

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.

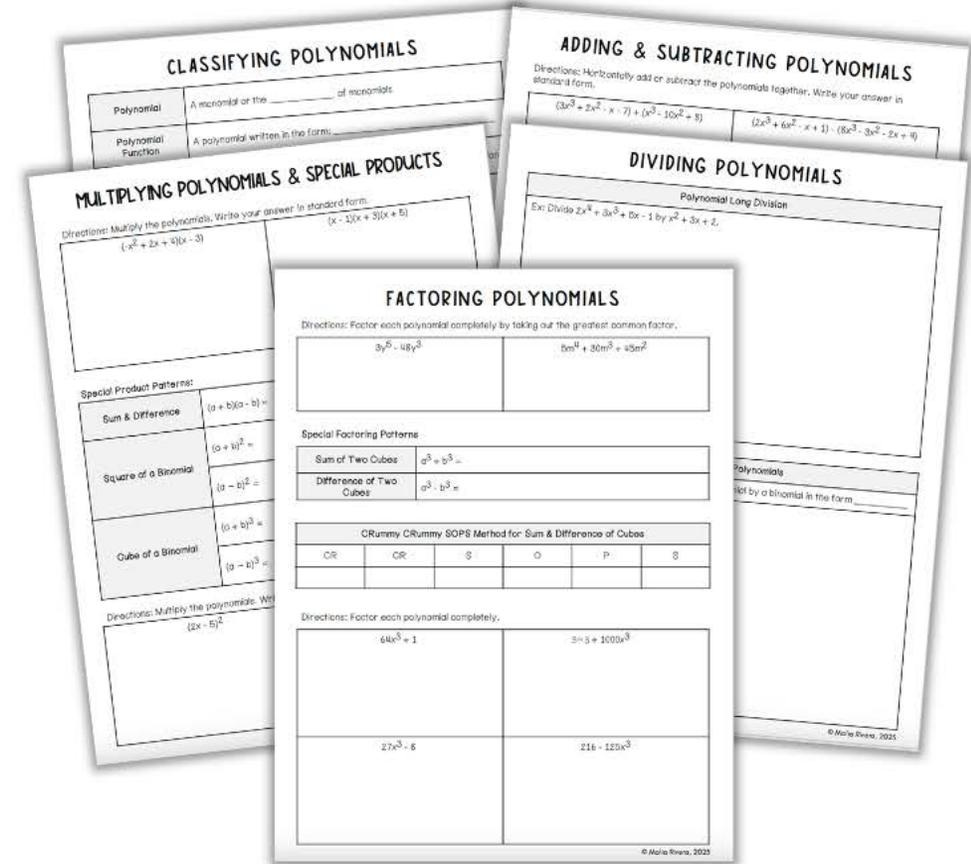


Aligns to CCSS, TEKs, and VA SOLs!

