New York State Next Generation Mathematics Learning Standards

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Algebra II Snapshot 

Standards New to Algebra II

AII-A.SSE.3a Factor a quadratic expression to reveal the zeros of the function it defines.
AII-F.BF.5a Understand inverse relationships between exponents and logarithms algebraically and graphically.
AII-F.BF.6 Represent and evaluate the sum of a finite arithmetic or finite geometric series, using summation (sigma) notation.
AII-F.BF.7 Explore the derivation of the formulas for finite arithmetic and finite geometric series. Use the formulas to solve problems. ★
AII-F.TF.4 Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions. Focus of standard is on cos(x), sin(x) and tan(x).

Standards Moved from Algebra II

N-Q.2 Define appropriate quantities for the purpose of descriptive modeling. Standard removed from Algebra I and Algebra II.
N-CN.7 Solve quadratic equations with real coefficients that have complex solutions. Standard has been removed, however content of standard is covered in AII-A.REI.4b.
A-SSE.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. Standard removed. Geometric series are now covered in standards AII-F.BF.6 and 7.
A-APR.4 Prove polynomial identities and use them to describe numerical relationships. Standard is now a plus standard, see (+)(-)A.APR.4.
A-REI.6 Solve systems of linear equations (3 x 3 systems) exactly and approximately, focusing on pairs of linear equations in two variables. Standard is now a plus standard, see (+)(-)A.REI.6b.
G-GPE.2 Derive the equation of a parabola given a focus and directrix. Standard is now a plus standard, see (+)(-)G.GPE.2.
S-IC.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population. Standard was removed, still an expectation with other IC domain standards.
S-IC.5 Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant. Standard has been removed.
S-CP.2 Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent. Standard has been removed. See standard AII-S.CP.4.
S-CP.3 Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B. Standard has been removed. See standard AII-S.CP.4.
S-CP.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. See standard AII-S.CP.4.
S-CP.6 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model. See standard AII-S.CP.4.

Highlights/Instructional Considerations for Algebra II

AII-N.RN.1 Explore how the meaning of rational exponents follows from extending the properties of integer exponents. Language has changed from explain to explore. Explore requires the student to learn the concept through a variety of instructional activities. Standard AII-N.RN.2 is the application of this content.
AII-N.CN.2 Multiplication of complex numbers includes simplifying powers of *i*.
AII-A.SSE.2 Factoring involves quadratic expressions with leading coefficients other than 1, factoring by grouping and factoring the sum and difference of cubes. The ability to see structure in expressions and use this structure to rewrite expressions is a fluency expectation for Algebra II.
AII-A.APR.6 Rewriting simple rational expressions in different forms (through inspection) is a fluency expectation for Algebra II.
AII-A.CED.1 Standard addresses the development of the model (equation/inequality in one variable, real world context). Tasks include linear, quadratic, rational and exponential functions.

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Highlights/Instructional Considerations (Cont.) for Algebra II

AII-A.REI.4b Graphing has been added as a method of solving quadratic equations. Coefficients can be rational for factoring, completing the square and the quadratic formula. Solutions may involve simplifying radicals.
AII-A.REI.7b When solving a linear/quadratic system algebraically and graphically, conics are limited to parabolas and circles.
AII-A.REI.11 Students are recognizing the graphical solution to $f(x)=g(x)$ and interpreting the solution in context. Additional functions include square root, cube root and trigonometric functions. Students also need to be able to recognize the graphical solution to $f(x)<g(x)$ or $f(x)\leq g(x)$.
AII-F.IF.3 Sequences will be defined/written recursively and explicitly in subscript notation. Fluency in translating between recursive and explicit forms is a fluency expectation for Algebra II.
AII-F.IF.4 Added zeros as one of the key features that need to be interpreted for graphs. Additional functions include square root and cube root functions.
AII-F.IF.6 Additional functions include square root and cube root functions.
AII-F.IF.7e Students are graphing cube root, exponential and logarithmic functions.
AII-F.IF.8b Tasks involve compounding growth/decay and continuous growth/decay.
AII-F.IF.9 Tasks also involve square root and cube root functions, in addition to polynomial, exponential, logarithmic and trigonometric functions.
AII-F.BF.1a and 2 Arithmetic and geometric sequences will be defined/written explicitly and recursively in subscript notation.
AII-F.BF.3b Additional functions include square root and cube root functions. Students will also write a new function using the value of k. Even and odd functions will be recognized from their graphs. Determining algebraically whether or not a function is even or odd is a plus standard (+)(-) F.BF.3c.
AII-F.BF.4a Inverses of one-to one functions will be found algebraically and graphically.
AII-F.LE.2 Arithmetic and geometric sequences are still an expectation of course, however removed from this standard. See AII-F.BF.2.
AII-F.TF.2 Standard has been re-worded: Apply concepts of the unit circle in the coordinate plane to calculate the values of the six trigonometric functions given angles in radian measure.
AII-F.TF.5 Horizontal shift has been added, in addition to amplitude, frequency and midline.
AII-F.TF.8 Standard has been re-worded: Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$. Find the value of any of the six trigonometric functions given any other trigonometric function value and when necessary find the quadrant of the angle.
AII-S.ID.4 Standard has been broken into two parts and re-written: AII-S.ID.4a Recognize whether or not a normal curve is appropriate for a given data set and AII-S.ID.4b If appropriate, determine population percentages using a graphing calculator for an appropriate normal curve.
AII-S.ID.6 Added note states that when representing bivariate data on a scatter plot and describing how the variables' values are related, it's important to keep in mind that the data must be linked to the same "subjects", not just two unrelated quantitative variables. Do not assume that an association between two variables implies that one causes another to change.
AII-S.ID.6a When fitting a function to real-world data, emphasis is on quadratic, exponential and power models, including the regression capabilities of the calculator.
AII-S.IC.2 Standard has been re-worded. Determine if a value for a sample proportion or sample mean is likely to occur based on a given simulation. For the purposes of this course, if the statistic falls within two standard deviations of the mean (95% interval centered on the population parameter), then the statistic is considered likely (plausible, usual).
AII-S.IC.4 Standard has been re-worded. Given a simulation model based on a sample proportion or mean, construct the 95% interval centered on the statistic (+/- two standard deviations) and determine if a suggested parameter is plausible.
AII-S.IC.6 Standard has been broken down into two parts and re-written: AII-S.IC.6a Use the tools of statistics to draw conclusions from numerical summaries and AII-S.IC.6b Use the language of statistics to critique claims from informational texts. For example, causation vs correlation, bias, measures of center and spread.

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