Mc Graw Hill

Grades 11–12

Florida 3rd–4th Year Math Overview

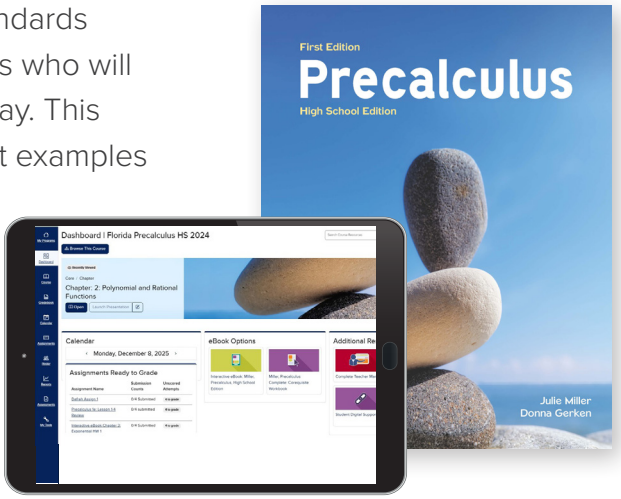
Help students explore advanced concepts and prepare for college and career success.

Florida Precalculus

Honors

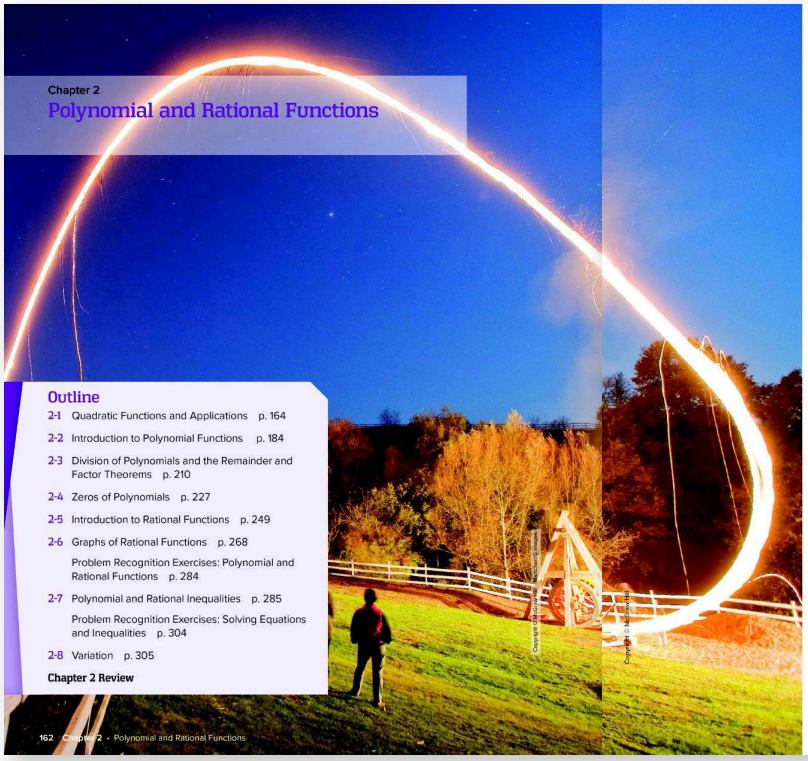
Florida Precalculus Honors

Florida Precalculus Honors is aligned to the B.E.S.T. standards and crafted specifically for the diverse group of students who will take this course as part of their high school math pathway. This text is organized around clear objectives, with abundant examples and opportunities for students to develop mastery. Concepts are connected to a wide range of applied topics certain to appeal to students with diverse backgrounds and interests, including business, chemistry, health, space exploration, education, sports, travel, and more.