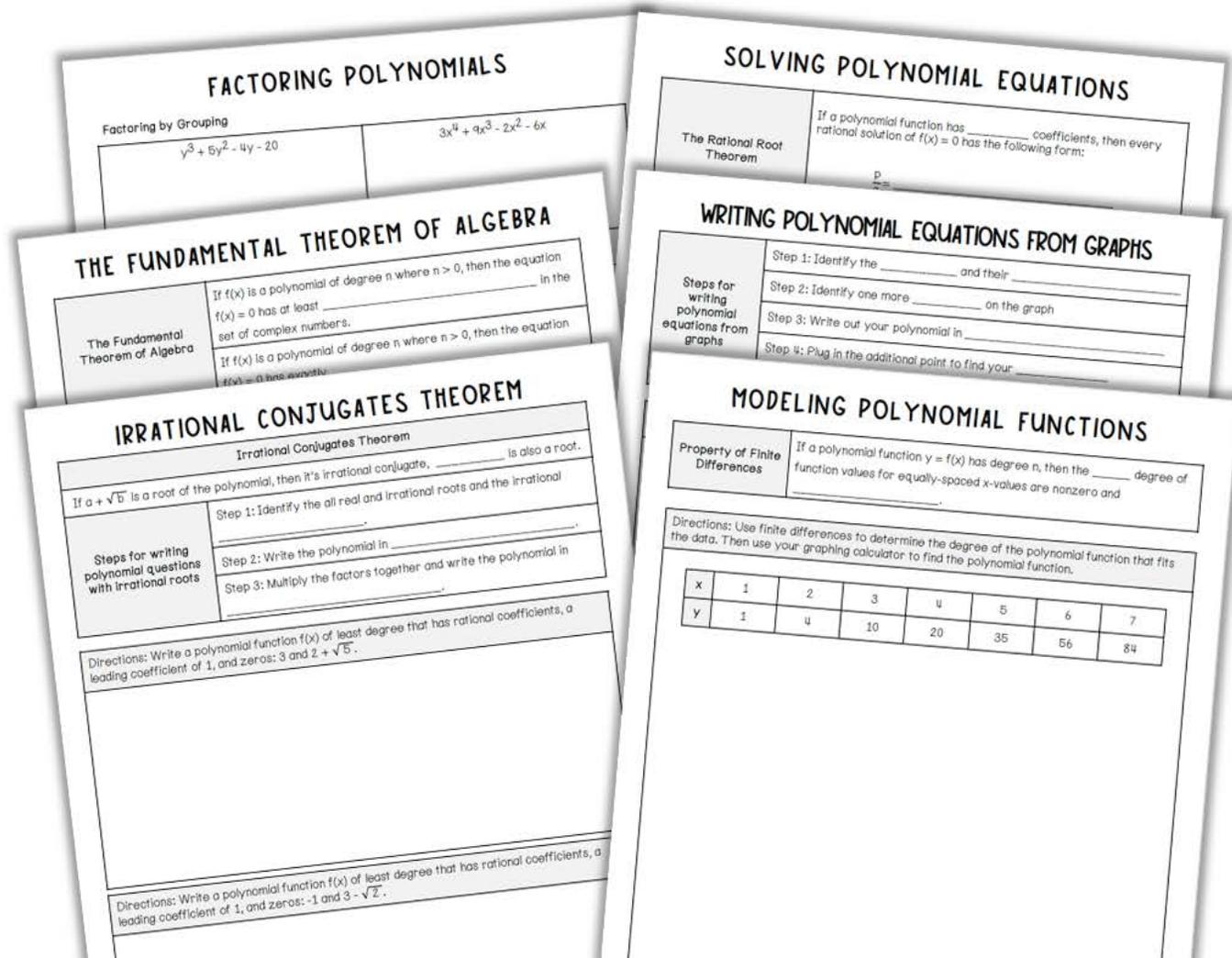


Suggested and detailed answer keys are included for you!

Algebra 2 Guided Notes Polynomial Functions



Algebra 2 Guided Notes: Polynomial Functions *includes:*



- ✓ 23 pages of guided notes
- ✓ Classifying Polynomials
- ✓ Polynomial Operations
- ✓ Factoring Polynomials
- ✓ Solving Polynomial Equations
- ✓ Fundamental Theorem of Algebra
- ✓ Polynomial Function Characteristics
- ✓ Graphing Polynomial Functions
- ✓ Writing Polynomial Equations
- ✓ Modeling Polynomial Functions

Algebra 2 Guided Notes: Polynomial Functions includes:



Detailed answer keys

Standards Covered:

CCSS: HSN-CN.A.1, HSN-CN.A.3, HSN-CN.C.8, HSN-CN.C.9, HSA-SSE.A.2, HSA-SSE.B.3, HSA-APR.A.1, HSA-APR.B.2, HSA-APR.B.3, HSA-CED.A.1, HSA-CED.A.2, HSF-IF.B.4, HSF-IF.C.7, HSF-IF.C.7c, HSF-IF.C.8

TEKS: A2.7B, A2.7C, A2.7D, A2.7E, A2.7I

VA SOLs: EO.AII.A.1c, F.AII.7abcdeh, F.AII.8

Answer key
CLASSIFYING POLYNOMIALS

Polynomial	A monomial or the <u>sum</u> of monomials
Polynomial Function	A polynomial written in the form: $y = a_n x^n + a_{n-1} x^{n-1} + \dots + a_0$
Degree	The <u>highest</u> power of a variable in the polynomial

Answer key
ADDING & SUBTRACTING POLYNOMIALS

Directions: Horizontally add or subtract the polynomials together. Write your answer in standard form.

$(3x^3 + 2x^2 - x - 7) + (x^3 - 10x^2 + 8)$ $3x^3 + x^3 + 2x^2 - 10x^2 - x - 7 + 8$ $4x^3 - 8x^2 - x + 1$	$(2x^3 + 6x^2 - x + 1) - (8x^3 - 3x^2 - 2x + 9)$ $2x^3 + 6x^2 - x + 1 - 8x^3 + 3x^2 + 2x - 9$ $-6x^3 + 9x^2 + x - 8$
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Answer key
MULTIPLYING POLYNOMIALS & SPECIAL PRODUCTS

Directions: Multiply the polynomials. Write your answer in standard form.

