10 Topic: Solving Higher Order Polynomials

Content Area: **Mathematics**
Course(s): **Algebra 2**
Time Period: **Semester 2**
Length: **2 weeks**
Status: **Published**

Standards

MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.F-IF.C.7c	Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
MA.A-APR.B.2	Know and apply the Remainder Theorem: For a polynomial $p(x)$ and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.
MA.F-LE.A.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

Enduring Understandings

1. Mathematics is a language consisting of symbols and rules.
2. The same mathematical ideas can be represented concretely or symbolically.
3. There can be different strategies to solve a problem, but some are more effective and efficient than others.

Essential Questions

1. Which operations and equivalences will simplify and help me solve the problem?
2. How is thinking algebraically different from thinking arithmetically?
3. How does explaining my process help me to understand a problem's solution better?
4. What is meant by equality?

Knowledge and Skills

- Understand and Use Polynomial Long Division
- Understand and Use Polynomial Synthetic Division
- Use Integral Roots Test
- Use Rational Roots Test
- Understand and Use Complex Root Theorem
- Understand and Use Descartes Rule of Signs

Transfer Goals

Using mathematical reasoning and strategic thinking can allow for practical solutions ot many problems.

Often unique vocabulary and implementation methods are needed to solve problems.

Resources

1. McDougal/Littell - Algebra & Trigonometry Structure & Method Book 2
2. Aufmann/Barker/Lockwood - Intermediate Algebra with Applications Sixth Edition
3. Houghton/Mifflin/Harcourt - On Core Mathematics Algebra 2
4. Holt - Algebra 2 with Trigonometry
5. Larson/Boswell - Big Ideas Math: Algebra 2 Texas Edition
6. Khan Academy
7. PurpleMath
8. KutaSoftware
9. CK-12
10. Quizlet
11. Albert I/O
12. Desmos

13. Problem Attic