

keep scrolling to get a
sneak peak!

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

THE FUNDAMENTAL THEOREM OF ALGEBRA

Algebra 2 Guided Notes

The Fundamental Theorem of Algebra

If $f(x)$ is a polynomial of degree n when $f(x) = 0$ has at least _____ set of complex numbers.

If $f(x)$ is a polynomial of degree n when $f(x) = 0$ has exactly _____

Directions: Identify the number of solutions or zeros each

$g(x) = x^3 + 3x^2 + 16x + 48$

all zeros of the function.

$f(x) = x^5 + x^3 -$

Descartes's Rule of Signs

The number of _____ the number of changes in sign of the _____ than this by an even number.

The number of _____ the number of changes in sign of the coefficients _____ than this by an even number.

Directions: Determine the possible numbers of positive real zeros, negative real zeros, and imaginary zeros.

$f(x) = x^6 - 2x^5 + 3x^4 - 10x^3 - 6x^2 - 8x - 8$

Math with Ms. Rivera

Answer key included

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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 The Fundamental Theorem of Algebra

The worksheets contain the following content:

THE FUNDAMENTAL THEOREM OF ALGEBRA

The Fundamental Theorem of Algebra

If $f(x)$ is a polynomial of degree n where $n > 0$, then the equation $f(x) = 0$ has at least _____ in the set of complex numbers.

If $f(x)$ is a polynomial of degree n where $f(x) = 0$ has exactly _____

Directions: Identify the number of solutions or zeros each function.

$g(x) = x^3 + 3x^2 + 16x + 48$

Directions: Find all zeros of the function.

$f(x) = x^5 + x^3 - 2x^2 - 12x - 8$

THE FUNDAMENTAL THEOREM OF ALGEBRA

Descartes's Rule of Signs

The number of _____ real zeros of $f(x)$ is equal to the number of changes in sign of the coefficients of $f(x)$ or is less than this by an even number.

The number of _____ real zeros of $f(x)$ is equal to the number of changes in sign of the coefficients of $f(x)$ or is less than this by an even number.

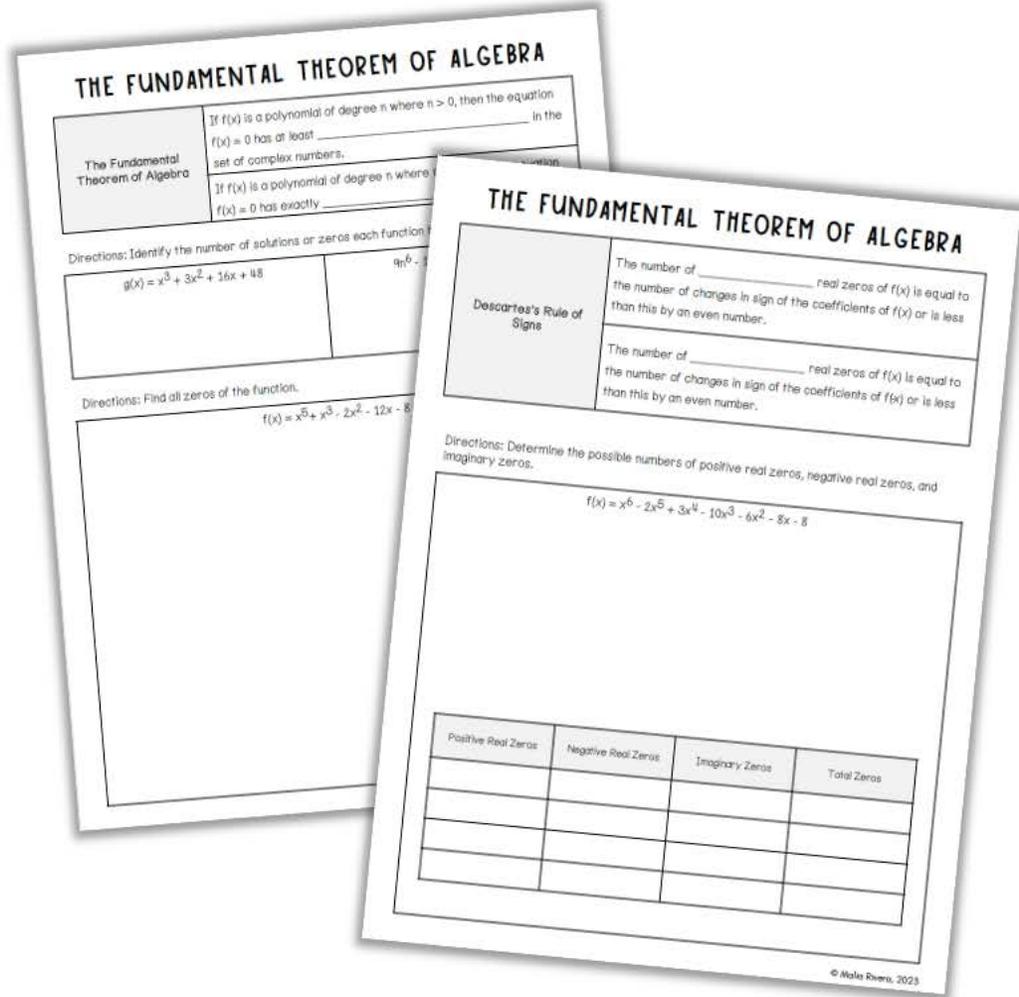
Directions: Determine the possible numbers of positive real zeros, negative real zeros, and imaginary zeros.

