

HPISD Curriculum: Pre Calculus Pre-AP

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Title	Estimated Duration	6 Weeks				
Unit 7: Polynomials	10 days	1	2	3	4	5 6
Unit Overview						
Polynomial Functions						
Generalizations/Enduring Understandings						
The student will understand that:	<ul style="list-style-type: none"> The graph of a polynomial function is influenced by the degree of the polynomial and the sign of the leading coefficient. The solution to a polynomial equation can consist of real and complex numbers. Polynomial inequalities whose degree is greater than one must be solved by sign analysis. Polynomial functions can be used to model real life situations. 					
Concepts	Guiding/Essential Questions					
	<ul style="list-style-type: none"> How is the graph of a polynomial function influenced by the degree of the polynomial and the sign of the leading coefficient? How many solutions can a polynomial function have? How does sign analysis correspond to the graph of a polynomial inequality? What kind of real life situations can be modeled using polynomials? 					
Learning Targets						
<ul style="list-style-type: none"> Students will select and apply appropriate techniques to solve, graph and write polynomial equations. Students will use sign analysis to solve polynomial inequalities. 						
Formative Assessments	Summative Assessments					

TEKS:	Processes and Skills: What students should be able to DO	Facts: What students should KNOW
<p>Graph exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric and piecewise defined functions, including step functions. P.2.F</p> <p>Graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power functions and their transformations, including $af(x)$, $f(x)+d$, $f(x-c)$, $f(bx)$ for specific values of a, b, c, and d, in mathematical and real-world problems. P.2.G</p> <p>Determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing. P.2.I</p> <p>Analyze and describe end behavior of functions, including exponential, logarithmic, rational, polynomial, and power functions using infinity notation to communicate this characteristic in mathematical and real-world problems. P.2.J</p> <p>Analyze situations modeled by functions, including exponential, logarithmic, rational, polynomial, and power functions, to solve real-world problems such as problems involving growth and decay and optimization. P.2.N</p> <p>Solve polynomial equations with real coefficients by applying a variety of techniques such as factoring, graphical methods, or technology in mathematical and real-world problems. P.5.J</p> <p>Solve polynomial inequalities with real coefficients by applying a variety of techniques such as factoring, graphical methods, or</p>	<ul style="list-style-type: none"> • Identify, write, graph, and solve polynomial functions using a variety of techniques. • Graph and solve quadratic inequalities. 	<ul style="list-style-type: none"> • The sign of the leading coefficient and the degree of the polynomial determines the end behavior of the polynomial; positive, even – ends approach infinity; positive, odd – left end approaches negative infinity while right end approaches infinity; negative, even – ends approach negative infinity; negative, odd – left end approaches infinity while right end approaches negative infinity. • The degree of the polynomial determines the number of solutions, ex: 3rd degree has 3 solutions, 4th degree has 4 solutions, etc. • Polynomial inequalities with degree greater than one must be solved by sign analysis.

<p>technology and write the solution set of the polynomial inequality in interval notation in mathematical and real-world problems. P.5.H</p> <p>Solve rational inequalities with real coefficients by applying a variety of techniques such as factoring, graphical methods, or technology and write the solution set of the rational inequality in interval notation in mathematical and real-world problems. P.5.L</p>		
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Topics		
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Polynomial Functions		
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Language of Instruction		
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<p>end behavior maximum minimum polynomial inequalities rational root theorem sign analysis synthetic division synthetic substitution</p>		
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State Assessment Connections	National Assessment Connections
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Resources		
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