Question of the Day:

- How do Smarter Balanced assessments and end-of-course exams affect how students come prepared for precalculus and calculus?
Smarter Balanced Assessment Consortium

- **Summative:**
  For reporting and program evaluation

- **Interim:**
  Online assessments to monitor progress

- **Formative Practices:**
  Digital Library; resources for PD
Math Claim 1: Concepts and Procedures

Students can explain and apply mathematical concepts and interpret and carry out mathematical procedures with precision and fluency.
Claim #2: Problem Solving

Students can solve a range of complex well-posed problems in pure and applied mathematics, making productive use of knowledge and problem solving strategies.
Claim #3: Communicating Reasoning

Students can clearly and precisely construct viable arguments to support their own reasoning and to critique the reasoning of others.
Claim #4: Modeling and Data Analysis

Students can analyze complex, real-world scenarios and can construct and use mathematical models to interpret and solve problems.
Common Core State Standards for Mathematics

Number and Quantity
- The complex number system

Algebra
- Seeing Structure in Expressions
- Arithmetic with Polynomials and Rational Expressions
Common Core State Standards for Mathematics

Algebra
- Seeing Structure in Expressions
- Arithmetic with Polynomials and Rational Expressions
- Creating Equations
- Reasoning with Equations and Inequalities
Common Core State Standards for Mathematics

Functions

- Interpreting Functions
- Building Functions
- Linear, Quadratic, and Exponential Models
- Trigonometric Functions
Iowa End-of-Course Assessments for Mathematics

Content Validation: Identify the content that has a connection to precalculus and calculus.

Matrix Algebra – none
Algebra I – none
Probability & Statistics – representing the slope and intercept within the context of the data.
Iowa End-of-Course Assessments for Mathematics

Geometry –
Using function notation and analyzing linear, quadratic, square root, cube root, piecewise-defined, polynomial, rational, exponential, and logarithmic functions.

Understanding and applying theorems about circles and finding arc lengths and areas of sectors of circles.
Iowa End-of-Course Assessments for Mathematics

Algebra II –
Number and Quantity
The Real Number System – using properties of rational exponents and using properties of rational and irrational numbers

The Complex Number System – performing arithmetic operations with complex numbers, representing complex numbers and their operations on the complex plane, and using complex numbers in polynomial identities and equations.
Iowa End-of-Course Assessments for Mathematics

Algebra II – Algebra
Arithmetic with Polynomials and Rational Expressions
Performing arithmetic operations on polynomials, understanding the relationship between zeros and factors of polynomials, using polynomial identities to solve problems, and rewriting rational expressions.
Iowa End-of-Course Assessments for Mathematics

Algebra II – Algebra

Reasoning with Equations and Inequalities

Solving linear equations and inequalities, quadratic equations, rational equations, and radical equations in one variable; solving systems of equations; and graphing linear equations and inequalities, and polynomial, rational, absolute value, exponential, and logarithmic functions.
Iowa End-of-Course Assessments for Mathematics

Algebra II – Functions
Interpreting Functions
Using function notation and analyzing linear, quadratic, square root, cube root, piecewise-defined, polynomial, rational, exponential, and logarithmic functions.
Iowa End-of-Course Assessments for Mathematics

Algebra II –
Functions
Building Functions
Creating functions describing relationships between quantities, using arithmetic operations on functions, composing functions, translating between explicit and recursive forms of sequences, understanding the effects of function transformations, finding inverse functions, and understanding and using the inverse relationship between exponents and logarithms to solve problems.
Iowa End-of-Course Assessments for Mathematics

Algebra II – Functions
Linear, Quadratic, and Exponential Models
Constructing and comparing linear, quadratic, and exponential functions; interpreting different representations of linear and exponential functions, including the parameters of the functions in terms of the context represented; and evaluating logarithms as solutions of exponential functions.
Iowa End-of-Course Assessments for Mathematics

Source:

http://itp.education.uiowa.edu/ieoc/Content/alg2.aspx
Iowa End-of-Course Assessments for Mathematics

The Short Answer

Constructs associated with Algebra II scope and sequence are likely to help prepare students for work in precalculus and calculus.
The Moral of the Story:

The Real Answer

Exams don’t affect anything. They’re a reflection of good teaching.

GOOD TEACHING affects how students come prepared for precalculus and calculus.
Questions
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