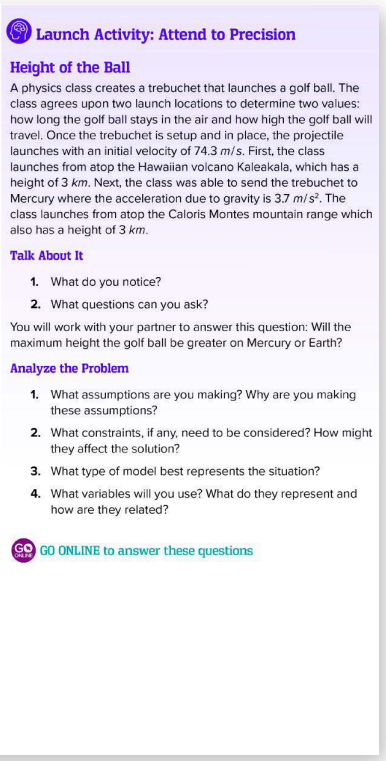


Stunning Visuals, Intuitive Layout

Making the study of advanced mathematics accessible and approachable for all students starts with a considerate, student-friendly design. Each chapter opens with a bright visual related to the topic of the **Launch Activity**. The chapter **Outline** provides a quick reference to what is covered in each chapter. The chapter openers are designed to be inviting, intriguing, and easy to navigate.


Chapter 2
Polynomial and Rational Functions

Outline


Launch Activity: Attend to Precision

Height of the Ball

A physics class creates a trebuchet that launches a golf ball. The class agrees upon two launch locations to determine two values: how long the golf ball stays in the air and how high the golf ball will travel. Once the trebuchet is setup and in place, the projectile launches with an initial velocity of 74.3 m/s. First, the class launches from atop the Hawaiian volcano Kaleakala, which has a height of 3 km. Next, the class was able to send the trebuchet to Mercury where the acceleration due to gravity is 3.7 m/s^2. The class launches from atop the Caloris Montes mountain range which also has a height of 3 km.

Talk About It

1. What do you notice?
2. What questions can you ask?

You will work with your partner to answer this question: Will the maximum height the golf ball be greater on Mercury or Earth?

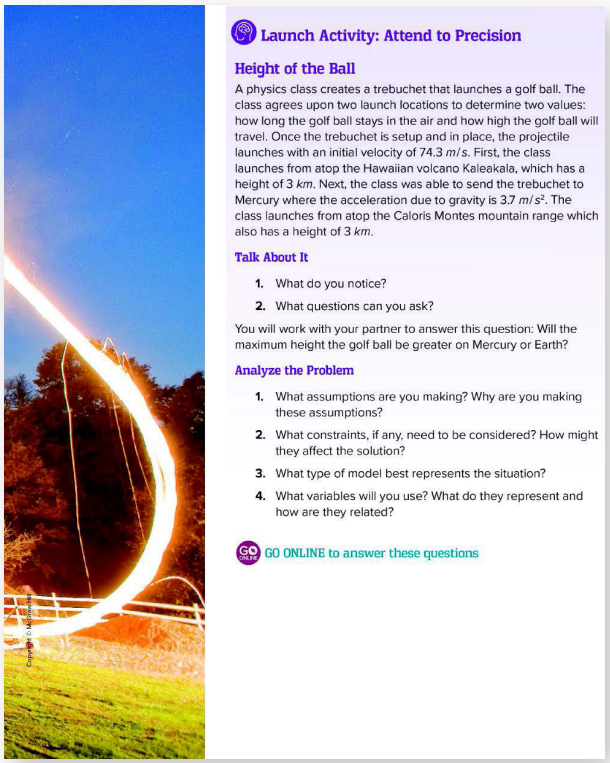
Analyze the Problem

1. What assumptions are you making? Why are you making these assumptions?
2. What constraints, if any, need to be considered? How might they affect the solution?
3. What type of model best represents the situation?
4. What variables will you use? What do they represent and how are they related?

GO ONLINE to answer these questions

Clear, Precise Narrative

At the core of *Florida Precalculus* is an accessible narrative that invites students to engage with and grasp the content through clear, student-friendly instruction. The narrative is augmented with point-of-use features and elements designed to enhance student interest and understanding.



