

MAJOR MODIFICATIONS IN VERSION 2.0

ALGEBRA 2 WITH TRIGONOMETRY

VERSION 2.0

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Besides editing problems for mathematical accuracy, grammatical errors, and other minor content issues, there were some major changes from Version 1.0 to Version 2.0. Many of these changes were due to direct suggestions from school district members of the eMathInstruction community. We would like to take this opportunity to thank every teacher, tutor, and student who contributed suggestions and criticisms of Version 1.0. All of these, we hope, have made Version 2.0 more robust, engaging, and responsive to the New York State standards and assessments.

NEW LESSONS

- **Unit #2 – Lesson #1 – Direct Variation** – This lesson in fact replaces the original Lesson #1 of Unit #2, Linear Relationships, which feedback had told us was too difficult this early in the year. Direct variation is in the state standards, so a variety of problems, including many applications, were addressed.
- **Unit #4 – Lesson #9 – More Work with Roots** – In this lesson, students are introduced to higher order roots, mostly the cube and fourth roots, and then practice simplifying roots with variables in the radicand. Although we believe that this skill is not essential for higher level mathematics or science, it does seem to be assessed, so we have included a lesson on it.
- **Unit #4 – Lesson #11 – Exponent Practice** – In this lesson we work with the fundamental exponent rules, as applied to expressions involving all types of rational exponents (whole number, negative, and fractional). Please note that many of the lessons at the end of Unit #4 had to be renumbered due to the inclusion of two new lessons in this unit.
- **Unit #6 – Lesson #10 – Solving Rational Inequalities** – The third lesson on inequalities has been inserted at the end of Unit #6. This is a challenging lesson where students must utilize many of the skills and facts from the rest of Unit #6. Students learn to identify critical points of a rational expression and then perform a sign analysis to construct the solution set of the inequality.
- **Unit #7 – Lesson #9 – Phase Shift** – Although we have reservations about equating the horizontal shift of a sinusoidal function with phase shift, it will be assessed as such on the New York State Regents examination. Hence, we have included this lesson so that students can practice identifying the phase shift from the equation of the curve and from the graph of the curve. The follow up lesson, Sinusoidal Modeling, has **not** been modified to include phase shifting.



LESSONS THAT HAVE BEEN MODIFIED SIGNIFICANTLY

Besides the addition of new lessons, mostly to satisfy state assessment standards, modifications were made to some lessons that change the content of the lesson significantly enough to warrant inclusion here. Most of these changes were made to address skills that were not emphasized enough or concepts included in the state standards, but not in Version 1.0.

- **Unit 1 – Lesson #6 – One to One Functions** – The homework for this lesson has been changed to introduce the concept of an **onto function or mapping**. We strongly believe that this topic is best left to a college level course in Abstract Algebra, but because of its relative simplicity and its inclusion in the New York State performance indicators, we have included it here. Certainly the one homework problem on it is not enough for the typical student to master the idea. We encourage teachers to continue to supplement this topic or include it in yearly review.
- **Unit #3 – Lesson #15 – Equations of Circles** – In this particular lesson we have included problems where students must find the equation of the circle, given its center and one point on the boundary of the circle. This was an inadvertent omission on our part in Version 1.0. These are good problems that emphasize the form of a circle's equation as well as finding a missing parameter of an equation by substituting a known solution to the equation.
- **Unit 4 – Lesson #5 – Solving Incomplete Quadratics** – We have now included a much heavier emphasis in both the lesson and the homework on using the process of completing the square to solve quadratic equations. Although we are opposed to having the state assessment specify whether students must use this method or the quadratic formula, we believe that this is a good skill to practice because it emphasizes many fundamental concepts in algebra, most importantly solving equations through the use of inverse operations.
- **Unit #11 – Lesson #4 – More Work with Counting** – We have now included one multipart problem where students tackle the classic counting question of the number of arrangements of letters in a word where repetition of letters occurs. Although we do not see these problems in the performance indicators, they have now shown up on all assessments released by New York State for Algebra 2 with Trigonometry.

eMathInstruction will continue to improve Algebra 2 with Trigonometry on a regular basis. We anticipate now using the e-text in its current version for two more years and then analyzing its correlation to both the New York State performance indicators and to the New York State assessments. We encourage all users of the e-text to give criticisms and suggestions for modifications. Feedback is always appreciated:

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