

keep scrolling to get a  
sneak peak!

This set of guided  
notes will walk  
Algebra 2 students  
through solving  
radical equations.  
All you need to do is print  
& make copies for your  
students!

# SOLVING RADICAL EQUATIONS

## Algebra 2 Guided Notes

**SOLVING RADICAL EQUATIONS**

Solve each equation. Be sure to check for extraneous solutions!

6.  $\sqrt[3]{4x-1} + 6 = 9$

Check:  $3\sqrt{4-3(-15)} = 21$   
 $3\sqrt{4+45} = 21$   
 $3\sqrt{49} = 21$   
 $3(7) = 21$   
 $21 = 21 \checkmark$

6.  $\sqrt[3]{4x-1} + 6 = 9$

Check:  $\sqrt[3]{4(7)-1} = 3$   
 $\sqrt[3]{28-1} = 3$   
 $\sqrt[3]{27} = 3$

$4x-1 = 27$   
 $+1 +1$   
 $\frac{4x}{4} = \frac{28}{4}$   
 $x = 7$

**Steps for Solving Radical Equations**

Step 1: Isolate the expression with the \_\_\_\_\_ on one side of the equation.

Step 2: Raise both sides of the equation to the power the exponent to \_\_\_\_\_ or eliminate the \_\_\_\_\_.

Step 3: Check your solution(s)! Make sure to check for \_\_\_\_\_ solutions. (When you plug it back in and get \_\_\_\_\_)

Directions: Solve each equation. Be sure to check for extraneous solutions!