Launch Activity: Attend to Precision

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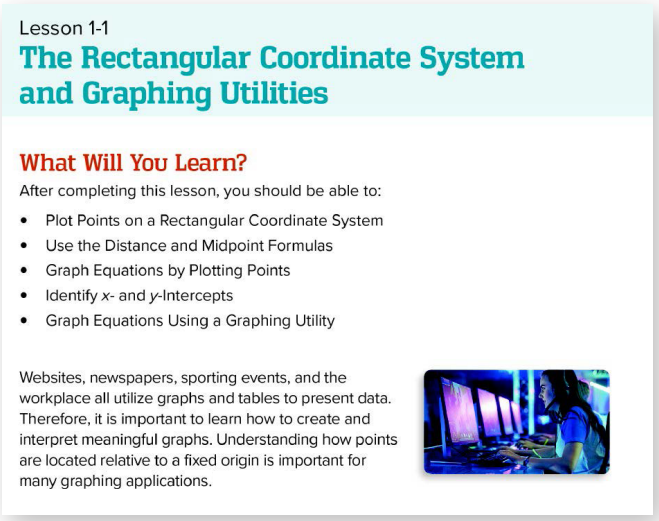
GO ONLINE to answer these questions

The **Launch Activity** helps students to develop their comfort and confidence with mathematical practices including modeling, asking questions, and using mathematical reasoning.

The **Go Online** icon indicates that the lesson is extended online. Students can work independently or in groups to answer the questions in the launch activity in their digital course.

Lessons open with **What Will You Learn?** sections that summarize the main lesson objectives. They also connect the content of the lesson to the wider world, emphasizing the connection between precalculus and students' everyday lives.



Lesson 1-1

The Rectangular Coordinate System and Graphing Utilities

What Will You Learn?

After completing this lesson, you should be able to:

- Plot Points on a Rectangular Coordinate System
- Use the Distance and Midpoint Formulas
- Graph Equations by Plotting Points
- Identify x- and y-Intercepts
- Graph Equations Using a Graphing Utility

Websites, newspapers, sporting events, and the workplace all utilize graphs and tables to present data. Therefore, it is important to learn how to create and interpret meaningful graphs. Understanding how points are located relative to a fixed origin is important for many graphing applications.

(tl) Martchan/G images; (br) Gorodenkoff/Shutterstock

Guided Learning

Each chapter in *Florida Precalculus* is divided into lessons that follow a predictable pattern. This structure and repetition helps students build their foundational understanding of the concepts.

Learn: Use the Distance and Midpoint Formulas

Recall that the distance between two points A and B on a number line can be represented by $|A - B|$ or $|B - A|$. Now we want to find the distance between two points in a coordinate plane. For example, consider the points (1, 5) and (4, 9). The distance d between the points is labeled in Figure 1-3. The dashed horizontal and vertical line segments form a right triangle with hypotenuse d.

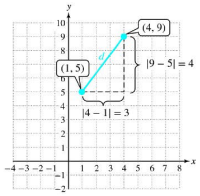


Figure 1-3

The horizontal distance between the points is $|4 - 1| = 3$.

The vertical distance between the points is $|9 - 5| = 4$.

Chapter Lessons are divided into **Learn** sections focused on a particular topic or skill. Each Learn section starts with a Learn statement and models a fully guided example for students to follow.

Applying the Pythagorean theorem, we have

$$d^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

We can drop the absolute value bars because $|a|^2 = (a)^2$ for all real numbers a. Likewise $|x_2 - x_1|^2 = (x_2 - x_1)^2$ and $|y_2 - y_1|^2 = (y_2 - y_1)^2$.

Distance Formula

The distance between points (x_1, y_1) and (x_2, y_2) is given by

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Important formulas and rules are highlighted in easy-to-find boxes for accessible student reference.

Example 1: Finding the Distance Between Two Points

Find the distance between the points (−5, 1) and (7, −3). Give the exact distance and an approximation to 2 decimal places.

Solution:

$(-5, 1)$ and $(7, -3)$ (x_1, y_1) and (x_2, y_2)	Label the points. Note that the choice for (x_1, y_1) and (x_2, y_2) will not affect the outcome.
$d = \sqrt{[7 - (-5)]^2 + (-3 - 1)^2}$	Apply the distance formula. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
$= \sqrt{(12)^2 + (-4)^2}$	Simplify the radical.
$= \sqrt{160}$	
$= 4\sqrt{10} \approx 12.65$	The exact distance is $4\sqrt{10}$ units. This is approximately 12.65 units.

