

OpenStax

College Algebra* ● *Algebra & Trigonometry* ● *Precalculus

Second Edition

Transition Guide

Overview

This transition guide describes the changes in revisions of *OpenStax College Algebra 2e*, *College Algebra 2e with Corequisite Support*, *Algebra and Trigonometry 2e*, and *Precalculus 2e*. Most of the described changes are those that substantially alter the book, rather than corrections to calculations or related errata.

This revision was undertaken to improve the functionality, inclusivity, design, and alignment of the book and its various formats. The most substantial content-oriented revisions increase the inclusivity of the material; they better represent different contributors and impacts of mathematics in a way that is designed to better engage and support students.

We are aware that shifting exercise numbers and related alterations can lead to difficulty in the revision transition process. This revision was undertaken with little change to problem numbering. (Note that many problems were improved, but in a manner that preserved the sequencing.) As a result, usage of homework systems and related tools should be only minimally affected.

Note that OpenStax's open license empowers faculty to continue using elements or the entirety of the first edition if needed.

Global Changes

In order to provide the most current, inclusive, and accurate material possible, we have made several hundred edits involving language related to gender, race, ethnicity, age, academic status, and related terminology. These changes have been made throughout the text, including within captions, examples, and problems. In most cases, they are not noted in the detailed tables below.

Specific Changes

This transition guide reflects the four different textbooks in the OpenStax Precalculus series. The texts are presented individually because most faculty utilize individual texts, but there are overlaps in coverage, and therefore many similar items are seen in the tables below. In addition to these changes, verbiage, phrasing, and ordering were improved, and more inclusive and people-first language was implemented.

College Algebra and College Algebra with Corequisite Support

Section 1.1	Added descriptions of the Lebombo and Ishango Bones as the earliest mathematical artifacts. Changed references to B.C/A.D. to BCE/CE.
Section 1.4	Changed introductory example to a person, Maahi, building a book repository (little free library).
Section 1.6	Problems 52 and 53 (Real World Applications): changed names of people in the problems.
Chapter 2 Introduction	The Chapter 2 opening vignette on the grid pattern of a football field has been replaced with a description of irrigation systems in agriculture, including and the grid-shaped arrangements of equipment and water supplies. (The photo has been similarly updated.)
Section 3.2	Updated framing of horror movie rankings in order to account for the currency issues related to movie releases.
Section 4.1	Example 2: Deciding whether a function is increasing/decreasing: This example focuses on texting frequency as the function. The language has been updated to contextualize the data as being from the 2010's, and refer to all texting users rather than limiting to teens only.
Chapter 5 Introduction	The chapter opening vignette on the rise of digital photography film has been replaced by a description of gas behavior and the gas laws, which are polynomial expressions. (The photo has been similarly updated.)
Section 5.1	Problems 66-68 (Real World Applications) replaced the corral with a dog park.
Section 5.5	The introductory mini-vignette was reframed to focus on Quinceañera celebration cakes.

Section 5.6	<p>In Example 3, <i>Solving an Applied Problem Involving a Rational Function</i>, the context has been expanded to focus on a healthcare worker in a refugee camp.</p> <p>Questions 80 and 81 (Real World Applications) contexts were changed to include the refugee camp mentioned above.</p>
Section 5.7	<p>The introductory mini-vignette on the gravel pile has been expanded to include the usage of gravel piles (cairns) by park rangers markers.</p> <p>Example 6 has likewise been adjusted to include the context of the park rangers and cairns.</p>
Section 6.1	<p>The data regarding the population of India has been updated to 2021 data, and the predictive population expansion beyond China's has been adjusted to 2027.</p>
Section 6.5	<p>The terminology in the mini-vignette on pH has been changed from "alkaline" to "basic" to reflect terms likely more familiar to students.</p>
Chapter 7	<p>The chapter-opening narrative regarding the Enigma decryption has been expanded to include additional contributors to the decoding process, including the students at Poznań University. We have also added far more detail regarding the methods and mathematics of the device's operation.</p>
Section 7.1	<p>Problems 57, 65 66 68, 70, 71, and 74 have been revised to be more inclusive.</p>
Section 7.2	<p>Problems 55, 62 64 have been revised to be more inclusive.</p>
Chapter 8 Introduction	<p>The opening narrative has been expanded to include the contributions of James Clerk Maxwell and Sofia Kovalevskaya, and the small-particle composition of Saturn's rings.</p>
Section 8.1	<p>The coverage of whispering chambers has been corrected (re Statuary Hall), and other examples have been added.</p>
Section 8.3	<p>The introduction has been replaced with an overview of Katherine Johnson's mathematical work regarding parabolic orbits, including a number of NASA space flights and her quote regarding the calculations.</p>
Section 9.6	<p>The background on Pascal's Triangle has been expanded to include its first documented writer, Pingala, and its illustrated depiction by Omar Khayyam. Pascal's role in republishing and repopularizing it is also discussed.</p>

