Mapleton Public Schools

Math
Power Standards: Algebra II

The Real Number System:

HS.N-RN.A Extend the properties of exponents to rational exponents.

- Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define 5 1/3 to be the cube root of 5 because we want $(5\ 1/3)^3 = 5\ 1/3^3$ to hold, so $(5\ 1/3)^3$ must equal 5. (CCSS: HS.N-RN.A.1)
- Rewrite expressions involving radicals and rational exponents using the properties of exponents. (CCSS: HS.N-RN.A.2)

Seeing Structure in Expressions:

HS.A-SSE.A Interpret the structure of expressions

- Use the structure of an expression to identify ways to rewrite it.

HS.A-SSE.B Write expressions in equivalent forms to solve problems.

- Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. CCSS:HS.A-SSE.B.3)
- Use the formula for the sum of a finite geometric series (when the common ratio is not 1) to solve problems. For example, calculate mortgage payments. (CCSS: HS.A-SSE.B.4)
  a. (+) Derive the formula for the sum of a finite geometric series (when the common ratio is not 1). (CCSS: HS.A-SSE.B.4)

Arithmetic with Polynomials & Rational Expressions:

HS.A-APR.B Understand the relationship between zeros and factors of polynomials.

- 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). (Students need not apply the Remainder Theorem to polynomials of degree greater than 4.) (CCSS: HS.A-APR.B.2)
- Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. (CCSS: HS.A-APR.B.3)

Reasoning with Equations & Inequalities:

HS.A-REI.D Represent and solve equations and inequalities graphically.

- **Explain that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). (CCSS: HS.A-REI.D.10)**

Interpreting Functions:

HS.F-IF.B Interpret functions that arise in applications in terms of the context.

- **For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. (CCSS: HS.F-IF.B.4)**
- **Calculate and interpret the average rate of change presented symbolically or as a table, of a function over a specified interval. Estimate the rate of change from a graph. (CCSS: HS.F-IF.B.6)**

Building Functions:

HS.F-BF.A Build a function that models a relationship between two quantities.

- **Write a function that describes a relationship between two quantities (CCSS: HS.F-BF.A.1)**
- **Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms. (CCSS: HS.F-BF.A.2)**

Making Inferences and Justifying Conclusions:

HS.S-ID.C Make inferences and justify conclusions from sample surveys, experiments, and observational studies.

- **Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling. (CCSS: HS.S-IC.B.4)**
- **Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant. (CCSS: HS.S-IC.B.5)**
- **Evaluate reports based on data. Define and explain the meaning of significance, both statistical (using p-values) and practical (using effect size). (CCSS: HS.S-IC.B.6)**