Apply the Skills

1. Find the distance between the points (−1, 4) and (3, −6). Give the exact distance and an approximation to 2 decimal places.

Examples are fully worked out with step-by step explanations, illustrations, and detailed solutions. Students build confidence in their own problem-solving ability and are then immediately able to apply the skills they've learned in the **Apply the Skills** exercise.

Meaningful Practice

In each lesson, students work toward independent problem solving. Scaffolded practice and timely reminders help to reinforce the learning while building their confidence. Several pop-up reminders prompt students to double-check the assumptions they are making while problem solving.

Solution:

a. $g(-2) = 2(-2) + 1$ Substitute -2 for x.
$= -3$ $g(-2) = -3$

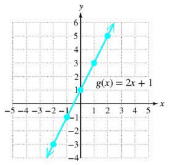
b. $g(-1) = 2(-1) + 1$ Substitute -1 for x.
$= -1$ $g(-1) = -1$

c. $g(0) = 2(0) + 1$ Substitute 0 for x.
$= 1$ $g(0) = 1$

d. $g(1) = 2(1) + 1$ Substitute 1 for x.
$= 3$ $g(1) = 3$

e. $g(2) = 2(2) + 1$ Substitute 2 for x.
$= 5$ $g(2) = 5$

The function values represent the ordered pairs $(-2, -3)$, $(-1, -1)$, $(0, 1)$, $(1, 3)$, and $(2, 5)$. The line through the points represents all ordered pairs defined by this function. This is the graph of the function.



Apply the Skills

5. Evaluate the function defined by $h(x) = 4x - 3$ for the given values of x.

a. $h(-3)$ **b.** $h(-1)$ **c.** $h(0)$ **d.** $h(1)$ **e.** $h(3)$

Good Practices

The name of a function can be represented by any letter or symbol. However, lowercase letters such as f, g, h, and so on are often used.

Each example is followed by **Apply the Skills** exercises, which give students an immediate opportunity to practice the new concept. **Good Practices** and **Check Your Work** boxes encourage students to slow down and refresh their problem-solving skills.

Apply the Skills

1. Graph the line represented by each equation.

a. $4x + 2y = 2$ **b.** $y = 1$ **c.** $-3x = 12$

Check Your Work

The graph of a linear equation is a line. Therefore, a minimum of two points is needed to graph the line. A third point can be used to verify that the line is graphed correctly. The points must all line up.

Insights

Since $(x_2 - x_1)^2 = (x_1 - x_2)^2$ and $(y_2 - y_1)^2 = (y_1 - y_2)^2$, the distance formula can also be expressed as

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}.$$

Insights provide additional context or explanations, often offering an alternate formula or way of thinking about a problem.

Good Practices

For more accuracy in the graph, plot one or two points near the vertex. Then use the symmetry of the curve to find additional points on the graph.

For example, the points (1, –2) and (0, –5) are on the left branch of the parabola. The corresponding points to the right of the axis of symmetry are (3, –2) and (4, –5).

Good Practices highlight proper notation and equation structure to ensure consistency in problem solving.

Check Your Work

By clearing fractions, the result of Example 1 can be checked by multiplication.

Dividend = (Divisor)(Quotient) + Remainder

$6x^3 - 5x^2 - 3 \stackrel{?}{=} (3x + 2)(2x^2 - 3x + 2) + (-7)$

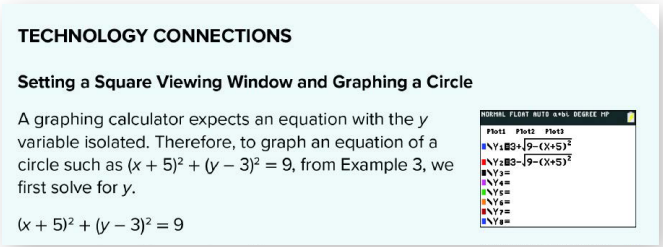
$\stackrel{?}{=} 6x^3 - 5x^2 + 4 + (-7)$

$\stackrel{?}{=} 6x^3 - 5x^2 - 3$ ✓

Check Your Work fends off common pitfalls by highlighting areas where mistakes are regularly made.

