

Polynomial Equations & Inequalities

Curriculum Expectations

By the end of this course, students will:

- determine the equation of the family of polynomial functions with a given set of zeros and of the member of the family that passes through another given point
- make connections between the polynomial function $f(x)$, the divisor $x - a$, the remainder from the division $\frac{f(x)}{x - a}$, and $f(a)$ to verify the remainder theorem and the factor theorem
- factor polynomial expressions in one variable, of degree no higher than four, using the factor theorem
- determine the connection between the real roots of a polynomial equation and the x -intercepts of the graph of the corresponding polynomial function, and describe this connection
- solve polynomial equations in one variable, of degree no higher than four, by selecting and applying strategies
- solve problems involving applications of polynomial functions and equations
- explain, for polynomial functions, the difference between the solution to an equation in one variable and the solution to an inequality in one variable, and demonstrate that given solutions satisfy an inequality
- determine solutions to polynomial inequalities in one variable by graphing the corresponding functions, and identifying intervals for which x satisfies the inequalities
- solve linear inequalities and factorable polynomial inequalities in one variable in a variety of ways, and represent the solutions on a number line or algebraically

Schedule of Topics

Day	Topic	Reading	Homework	Questions?
1	Division of Polynomials	None	Worksheet	
2	Remainder Theorem	§2.1	p.91 #3,5,7,9-12,14a,15a,20	
3	Factor Theorem	§2.2	p.102 #2,4-6,8-11,14,17,18	
4	Descartes' Rule of Signs	None	Worksheet	
5	Solving Polynomial Equations	§2.3	p.110 #3-8,10,14,17,19	
6		None	Worksheet	
7	Families of Polynomial Equations	§2.4	p.119 #3,8,9,11-16	
8	Linear Inequalities	None	Worksheets	
9	Polynomial Inequalities	§2.5, §2.6	p.138 #2-9	
10	Unit Review	None	pp.140-143	

Assessment and Evaluation

Quiz/Test/Task	Date	K	A	T	C

Skills Checklist

At the end of this strand, I am able to:

- | | | | |
|---|------------|-----------|------------|
| • divide one polynomial by another using long division | [] Always | [] Often | [] Seldom |
| • divide a polynomial by a binomial using synthetic division | [] Always | [] Often | [] Seldom |
| • identify the quotient and remainder resulting from a division | [] Always | [] Often | [] Seldom |
| • express the result of a polynomial division using different forms | [] Always | [] Often | [] Seldom |
| • use the remainder theorem to determine remainders | [] Always | [] Often | [] Seldom |
| • use the factor theorem to determine factors of a polynomial | [] Always | [] Often | [] Seldom |
| • use the factor theorem/synthetic division to factor polynomials | [] Always | [] Often | [] Seldom |
| • predict the number of real roots of a polynomial | [] Always | [] Often | [] Seldom |
| • solve polynomial equations by factoring/quadratic formula | [] Always | [] Often | [] Seldom |
| • solve word problems involving polynomial equations | [] Always | [] Often | [] Seldom |
| • identify families of polynomial functions | [] Always | [] Often | [] Seldom |
| • determine equations of polynomial functions meeting criteria | [] Always | [] Often | [] Seldom |
| • express linear inequalities using a number line | [] Always | [] Often | [] Seldom |
| • solve linear inequalities graphically | [] Always | [] Often | [] Seldom |
| • solve linear inequalities algebraically | [] Always | [] Often | [] Seldom |
| • solve polynomial inequalities graphically | [] Always | [] Often | [] Seldom |
| • solve polynomial inequalities using cases | [] Always | [] Often | [] Seldom |
| • solve polynomial inequalities using intervals | [] Always | [] Often | [] Seldom |

Student Comments

Parent/Guardian Comments

Teacher Comments