$(-x^2 + 2x + 4)(x - 3)$ $-x^2(x) - x^2(-3) + 2x(x) + 2x(-3) + 4(x) + 4(-3)$ $-x^3 + 3x^2 + 2x^2 - 6x + 4x - 12$ $-x^3 + 5x^2 - 2x - 12$	$(x - 1)(x + 3)(x + 5)$ $(x^2 + 3x - x - 3)(x + 5)$ $(x^2 + 2x - 3)(x + 5)$ $x^2(x) + x^2(5) + 2x(x) + 2x(5)$ $x^3 + 5x^2 + 2x^2 + 10x - 3$ $x^3 + 7x^2 + 7x - 15$
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Answer key
DIVIDING POLYNOMIALS

Polynomial Long Division

Ex: Divide $2x^4 + 3x^3 + 5x - 1$ by $x^2 + 3x + 2$.

$$\begin{array}{r}
 2x^2 - 3x + 5 \\
 x^2 + 3x + 2 \overline{) 2x^4 + 3x^3 + 0x^2 + 5x - 1} \\
 \underline{-(2x^4 + 6x^3 + 4x^2)} \\
 -3x^3 - 4x^2 + 5x \\
 \underline{-(-3x^3 - 9x^2 - 6x)} \\
 5x^2 + 11x - 1 \\
 \underline{-(5x^2 + 15x + 10)} \\
 -4x - 11 \leftarrow \text{Remainder}
 \end{array}$$

Answer: $2x^2 - 3x + 5 + \frac{-4x - 11}{x^2 + 3x + 2}$

Special Product Patterns:

Sum & Difference	$(a + b)(a - b) = a^2 - b^2$
Square of a Binomial	$(a + b)^2 = a^2 + 2ab + b^2$
	$(a - b)^2 = a^2 - 2ab + b^2$
Cube of a Binomial	$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$
	$(a - b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$

Synthetic Division of Polynomials

You can only use this method when dividing a polynomial by a binomial in the form $x - k$ or $x + k$.

Ex: Divide $-x^3 + 4x^2 + 9$ by $x - 3$.

$$\begin{array}{r|rrrr}
 3 & -1 & 4 & 0 & 9 \\
 & & -3 & 3 & 9 \\
 \hline
 & -1 & 1 & 3 & 18
 \end{array}$$

Check out what *other teachers* are saying:



"Great material! Thanks for making my life so much easier."

- 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.

You may also enjoy ...

RADICAL FUNCTIONS

Algebra 2 Guided Notes

Collage of notes for Radical Functions. Sections include:

- SOLVING RADICAL**: Directions: Solve each equation. Be sure to check for...
Equation: $3\sqrt{4-3x} = 21$
Check: $3\sqrt{4-3(-5)} = 21$
 $3\sqrt{4+15} = 21$
 $3\sqrt{19} = 21$
 $3 \cdot 3 = 9$
 $9 \cdot 2 = 18$
 $18 \neq 21$
Equation: $3\sqrt{4+3x} = 21$
Check: $3\sqrt{4+3(5)} = 21$
 $3\sqrt{4+15} = 21$
 $3\sqrt{19} = 21$
 $3 \cdot 3 = 9$
 $9 \cdot 2 = 18$
 $18 \neq 21$
- GRAPHING RADICAL**: Square Root Function, Parent radical function, Graphing a square root function.

Answer key included

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RATIONAL FUNCTIONS

Algebra 2 Guided Notes

Collage of notes for Rational Functions. Sections include:

- COMPLEX FRACTIONS**: Method 2. Step 1: Find the LCD of all the denominators in the complex fraction. Step 2: Multiply the numerator and denominator by the LCD. Step 3: Simplify.
- SOLVING RATIONAL**: Solving Rational Equations. Example: $\frac{1}{x+2} = \frac{2}{x}$. Solution: $x(x+2) = 2(x+2)$, $x^2 + 2x = 2x + 4$, $x^2 = 4$, $x = \pm 2$. Check: $\frac{1}{2+2} = \frac{2}{2}$, $\frac{1}{4} \neq 1$. Solution: $x = -2$. Check: $\frac{1}{-2+2}$ is undefined.
- GRAPHING RATIONAL**: When graphing rational functions, you need to keep the... Zeros, Hole(s), Y-Intercept, Leading Coefficient, End Behavior at Vertical Asymptotes.

Answer key included

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EXPONENTIAL & LOGARITHMIC FUNCTIONS

Algebra 2 Guided Notes

Collage of notes for Exponential & Logarithmic Functions. Sections include:

- TRANSFORMATIONS OF LOGARITHMIC FUNCTIONS**: Steps for graphing.
- GRAPHING EXPONENTIAL FUNCTION**: Steps for graphing.
- EXPONENTIAL FUNCTIONS WITH BASE E**: The Natural Base e. $e \approx 2.71828182846$. Exponential growth function: $f(x) = a \cdot b^x$. Exponential decay function: $f(x) = a \cdot b^{-x}$.

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 $(f \circ g)(x)$

COMPOUND INEQUALITIES

Compound inequality has two separate inequalities joined by _____

Graph of a compound inequality with "and" 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: $1. (y^{1/2} \cdot y^{1/3})^2$

Answer key included

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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 Equations, Inequalities, and Polynomial Functions guided notes for Algebra 2 that can be used all year long!

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