Whiteriver Unified School District
Essential Standards Quarterly Focus

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Teacher

What is it that we expect students to learn?

Grade 12 | **Subject: Integrated Mathematics 3**

First Quarter

1. **A2.A-SSE.A.2**
   Use structure to identify ways to rewrite polynomial and rational expressions. Focus on polynomial operations and factoring patterns.

2. **P.A-APR.D.7**
   Understand that rational expressions form a system analogous to rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.

3. **A2.A-APR.D.6**
   Rewrite rational expressions in different forms; write $\frac{a(x)}{b(x)}$ in the form $q(x) + \frac{r(x)}{b(x)}$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or for the more complicated examples, a computer algebra system.

4. **A2.A-APR.B.2**
   Know and apply the Remainder and Factor 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 $p(x)$.

5. **A2.A-APR.B.3**
   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.

6. **P.F-IF.C.7**
   Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.

Second Quarter

1. **A2.N-CN.A.1**
   Apply the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. Write complex numbers in the form $a + bi$ with a and b are real.

2. **P.N-CN.A.3**
   Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.

3. **A2.N-CN.C.7**
   Solve quadratic equations with real coefficients that have complex solutions.

4. **A2.A-REI.C** Solve systems of equations. (Extended to System of Linear Equations in Three Variables). **A1.A-REI.C.6** Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables. Include problem solving opportunities utilizing real-world context.

5. **RFR.IC.2**
   Identify key features of conic sections (foci, directrix, radii, axes, asymptotes, center) graphically and algebraically.

6. **RFR.IC.5**
   Given a quadratic equation of the form $ax^2 + by^2 + cx + dy + e = 0$, determine if the equation is a circle, ellipse, parabola, or hyperbola.

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Third Quarter

1. **P.F-BF.B.5**
   Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.

2. **A2.F-BF.A.1b**
   Write a function that describes a relationship between two quantities. b. Combine function types using arithmetic operations and function composition.

3. **P.F-BF.B.4**
   Find inverse functions. b. Verify by composition that one function is the inverse of another. c. Read values of an inverse function from a graph or a table, given that the function has an inverse. d. Produce an invertible function from a non-invertible function by restricting the domain.

4. **RFR.ISS.1**
   Model real-world situations involving sequences or series using recursive and/or explicit definitions.

5. **RFR.ISS.2**
   Use covariational reasoning to describe sequences and series.

6. **RFR.ISS.4**
   Find the sums of finite or infinite series, if they exist.

7. **RV.EV.3**
   Find the components of a vector by subtracting the coordinates of an initial point from the coordinates of a terminal point.

Fourth Quarter

1. **RV.EV.5**
   Add and subtract vectors and multiply a vector by a scalar.

2. **RM.UM.2**
   Use matrix operations to solve problems. Add, subtract, and multiply matrices of appropriate dimensions. Multiply matrices by scalars to produce new matrices.

3. **RM.UM.3**
   Find the inverse and determinant of a matrix.

4. **P.A-REI.C.9**
   Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).

5. **RM.UM.4**
   Use matrices to solve systems of linear equations.

6. **RFR.ETT.2**
   Apply the Law of Sines and Law of Cosines to solve problems.

7. **RT.RTS.1**
   Use the structure of a trigonometric expression to identify ways to rewrite it.

- *Endurance- Knowledge and skills of value beyond a single date*
- *Leverage- Knowledge and skills valuable in multiple disciplines*
- *Readiness for the next level of learning- Knowledge and skills that are necessary for success in the next grade level or the next level of instruction*