Real-World Connections

One of the most important tools for motivating students is making the mathematics they learn meaningful to their lives. Numerous robust applications throughout *Florida Precalculus* connect abstract concepts to tangible events and circumstances.



TECHNOLOGY CONNECTIONS

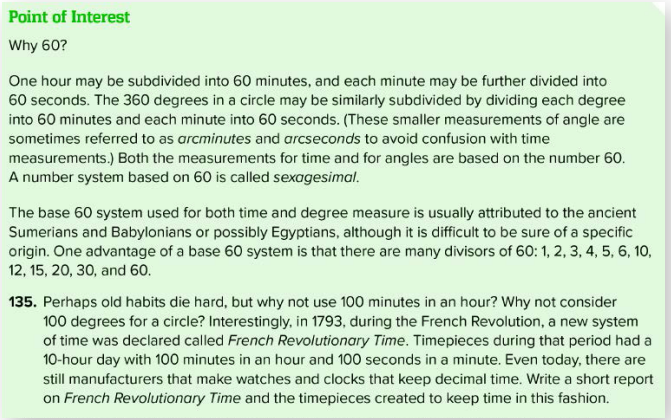
Setting a Square Viewing Window and Graphing a Circle

A graphing calculator expects an equation with the y variable isolated. Therefore, to graph an equation of a circle such as $(x + 5)^2 + (y - 3)^2 = 9$, from Example 3, we first solve for y.

$(x + 5)^2 + (y - 3)^2 = 9$

Technology Connections clearly explain how to solve different types of problems with a graphing calculator. Students will apply these techniques at the end of each lesson.

Point of Interest features interesting topics from diverse perspectives and a variety of applications. Perfect for partner activities or class discussions, these features provide students with the opportunity to see the relevance of mathematics to their everyday lives.



Point of Interest

Why 60?

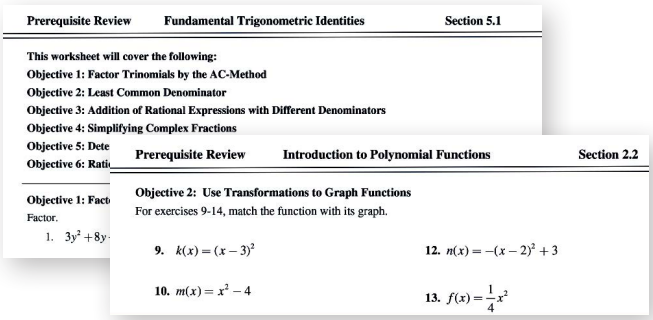
One hour may be subdivided into 60 minutes, and each minute may be further divided into 60 seconds. The 360 degrees in a circle may be similarly subdivided by dividing each degree into 60 minutes and each minute into 60 seconds. (These smaller measurements of angle are sometimes referred to as *arcminutes* and *arcseconds* to avoid confusion with time measurements.) Both the measurements for time and for angles are based on the number 60. A number system based on 60 is called *sexagesimal*.

The base 60 system used for both time and degree measure is usually attributed to the ancient Sumerians and Babylonians or possibly Egyptians, although it is difficult to be sure of a specific origin. One advantage of a base 60 system is that there are many divisors of 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, and 60.

135. Perhaps old habits die hard, but why not use 100 minutes in an hour? Why not consider 100 degrees for a circle? Interestingly, in 1793, during the French Revolution, a new system of time was declared called *French Revolutionary Time*. Timepieces during that period had a 10-hour day with 100 minutes in an hour and 100 seconds in a minute. Even today, there are still manufacturers that make watches and clocks that keep decimal time. Write a short report on *French Revolutionary Time* and the timepieces created to keep time in this fashion.

Support for All Learners

Differentiated support addresses a range of abilities and proficiency levels, including students who need support with prerequisite skills and those who are ready for more challenging content.



Prerequisite Review **Fundamental Trigonometric Identities** **Section 5.1**

This worksheet will cover the following:
Objective 1: Factor Trinomials by the AC-Method
Objective 2: Least Common Denominator
Objective 3: Addition of Rational Expressions with Different Denominators
Objective 4: Simplifying Complex Fractions
Objective 5: Dete
Objective 6: Ratio

Objective 1: Facto
Factor.
1. $3y^2+8y$

Prerequisite Review **Introduction to Polynomial Functions** **Section 2.2**

Objective 2: Use Transformations to Graph Functions
For exercises 9-14, match the function with its graph.