1.  $x^{\frac{1}{3}} - 4 = 0$

2.  $x^{\frac{2}{3}} + 13 = 17$

8.  $\sqrt[3]{4x-9} = \sqrt[3]{2x-1}$

Check:  $-3+2 = \sqrt{2(-3)+7}$   
 $-1 = \sqrt{-6+7}$   
 $-1 = \sqrt{1}$

$4x-9 = 2x-1$   
 $-2x +9 -2x$   
 $\frac{2x}{2} = \frac{5}{2}$

3.  $(x-2)^{\frac{1}{2}} = 3$

Math with Ms. Rivera

Answer key included

© Malia Rivera, 2023

# 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.

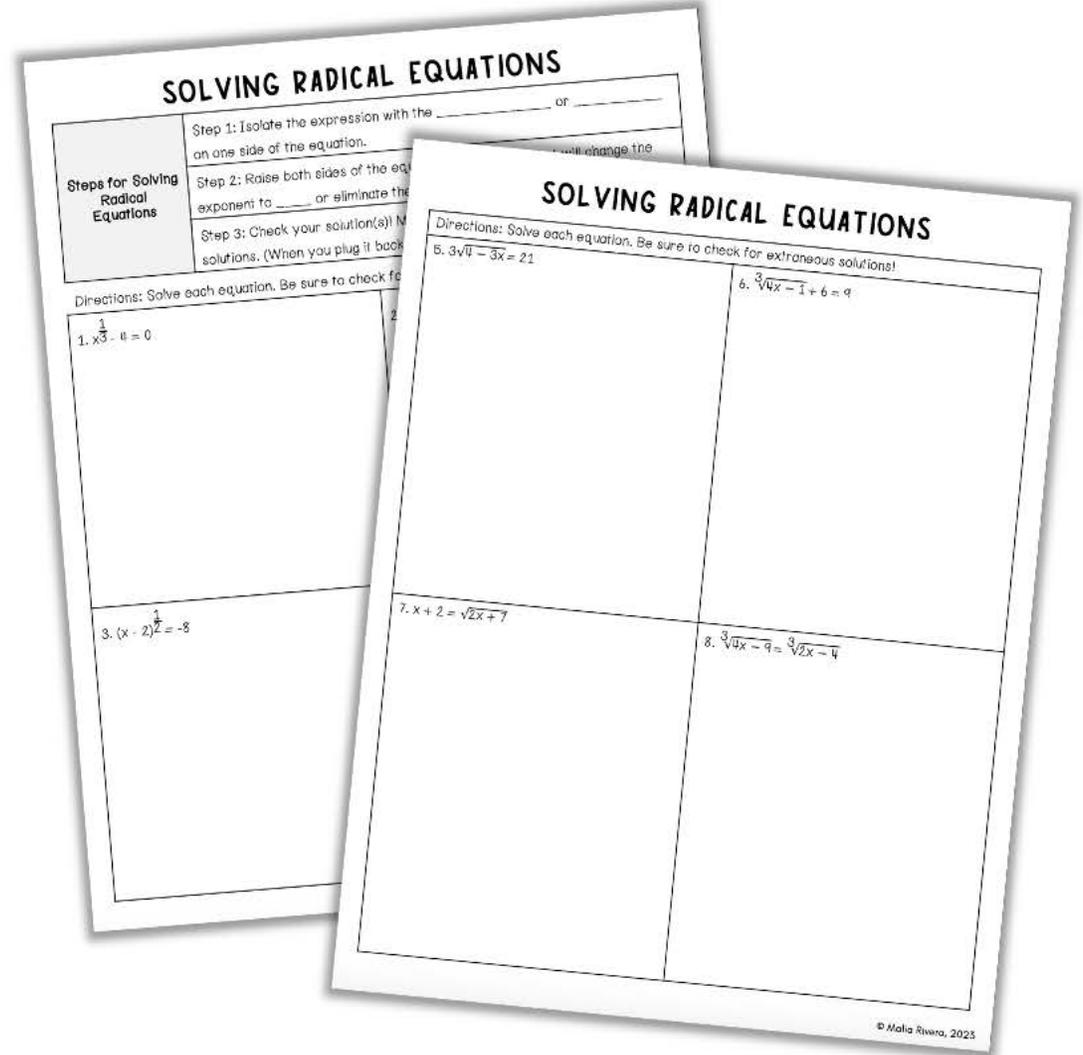


Aligns to CCSS, TEKS, and VA SOLs!

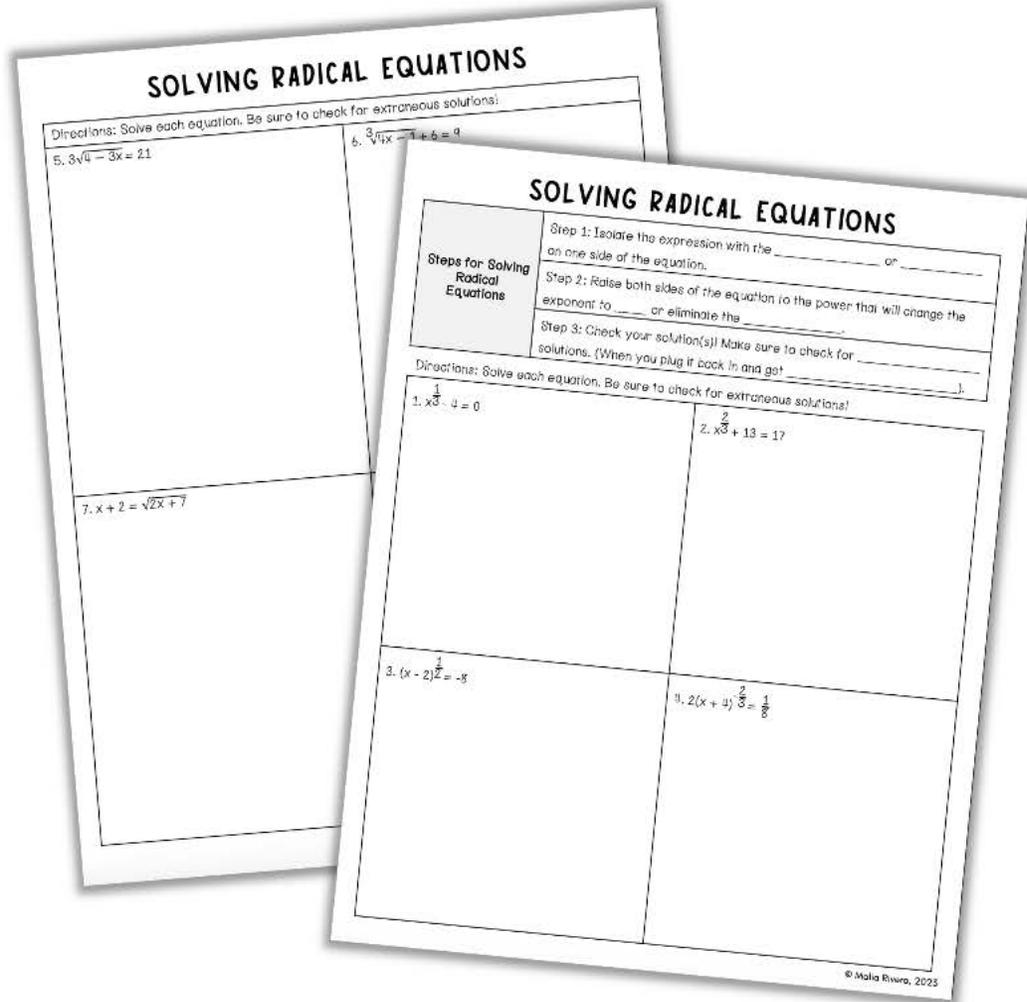


Suggested and detailed answer keys are included for you!