Algebra and Trigonometry

Section 1.1	Added descriptions of the Lebombo and Ishango Bones as the earliest mathematical artifacts. Changed references to B.C/A.D. to BCE/CE.
Section 1.4	Changed introductory example to a person, Maahi, building a book repository (little free library).
Section 1.6	Problems 52 and 53 (Real World Applications): changed names of people in the problems.
Chapter 2 Introduction	The Chapter 2 opening vignette on the grid pattern of a football field has been replaced with a description of irrigation systems in agriculture, including and the grid-shaped arrangements of equipment and water supplies. (The photo has been similarly updated.)
Section 3.2	Updated framing of horror movie rankings in order to account for the currency issues related to movie releases.
Section 4.1	Example 2: Deciding whether a function is increasing/decreasing: This example focuses on texting frequency as the function. The language has been updated to contextualize the data as being from the 2010's, and refer to all texting users rather than limiting to teens only.
Section 4.2	The student in the section-opening example was changed from Emily who used she/her pronouns to Elan who uses they/their pronouns.
Chapter 5 Introduction	The chapter opening vignette on the rise of digital photography film has been replaced by a description of gas behavior and the gas laws, which are polynomial expressions. (The photo has been similarly updated.)
Section 5.1	Problems 66-68 (Real World Applications) replaced the corral with a dog park.
Section 5.5	The introductory mini-vignette was reframed to focus on Quinceañera celebration cakes.
Section 5.6	In Example 3, Solving an Applied Problem Involving a Rational Function , the context has been expanded to focus on a healthcare worker in a refugee camp. Questions 80 and 81 (Real World Applications) contexts were changed to include the refugee camp mentioned above.

Section 5.7	<p>The introductory mini-vignete on the gravel pile has been expanded to include the usage of gravel piles (cairns) by park rangers markers.</p> <p>Example 6 has likewise been adjusted to include the context of the park rangers and cairns.</p>
Section 6.1	<p>The data regarding the population of India has been updated to 2021 data, and the predictive population expansion beyond China's has been adjusted to 2027.</p>
Section 6.5	<p>The terminology in the mini-vignette on pH has been changed from "alkaline" to "basic" to reflect terms likely more familiar to students.</p>
Chapter 7 Introduction	<p>The narrative regarding tides has been expanded to include the usage of tides as cultural elements, and specifically by Indigenous peoples to fish.</p>
Section 7.1	<p>Example 10 on water wheels has been expanded to provide historical and practical context.</p> <p>Problem 62 has updated the item from a CD-ROM to a computer hard drive disk.</p>
Section 7.3	<p>The introduction on Ferris wheels has been updated to feature the current largest roller coaster, the Ain Dubai; additional context has been added regarding other large buildings in Dubai.</p>
Chapter 8 Introduction	<p>The introduction on sun cycles has been significantly expanded to include the religious and cultural aspects related to the sun, including Egyptian, Hindu, and Native American accounts.</p>
Section 8.3	<p>In problem 57, we have added a brief explanation of a roof truss.</p>
Chapter 9 Introduction	<p>The introduction on generalized trigonometry ideas has been replaced by a narrative on the usage of angles to win points in tennis. The text then moves into a discussion of the trigonometric calculations utilized in the Hawk-Eye 3D vision system, which is used to track balls during review and challenge replays.</p>
Section 9.5	<p>Expanded coverage of Thales of Miletus to provide more detail on his method of finding the height of the pyramid.</p> <p>Problems 97, 99, and 104 have been adjusted to include new names or genders.</p>
Section 10.7	<p>The mini-vignette on baseball has been expanded to include the usage of analytics, launch angle, and exit velocity.</p>
Chapter 11	<p>The chapter-opening narrative regarding the Enigma decryption has been expanded to include additional contributors to the decoding process,</p>

	including the students at Poznań University. We have also added far more detail regarding the methods and mathematics of the device's operation.
Section 11.1	Problems 57, 65 66 68, 70, 71, and 74 have been revised to be more inclusive.
Section 11.2	Problems 55, 62 64 have been revised to be more inclusive.
Chapter 12 Introduction	The opening narrative has been expanded to include the contributions of James Clerk Maxwell and Sofia Kovalevskaya, and the small-particle composition of Saturn's rings.
Section 12.1	The coverage of whispering chambers has been corrected (re Statuary Hall), and other examples have been added.
Section 12.3	The introduction has been replaced with an overview of Katherine Johnson's mathematical work regarding parabolic orbits, including a number of NASA space flights and her quote regarding the calculations.
Section 13.6	The background on Pascal's Triangle has been expanded to include its first documented writer, Pingala, and its illustrated depiction by Omar Khayyam. Pascal's role in republishing and repopularizing it is also discussed.

