

# A2T Unit 3 - Polynomials & Polynomial Functions

**HOMEWORK POLICY:** In order to receive a 3, you must do the following (.5 off for each objective not completed):

- 1) Write your name and date along with the assignment in the top margin. All of your work must be done in pencil or a black pen.
- 2) IXL work must be done on Loose-leaf for at least an 80% score. If you have to do any graphing, it must be done on graph paper.
- 3) Every problem must be attempted to the best of your ability. Use the internet (Khan Academy) if you have problems understanding.
- 4) All algebraic work must be shown, and it should be neat and organized (hint: circle or underline your answers).
- 5) All worksheets should be checked and fully corrected using a red pen before coming to class. Go to [cindyedwards.weebly.com](http://cindyedwards.weebly.com).
- 6) Finally, assess your understanding by filling in the evaluation under the assignment.

**BE PREPARED FOR DAILY QUIZZES!**

DATE	DAILY LEARNING TARGETS & OBJECTIVES		INDEPENDENT PRACTICE (HOMEWORK)	GRADE
Mon/Tue, Nov. 13/14 <b>Day 01</b>	<b>Test on Unit 2B</b> Operations with Polynomials (Properties of Exponents)		Day 01 Operations with Polynomials Practice	— 3
L. Target?	Emoji	What Questions do you still have?	What were your AHA Moments?	
Wed/Thu, Nov. 15/16 <b>Day 02</b>	Review Properties of Exponents Dividing Polynomials (Long Division) <b>CAV CONNECTION Nov. 15 – Adjusted Schedule</b>		Review Target 1 (go to the Learning Menu ☺) Alg 2 IXL K.4 (Must score 80% or higher) <b>Create your Expunent (See Google Classroom)</b>	— 3
L. Target?	Emoji	What Questions do you still have?	What were your AHA Moments?	
Fri/Mon, Nov. 17/20 <b>Day 03</b>	Dividing Polynomials (Synthetic Division) Polynomial Functions and End Behavior		Alg 2 IXL K.5 (Must score 80% or higher) Day 03 Polynomial Funct. & End Behavior Practice	— 3
L. Target?	Emoji	What Questions do you still have?	What were your AHA Moments?	
Tue/Wed, Nov. 21/22 <b>Day 04</b>	 Introduction to the Desmos Project... There is NO Homework – ENJOY YOUR THANKSGIVING! <b>Early Release Nov. 22– Adjusted Schedule... Return to school on Monday, Nov. 27!</b> <b>Happy Thanksgiving!</b>			
Mon/Tue, Nov. 27/28 <b>Day 05</b>	Analyzing Graphs of Polynomial Functions <b>MDJ: What is the sum and difference of cubes? See GC for information and link.</b>		Day 05 Analyzing Graphs of Polynomial Functions Alg 2 IXL K.14	— 3
L. Target?	Emoji	What Questions do you still have?	What were your AHA Moments?	
Wed/Thu, Nov. 29/30 <b>Day 06</b>	Solving Polynomial Equations by Factoring Sum and Difference of Cubes		Day 06 Solving Polynomials by Factoring Practice Alg. 2 IXL I.6	— 3
L. Target?	Emoji	What Questions do you still have?	What were your AHA Moments?	
Fri/Mon, Dec. 1/4 <b>Day 07</b>	The Remainder and Factor Theorem Roots and Zeros		Day 07 Roots and Zeros Homework Worksheet	— 3
L. Target?	Emoji	What Questions do you still have?	What were your AHA Moments?	
Tue/Wed, Dec. 5/6 <b>Day 08</b>	Unit 3 Review		Unit 3 Test Review Worksheet <b>Not due until Mon/Tue, Dec. 19/20</b>	
L. Target?	Emoji	What Questions do you still have?	What were your AHA Moments?	
Thu/Fri, Dec. 7/8 <b>Day 09</b>	Test on Unit 3		<b>TOTAL POINTS:</b>	— 21
L. Target?	Emoji	What Questions do you still have?	What were your AHA Moments?	

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**LEARNING TARGETS:**

**Target 1:** I CAN simplify polynomial expressions and apply the properties of exponents

**Target 2:** I CAN divide polynomials using polynomial long division and synthetic division and apply the properties of the Remainder and Factor Theorems

**Target 3:** I CAN describe the characteristics and behavior of a polynomial function given its graph

**Target 4:** I CAN write the equation of a polynomial function given its zeros/roots or graph

**Target 5:** I CAN solve a higher degree polynomial equation over the set of complex numbers by factoring to include the sum and difference of cubes

**Target 6:** I CAN find the zeros of a higher degree polynomial function over the set of complex numbers using the process of depressing a polynomial.



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**BIG IDEAS/ENDURING UNDERSTANDINGS**

1. The solutions of a polynomial equation are the zeros/roots of its related function.
2. A positive exponent means you multiplying the base that number of times.
3. A negative exponent means you are dividing by the base that number of times.
4. The complete factorization of polynomials has occurred when each factor is a prime polynomial.
5. A function can be described on an interval as increasing, decreasing, or constant.
6. End behavior describes a function as  $x$  approaches positive and negative infinity.

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**ESSENTIAL QUESTIONS: Be ready to do an essay on any of these questions on the test day!**

1. Which real-life situations can be modeled by a polynomial function?
2. In what ways are the degree, function parameters, zeros/roots, and extrema (terrace, tangents, local max and min) related to the behavior of a polynomial function?
3. What is a negative exponent and how does it apply to scientific notation?

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**SOL OBJECTIVES (2009):**

**AII/T.1** The student, given polynomial expressions, will add, subtract, multiply divide, simplify, factor completely, and evaluate polynomial expressions.

**AII/T.4** The student will solve, algebraically and graphically,

- a) absolute value equations and inequalities;
- b) quadratic equations over the set of complex numbers;
- c) equations containing rational algebraic expressions; and
- d) equations containing radical expressions.

Graphing calculators will be used for solving and for confirming the algebraic solutions.

**AII/T.5** The student will solve nonlinear systems of equations, including linear-quadratic and quadratic, algebraically and graphically. Graphing calculators will be used as a tool to visualize graphs and predict the number of solutions.

**AII/T.6** The student will recognize the general shape of function (absolute value, square root, cube, root, rational, polynomial, exponential, and logarithmic) families and will convert between graphic and symbolic forms of functions. A transformational approach to graphing will be employed. Graphing calculators will be used as a tool to investigate the shapes and behaviors of these functions.

**AII/T.7a-f** The student will investigate and analyze functions algebraically and graphically. Key concepts include  
a) domain and range,, including limited and discontinuous domains and ranges;  
b) zeros;  
c) x- and y- intercepts;  
d) intervals in which a function is increasing or decreasing;  
e) asymptotes;  
f) end behavior.

Graphing calculators will be used as a tool to assist in the investigation of functions.

**AII/T.8** The student will investigate and describe the relationships among solutions of an equation, zeros of a function, x-intercepts of a graph, and factor of a polynomial expression.

**AII/T.9** The student will collect and analyze data, determine the equation of the curve of best fit, make predictions, and solve real-world problems, using mathematical models. Mathematical models will include polynomial, exponential, and logarithmic functions.