## Algebra 2 Guided Notes Solving Radical Equations



# Algebra 2 Guided Notes: Solving Radical Equations *includes*:



- ✓ 2 pages of guided notes
- ✓ Solving Square Root and Cube Root Equations
- ✓ Radicals on One Side
- ✓ Radicals on Both Sides
- ✓ Including Extraneous Solutions

# Algebra 2 Guided Notes: Solving Radical Equations *includes:*

 Detailed answer keys

**CCSS:** HSA-REI.A.2

**TEKS:** A2.4.F, A2.4.G, A2.6.B

**VA SOL:** EO.AII.3.d

**SOLVING RADICAL EQUATIONS**

Directions: Solve each equation. Be sure to check for extraneous solutions!

5.  $3\sqrt{4-3x} = \frac{21}{3}$       Check:

$$\begin{aligned} \frac{21}{3} &= 7 \\ (\sqrt{4-3x})^2 &= (7)^2 \\ 4-3x &= 49 \\ -4 & \quad -4 \\ -3x &= 45 \\ \frac{-3x}{-3} &= \frac{45}{-3} \\ \boxed{x} &= \boxed{-15} \end{aligned}$$

Check:

$$\begin{aligned} 3\sqrt{4-3(-15)} &= 21 \\ 3\sqrt{4+45} &= 21 \\ 3\sqrt{49} &= 21 \\ 3(7) &= 21 \\ 21 &= 21 \checkmark \end{aligned}$$

6.  $\sqrt[3]{4x-1} = 2$       Check:

$$\begin{aligned} (\sqrt[3]{4x-1})^3 &= (2)^3 \\ 4x-1 &= 8 \\ +1 & \quad +1 \\ 4x &= 9 \\ \frac{4x}{4} &= \frac{9}{4} \\ \boxed{x} &= \boxed{\frac{9}{4}} \end{aligned}$$

Check:

$$\begin{aligned} \sqrt[3]{4(\frac{9}{4})-1} &= 2 \\ \sqrt[3]{9-1} &= 2 \\ \sqrt[3]{8} &= 2 \\ 2 &= 2 \checkmark \end{aligned}$$

**SOLVING RADICAL EQUATIONS**

Steps for Solving Radical Equations

Step 1: Isolate the expression with the exponent or radical on one side of the equation.

Step 2: Raise both sides of the equation to the power that will change the exponent to 1 or eliminate the radical.

Step 3: Check your solution(s)! Make sure to check for extraneous solutions. (When you plug it back in and get no solution).

Directions: Solve each equation. Be sure to check for extraneous solutions!

1.  $x^{\frac{1}{3}} - 4 = 0$       Check:

$$\begin{aligned} +4 & \quad +4 \\ (x^{\frac{1}{3}})^3 &= (4)^3 \\ \boxed{x} &= \boxed{64} \end{aligned}$$

Check:

$$\begin{aligned} 64^{\frac{1}{3}} - 4 &= 0 \\ 4 - 4 &= 0 \\ 0 &= 0 \checkmark \end{aligned}$$

2.  $x^{\frac{2}{3}} + 13 = 17$       Check:

$$\begin{aligned} -13 & \quad -13 \\ (x^{\frac{2}{3}})^{\frac{3}{2}} &= (4)^{\frac{3}{2}} \\ x &= (\sqrt{4})^3 \\ \boxed{x} &= \boxed{8} \end{aligned}$$

Check:

$$\begin{aligned} (8)^{\frac{2}{3}} + 13 &= 17 \\ (\sqrt[3]{8})^2 + 13 &= 17 \\ 4 + 13 &= 17 \\ 17 &= 17 \checkmark \end{aligned}$$

7.  $(x+2)^2 = \sqrt{2x+7}$

$$\begin{aligned} (x+2)(x+2) &= 2x+7 \\ x^2+4x+4 &= 2x+7 \\ -2x-7 & \quad -2x-7 \\ x^2+2x-3 &= 0 \\ (x+3)(x-1) &= 0 \\ x+3=0 & \quad x-1=0 \\ x=-3 & \quad \boxed{x=1} \end{aligned}$$