9. $k(x) = (x - 3)^2$

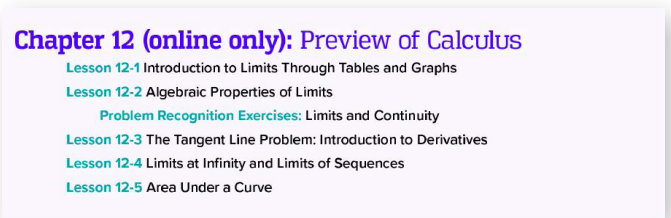
10. $m(x) = x^2 - 4$

12. $n(x) = -(x - 2)^2 + 3$

13. $f(x) = \frac{1}{4}x^2$

The printable, interactive **Corequisite Workbook** is included in the digital resources. This workbook provides extra math practice on prerequisite content for each lesson in the textbook.

For accelerated learners, the online-only **Chapter 12** offers a preview of calculus.

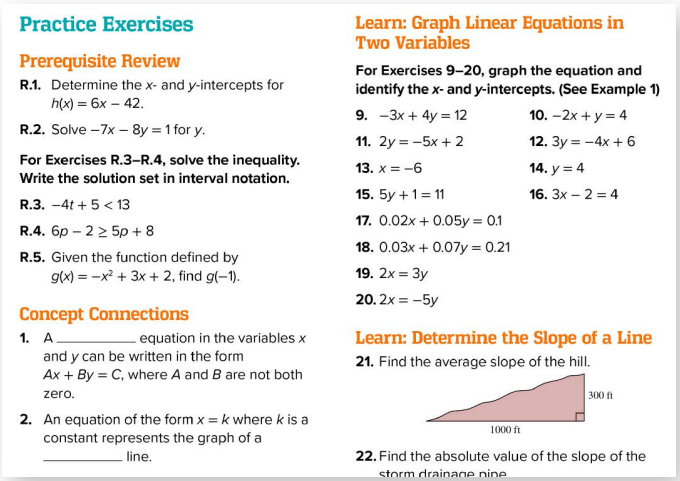


Chapter 12 (online only): Preview of Calculus

Lesson 12-1 Introduction to Limits Through Tables and Graphs
Lesson 12-2 Algebraic Properties of Limits
Problem Recognition Exercises: Limits and Continuity
Lesson 12-3 The Tangent Line Problem: Introduction to Derivatives
Lesson 12-4 Limits at Infinity and Limits of Sequences
Lesson 12-5 Area Under a Curve

Abundant, Varied Lesson Assessments

Each lesson ends with a graded, varied, and carefully organized set of **Practice Exercises**. Several strands of problems are present to review the full breadth of knowledge covered in each lesson.



Practice Exercises

Prerequisite Review

R.1. Determine the x- and y-intercepts for $h(x) = 6x - 42$.

R.2. Solve $-7x - 8y = 1$ for y.

For Exercises R.3–R.4, solve the inequality. Write the solution set in interval notation.

R.3. $-4t + 5 < 13$

R.4. $6p - 2 \geq 5p + 8$

R.5. Given the function defined by $g(x) = -x^2 + 3x + 2$, find $g(-1)$.

Concept Connections

1. A _____ equation in the variables x and y can be written in the form $Ax + By = C$, where A and B are not both zero.

2. An equation of the form $x = k$ where k is a constant represents the graph of a _____ line.

Learn: Graph Linear Equations in Two Variables

For Exercises 9–20, graph the equation and identify the x- and y-intercepts. (See Example 1)