$f(x) = x^6 - 2x^5 + 3x^4 - 10x^3 - 6x^2 - 8x - 8$

Positive Real Zeros	Negative Real Zeros	Imaginary Zeros	Total Zeros

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Algebra 2 Guided Notes: The Fundamental Theorem of Algebra *includes*:



- ✓ 2 pages of guided notes
- ✓ Definition of The Fundamental Theorem of Algebra
- ✓ Finding Real and Complex Zeros
- ✓ Descartes's Rule of Signs

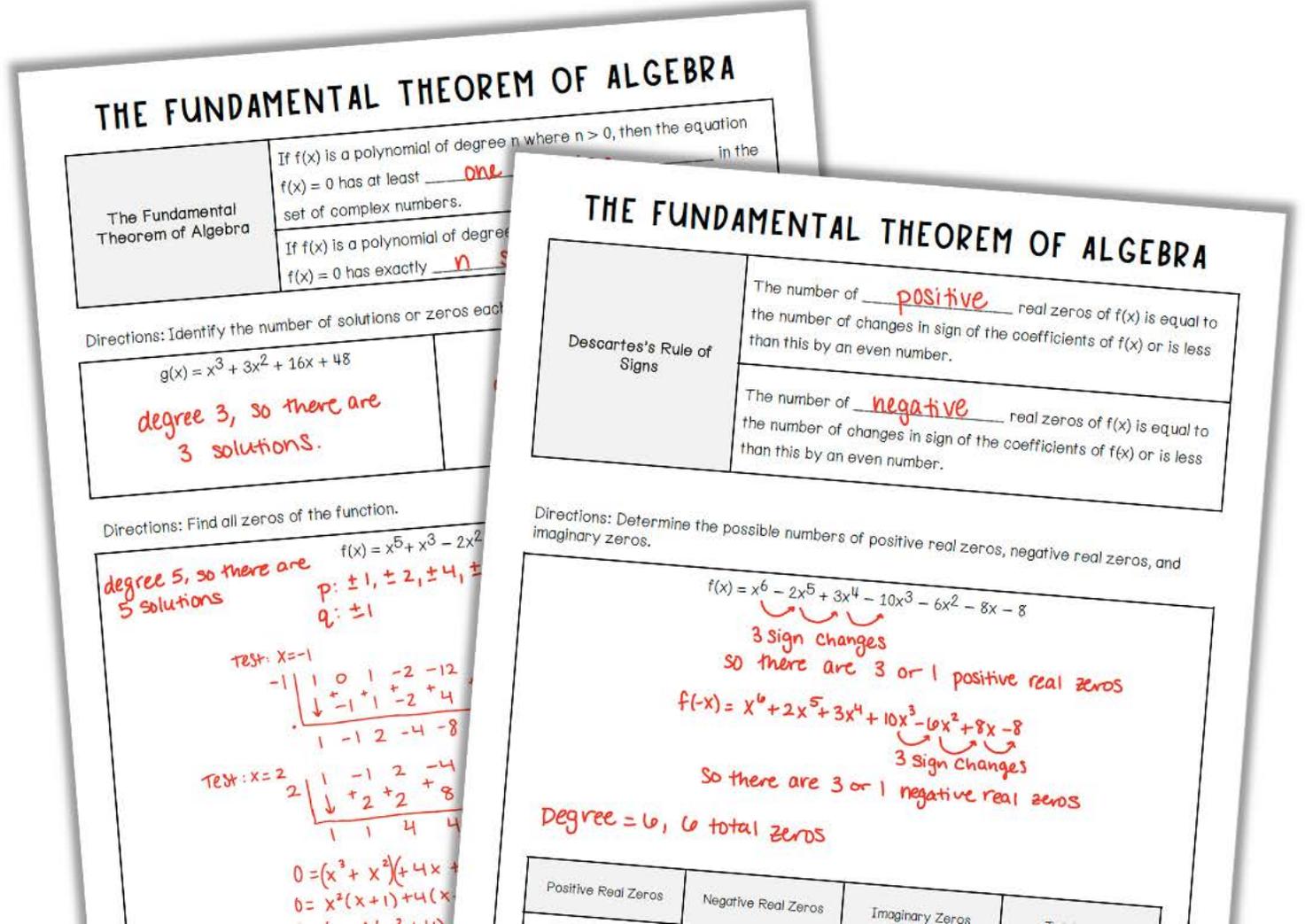
Algebra 2 Guided Notes: The Fundamental Theorem of Algebra *includes:*