Check:

$$\begin{aligned} -3+2 &= \sqrt{2(-3)+7} \\ -1 &= \sqrt{-6+7} \\ -1 &= \sqrt{1} \\ -1 &= 1 \\ -1 &\neq 1 \end{aligned}$$

Check:

$$\begin{aligned} 1+2 &= \sqrt{2(1)+7} \\ 3 &= \sqrt{2+7} \\ 3 &= \sqrt{9} \\ 3 &= 3 \checkmark \end{aligned}$$

**Extraneous Solution**

3.  $(x-2)^{\frac{1}{2}} = (-8)^2$       Check:

$$\begin{aligned} +2 & \quad +2 \\ (x-2)^{\frac{1}{2}} &= (-8)^2 \\ \boxed{x} &= \boxed{66} \end{aligned}$$

Check:

$$\begin{aligned} (66-2)^{\frac{1}{2}} &= -8 \\ 64^{\frac{1}{2}} &= -8 \\ 8 &\neq -8 \end{aligned}$$

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

$$\begin{aligned} \frac{1}{2} & \quad \frac{1}{2} \\ ((x+4)^{\frac{2}{3}})^{\frac{3}{2}} &= (\frac{1}{16})^{\frac{3}{2}} \\ x+4 &= 16^{\frac{3}{2}} \end{aligned}$$

## 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 ...

# GRAPHING RADICAL FUNCTIONS

Algebra 2 Guided Notes

**GRAPHING RADICAL FUNCTIONS**

Parent radical functions

Square Root Function

Cube Root Function

Directions: Graph the function. Identify the domain & range of the function.

$f(x) = -\sqrt[3]{x}$

x	-8	-1	0	1	8
y	2	1	0	-1	-2

Domain:  $(-\infty, \infty)$

Range:  $(-\infty, \infty)$

Directions: Graph the function. Identify the domain & range of the function.

$f(x) = \sqrt{x+2}$

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

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

x \_\_\_\_\_

y \_\_\_\_\_

**Answer key included**

© Malia Rivera, 2023

# TRANSFORMATIONS OF RADICAL FUNCTIONS

Algebra 2 Guided Notes

**TRANSFORMATIONS OF RADICAL FUNCTIONS**

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

2. Directions: Describe the transformation of  $f(x)$  represented by  $g(x)$ .

$f(x) = \sqrt[3]{x}$

$g(x) = 2\sqrt[3]{x-4} - 2$

- vertical stretch by 2
- horizontal shift right 4 units
- vertical shift down 2 units

x	-4	3	4	5	12
y	4	6	4	2	2

Domain:  $(-\infty, \infty)$

Range:  $(-\infty, \infty)$

3. Directions: Let the graph of  $g(x)$  be a horizontal compression by a factor of 3 units left of the graph of  $f(x) = \sqrt[3]{x}$ . Write a rule for  $g(x)$ .

$g(x) = f(3x)$

**Answer key included**

© Malia Rivera, 2023

# SIMPLIFYING RATIONAL EXPRESSIONS

Algebra 2 Guided Notes

**SIMPLIFYING RATIONAL EXPRESSIONS**

A ratio of two polynomials. EX:  $f(x) = \frac{p(x)}{q(x)}$

Steps for Simplifying Rational Expressions

Step 1: Simplify the numerator and denominator by \_\_\_\_\_ factors if they appear.

Step 2: Divide out the Common factors if they appear in the numerator and the denominator.

Property

$\frac{a \cdot c}{b \cdot c} = \frac{a}{b}$

Answers should always be left in simplest form.

Directions: Simplify each of the following rational expressions.

1.  $\frac{6y - 28}{5y^2 - 13y - 6} \rightarrow \frac{6(y-3)}{(5y+2)(y-3)} \rightarrow \frac{6}{5y+2}$

2.  $\frac{x^2 - 16}{x^2 - 6x + 8} \rightarrow \frac{(x+4)(x-4)}{(x-2)(x-4)} \rightarrow \frac{x+4}{x-2}$

**Answer key included**

© Malia Rivera, 2023

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 also \_\_\_\_\_

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

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

**COMPOUND INEQUALITIES**

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

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

$x > 3$

**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 \_\_\_\_\_

$1. (3^{1/2})^{-2} \cdot 3^{3/2}$

**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 Radical Equations 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