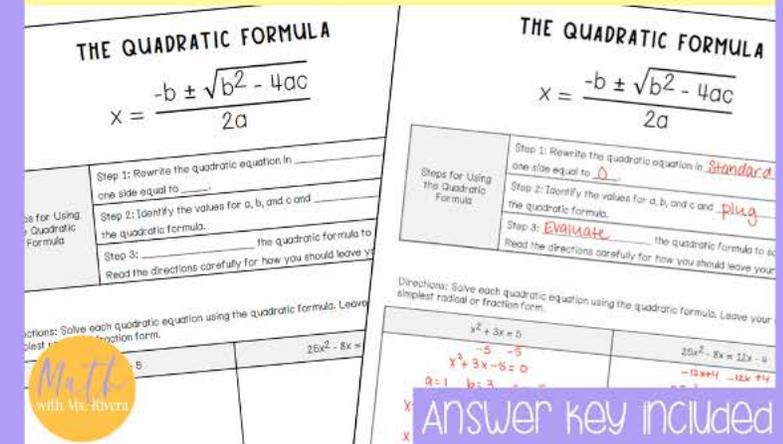
$2x(x - 2) = 200$

Answer key included

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# QUADRATIC FORMULA

Algebra 2 Guided Notes



**THE QUADRATIC FORMULA**

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Step 1: Rewrite the quadratic equation in \_\_\_\_\_ Standard form \_\_\_\_\_

Step 2: Identify the values for a, b, and c and \_\_\_\_\_ plug \_\_\_\_\_ the quadratic formula.

Step 3: \_\_\_\_\_ Evaluate \_\_\_\_\_ the quadratic formula to \_\_\_\_\_

Read the directions carefully for how you should leave your answer.

Directions: Solve each quadratic equation using the quadratic formula. Leave your answer in simplest radical or fraction form.

$x^2 + 3x + 5 = 0$

$25x^2 - 8x + 1 = 0$

Answer key included

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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  $(f \circ g)(x)$

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

**COMPOUND INEQUALITIES**

Compound inequality has two separate inequalities joined by \_\_\_\_\_

Graph of a compound inequality with "and" is the \_\_\_\_\_ of the graphs of the inequalities.

$x > 3$

**POLYNOMIAL FUNCTION CHARACTERISTICS**

Multiplicities	Touch	Inflection

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

**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:  $1. (y^{1/2} \cdot y^{1/3})^2$

**Math with Ms. Rivera**

**ANSWER KEY INCLUDED**



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 Solving Quadratic Equations by Square Roots guided notes for Algebra 2 that can be used all year long!

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