9. $-3x + 4y = 12$ **10.** $-2x + y = 4$

11. $2y = -5x + 2$ **12.** $3y = -4x + 6$

13. $x = -6$ **14.** $y = 4$

15. $5y + 1 = 11$ **16.** $3x - 2 = 4$

17. $0.02x + 0.05y = 0.1$

18. $0.03x + 0.07y = 0.21$

19. $2x = 3y$

20. $2x = -5y$

Learn: Determine the Slope of a Line

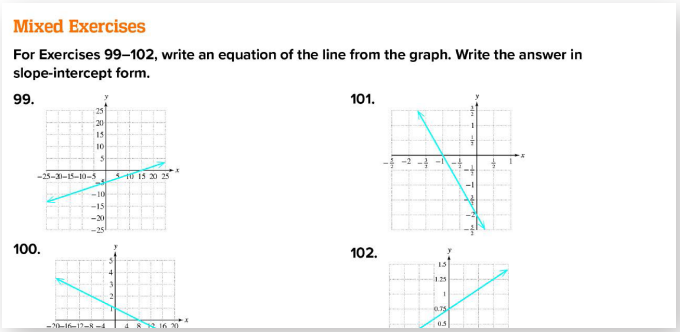
21. Find the average slope of the hill.

22. Find the absolute value of the slope of the storm drainage pipe.

Prerequisite Review problems open each set of Practice Exercises.

Concept Connections ask students to review the vocabulary and key concepts presented in the section.

Each **Learn** topic is reviewed independently with several practice exercises.



Mixed Exercises

For Exercises 99–102, write an equation of the line from the graph. Write the answer in slope-intercept form.

99.

101.

100.

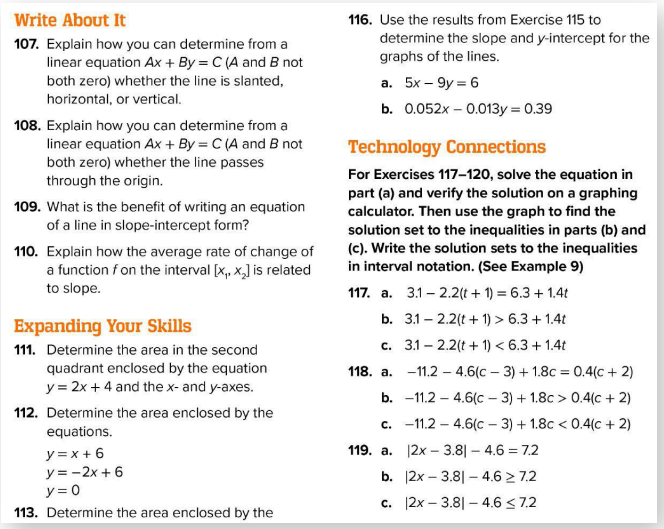
102.

Mixed Exercises review topics across multiple learning objectives within a lesson.

Write About It exercises emphasize mathematical language, giving students an opportunity to answer questions and describe key concepts in their own words.

Expanding Your Skills challenges and broadens students' understanding of the material.

Technology Connections are designed for use with students' graphing calculators.



Write About It

107. Explain how you can determine from a linear equation $Ax + By = C$ (A and B not both zero) whether the line is slanted, horizontal, or vertical.

108. Explain how you can determine from a linear equation $Ax + By = C$ (A and B not both zero) whether the line passes through the origin.

109. What is the benefit of writing an equation of a line in slope-intercept form?

110. Explain how the average rate of change of a function f on the interval $[x_1, x_2]$ is related to slope.

Expanding Your Skills

111. Determine the area in the second quadrant enclosed by the equation $y = 2x + 4$ and the x- and y-axes.

112. Determine the area enclosed by the equations.

$y = x + 6$
$y = -2x + 6$
$y = 0$

113. Determine the area enclosed by the

116. Use the results from Exercise 115 to determine the slope and y-intercept for the graphs of the lines.

a. $5x - 9y = 6$

b. $0.052x - 0.013y = 0.39$

Technology Connections

For Exercises 117–120, solve the equation in part (a) and verify the solution on a graphing calculator. Then use the graph to find the solution set to the inequalities in parts (b) and (c). Write the solution sets to the inequalities in interval notation. (See Example 9)