 Detailed answer keys

CCSS: HSA-APR.B.3

TEKS: A2.7.D, A2.7.E

VA SOL: EO.All.1c



THE FUNDAMENTAL THEOREM OF ALGEBRA

The Fundamental Theorem of Algebra	If $f(x)$ is a polynomial of degree n where $n > 0$, then the equation $f(x) = 0$ has at least <u>one</u> solution in the set of complex numbers.
	If $f(x)$ is a polynomial of degree n , then the equation $f(x) = 0$ has exactly <u>n</u> solutions in the set of complex numbers.

Directions: Identify the number of solutions or zeros each function has.

$g(x) = x^3 + 3x^2 + 16x + 48$

degree 3, so there are 3 solutions.

Directions: Find all zeros of the function.

$f(x) = x^5 + x^3 - 2x^2$

degree 5, so there are 5 solutions

$p: \pm 1, \pm 2, \pm 4, \pm 8$

$q: \pm 1$

Test: $x = -1$

-1	1	0	1	-2	-12
		+	-	+	+
		-1	1	-2	4
		1	-1	2	-4
		1	-2	-4	-8

Test: $x = 2$

2	1	-1	2	-4	
		+	+	+	
		2	2	8	
		1	1	4	4

$0 = (x^3 + x^2) + 4x + 4$

$0 = x^2(x+1) + 4(x+1)$

THE FUNDAMENTAL THEOREM OF ALGEBRA

Descartes's Rule of Signs

The number of positive real zeros of $f(x)$ is equal to the number of changes in sign of the coefficients of $f(x)$ or is less than this by an even number.

The number of negative real zeros of $f(x)$ is equal to the number of changes in sign of the coefficients of $f(x)$ or is less than this by an even number.

Directions: Determine the possible numbers of positive real zeros, negative real zeros, and imaginary zeros.

$f(x) = x^6 - 2x^5 + 3x^4 - 10x^3 - 6x^2 - 8x - 8$

3 sign changes
so there are 3 or 1 positive real zeros

$f(-x) = x^6 + 2x^5 + 3x^4 + 10x^3 - 6x^2 + 8x - 8$

3 sign changes
so there are 3 or 1 negative real zeros

Degree = 6, 6 total zeros

Positive Real Zeros	Negative Real Zeros	Imaginary Zeros	Total Zeros
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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 ...

CHARACTERISTICS OF POLYNOMIAL FUNCTIONS

Algebra 2 Guided Notes

Thumbnail of a guided notes page for "CHARACTERISTICS OF POLYNOMIAL FUNCTIONS". The page includes sections for "POLYNOMIAL FUNCTION CHARACTERISTICS", "Relative Extrema (Minimum or Maximum)", "Increasing Intervals", and "Decreasing Intervals". It also features a small graph and a logo for "Math with Ms. Rivera".

Answer key included

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GRAPHING POLYNOMIAL FUNCTIONS

Algebra 2 Guided Notes

Thumbnail of a guided notes page for "GRAPHING POLYNOMIAL FUNCTIONS". It features a graph of a polynomial function with a red curve and a point labeled (0, 12). The page includes instructions for sketching a graph and identifying characteristics like zeros and intervals. A logo for "Math with Ms. Rivera" is present.

Answer key included

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WRITING POLYNOMIAL EQUATIONS

Algebra 2 Guided Notes

Thumbnail of a guided notes page for "WRITING POLYNOMIAL EQUATIONS". It includes a section for "COMPLEX CONJUGATES" and "POLYNOMIAL EQUATIONS FROM GRAPH". The page provides step-by-step instructions for identifying zeros and factors, and writing polynomial equations. A logo for "Math with Ms. Rivera" is present.

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.

$x > -8$

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 Fundamental Theorem of Algebra guided notes for Algebra 2 that can be used all year long!

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