Precalculus

Section 1.2	Updated framing of horror movie rankings in order to account for the currency issues related to movie releases.
Section 2.1	Example 2: Deciding whether a function is increasing/decreasing: This example focuses on texting frequency as the function. The language has been updated to contextualize the data as being from the 2010's, and refer to all texting users rather than limiting to teens only.
Section 2.2	The student in the section-opening example was changed from Emily who used she/her pronouns to Elan who uses they/their pronouns.
Chapter 3 Introduction	The chapter opening vignette on the rise of digital photography film has been replaced by a description of gas behavior and the gas laws, which are polynomial expressions. (The photo has been similarly updated.)
Section 3.1	Problems 66-68 (Real World Applications) replaced the corral with a dog park.
Section 3.6	The introductory mini-vignette was reframed to focus on Quinceañera celebration cakes.
Section 3.7	In Example 3, Solving an Applied Problem Involving a Rational Function , the context has been expanded to focus on a healthcare worker in a refugee camp. Questions 80 and 81 (Real World Applications) contexts were changed to include the refugee camp mentioned above.
Section 3.8	The introductory mini-vignette on the gravel pile has been expanded to include the usage of gravel piles (cairns) by park rangers markers. Example 6 has likewise been adjusted to include the context of the park rangers and cairns.
Section 4.1	The data regarding the population of India has been updated to 2021 data, and the predictive population expansion beyond China's has been adjusted to 2027.
Section 4.5	The terminology in the mini-vignette on pH has been changed from "alkaline" to "basic" to reflect terms likely more familiar to students.
Chapter 5 Introduction	The narrative regarding tides has been expanded to include the usage of tides as cultural elements, and specifically by Indigenous peoples to fish.
Section 5.1	Example 10 on water wheels has been expanded to provide historical and practical context. Problem 62 has updated the item from a CD-ROM to a computer hard drive disk.

Section 5.2	The introduction on Ferris wheels has been updated to feature the current largest roller coaster, the Ain Dubai; additional context has been added regarding other large buildings in Dubai.
Chapter 6 Introduction	The introduction on sun cycles has been significantly expanded to include the religious and cultural aspects related to the sun, including Egyptian, Hindu, and Native American accounts.
Section 6.3	In problem 57, we have added a brief explanation of a roof truss.
Chapter 7 Introduction	The introduction on generalized trigonometry ideas has been replaced by a narrative on the usage of angles to win points in tennis. The text then moves into a discussion of the trigonometric calculations utilized in the Hawk-Eye 3D vision system, which is used to track balls during review and challenge replays.
Section 7.5	Expanded coverage of Thales of Miletus to provide more detail on his method of finding the height of the pyramid. Problems 97, 99, and 104 have been adjusted to include new names or genders.
Section 8.7	The mini-vignette on baseball has been expanded to include the usage of analytics, launch angle, and exit velocity.
Chapter 9	The chapter-opening narrative regarding the Enigma decryption has been expanded to include additional contributors to the decoding process, including the students at Poznań University. We have also added far more detail regarding the methods and mathematics of the device's operation.
Section 9.1	Problems 57, 65 66 68, 70, 71, and 74 have been revised to be more inclusive.
Section 9.2	Problems 55, 62 64 have been revised to be more inclusive.
Chapter 10 Introduction	The opening narrative has been expanded to include the contributions of James Clerk Maxwell and Sofia Kovalevskaya, and the small-particle composition of Saturn's rings.
Section 10.1	The coverage of whispering chambers has been corrected (re Statuary Hall), and other examples have been added.
Section 10.3	The introduction has been replaced with an overview of Katherine Johnson's mathematical work regarding parabolic orbits, including a number of NASA space flights and her quote regarding the calculations.
Section 11.6	The background on Pascal's Triangle has been expanded to include its first documented writer, Pingala, and its illustrated depiction by Omar

	Khayyam. Pascal's role in republishing and repopularizing it is also discussed.
Chapter 12 Introduction	The chapter-opening narrative on Usain Bolt has been replaced with one on Sifan Hassan, a similarly dominant runner who had a landmark series of victories at the Tokyo Olympics in 2021. The concepts regarding non-uniform speed remain generally the same, and Hassan's signature "win from the back" running style provides a strong example of the concept.
Section 12.4	Example regarding teenage refrigerator door opening has been replaced by context from a Pew study on mobile device ownership by people of different generations (Millennial, Baby Boom, and older generations).