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Changes to RIDE's Model Algebra 2 Course

In the 2022-2023 school year, Rhode Island was one of 22 states accepted to join the Launch Years initiative, which seeks to better align students' high school math course taking with their postsecondary aspirations. The working group was composed of K – 12 and college Math teachers, K - 12 leaders, college administration, college admissions representatives, a high school counselor, and two URI students.

The working group focused on identifying the structures to support all our students through a standardized course sequence of Algebra 1, Geometry, and Algebra 2, ensuring open doors for access to both college and career after high school. One of the recommendations that resulted from the initial work was the adjustment of Algebra 2 model course content to increase depth and decrease breadth of content to minimize the need for remediation. It is also worth noting that, through the course of gathering public input on RIDE's Readiness-Based graduation requirements, one of the most commented upon parts of RIDE's proposal was the Algebra 2 requirement. This reinforces the idea that Algebra 2 was a course worth re-examining.

A subcommittee of the working group examined RIDE's model Algebra 2 course alongside introductory, credit-bearing courses at URI, RIC, and CCRI. The subcommittee's first conclusion was that focusing on depth rather than breadth would likely improve student learning and success in the course. They then identified several standards that were unnecessary for success based on the content of those college courses, as well as other standards that could benefit from more clearly defined expectations of the depth required for students to demonstrate proficiency. After the full working group examined and recommended these changes, RIDE met with the College Board to ensure that the proposed changes would not hinder students' ability to achieve proficiency on the SAT.

The revised RIDE model Algebra 2 course is designed to create a more focused and manageable Algebra 2 course, better supporting student success while maintaining alignment with post-secondary expectations and representing the minimum expectation of an Algebra 2 course. However, LEAs may continue to include some of the standards listed on the next page in their Algebra 2 courses.

The full model Algebra 2 course content can be found on RIDE's website here.

The following adjustments have been made to RIDE's model Algebra 2 course:

Removal of the following standard:

- G-GPE A.2. Derive the equation of a parabola given a focus and a directrix.

Moving the following standards to Precalculus:

- A-SSE B.4. Derive the formula for the sum of a finite geometric series (when the common ratio is not 1) and use the formula to solve problems.
- A-APR C.4. Prove polynomial identities and use them to describe numerical relationships.
- A-APR D.6. Rewrite simple rational expressions in different forms; write $^{a(x)}/_{b(x)}$ in the form $q(x) + {}^{r(x)}/_{b(x)}$, 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.
- F-TF A.2. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.
- F-TF B.5. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.
- F-TF C.8. Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant.

Clarification of parameters for the following standards (the specific parameters can be found in the model course document linked above):

- N-RN A.2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.
  - Simplify radicals with a constant and a single variable.
- A-APR A.1.a. Perform operations on polynomial expressions.
  - Only linear division (not synthetic division) is required.
- For standards involving rational, polynomial, or logarithmic functions:
  - Rational functions need involve no more complexity than those with factorable quadratics in the numerator and/or denominator.
  - For polynomial function work (without the use of a calculator), the functions need only be either cubic and quartic, expressed either:
    - in factored form, or

- with a greatest common factor, such that the remaining expression is quadratic.

- For logarithmic functions, for logarithms of base 2, e, and 10,
  - identify the parent function from a graph, or
  - graph a function with the basic shape and x-intercept.