117. **a.** $3.1 - 2.2(t + 1) = 6.3 + 1.4t$

b. $3.1 - 2.2(t + 1) > 6.3 + 1.4t$

c. $3.1 - 2.2(t + 1) < 6.3 + 1.4t$

118. **a.** $-11.2 - 4.6(c - 3) + 1.8c = 0.4(c + 2)$

b. $-11.2 - 4.6(c - 3) + 1.8c > 0.4(c + 2)$

c. $-11.2 - 4.6(c - 3) + 1.8c < 0.4(c + 2)$

119. **a.** $|2x - 3.8| - 4.6 = 7.2$

b. $|2x - 3.8| - 4.6 \geq 7.2$

c. $|2x - 3.8| - 4.6 \leq 7.2$

Comprehensive Chapter Review

Each chapter ends with a **Chapter Review** summarizing important equations, vocabulary, and key concepts. These elements review the full extent of the content covered in the chapter.

Chapter 1 Key Concepts

Lesson 1.1 The Rectangular Coordinate System and Graphing Utilities

Key Concepts	Reference
The **distance** between two points (x_1, y_1) and (x_2, y_2) in a rectangular coordinate system is given by $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.	p. 6
The **midpoint** between the points is given by $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$.	p. 8
• To find an x-intercept $(a, 0)$ of the graph of an equation, substitute 0 for y and solve for x. • To find a y-intercept $(0, b)$ of the graph of an equation, substitute 0 for x and solve for y.	p. 11

Lesson 1.2 Circles

Key Concepts	Reference
The **standard form** of an equation of a circle with radius r and center (h, k) is $(x - h)^2 + (y - k)^2 = r^2$.	p. 23
An equation of a circle written in the form $x^2 + y^2 + Ax + By + C = 0$ is called the **general form** of an equation of a circle.	p. 25

The Chapter Review is organized into **Key Concepts** tables. Each table summarizes the most important vocabulary words and formulas from each lesson.

Each **key formula** or **vocabulary** word is tagged with a page reference so that students can easily navigate back to the initial introduction of that concept for review.

Lesson 1.4 Linear Equations in Two Variables and Linear Functions

Key Concepts	Reference
Let A, B, and C represent real numbers where A and B are not both zero. A **linear equation** in the variables x and y is an equation that can be written as $Ax + By = C$.	p. 50
The **slope** of a line passing through the distinct points (x_1, y_1) and (x_2, y_2) is given by $m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$.	p. 53
Given a line with slope m and y-intercept $(0, b)$, the **slope-intercept form** of the line is given by $y = mx + b$.	p. 55
If f is defined on the interval $[x_1, x_2]$, then the **average rate of change** of f on the interval $[x_1, x_2]$ is the slope of the secant line containing $(x_1, f(x_1))$ and $(x_2, f(x_2))$ and is given by $m = \frac{f(x_2) - f(x_1)}{x_2 - x_1}$	p. 58
The x-coordinates of the points of intersection between the graphs of $y = f(x)$ and $y = g(x)$ are the solutions to the equation $f(x) = g(x)$.	p. 59

LESSON R-4 Rational Expressions and More Operations on Radicals

KEY CONCEPTS	EXAMPLES
Definition of a rational expression: A **rational expression** is a ratio of two polynomials. Values of the variable that make the denominator equal to zero are called restricted values of the variable.	**Example 1:** $\frac{x+5}{x+7}$ is a rational expression with the restriction that $x \neq -7$.
Simplify rational expressions: To simplify a rational expression, use the property of equivalent algebraic fractions. $\frac{ac}{bc} = \frac{a}{b}$ for $b \neq 0, c \neq 0$	**Example 2:** $\frac{2x^2 - 9x - 5}{6x^2 - 30x} = \frac{(2x+1)(x-5)}{6x(x-5)}$ $= \frac{2x+1}{6x}$ for $x \neq 0, x \neq 5$
Multiply and divide rational expressions: $\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$ for $b \neq 0, d \neq 0$ $\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{ad}{bc}$ for $b \neq 0, c \neq 0, d \neq 0$	**Example 3:** $\frac{12 - 3x}{2x + 1} \div \frac{x^2 - 3x - 4}{2x^2 + 15x + 7}$ $= \frac{12 - 3x}{2x + 1} \cdot \frac{2x^2 + 15x + 7}{x^2 - 3x - 4}$ $= \frac{3(4 - x)}{(2x + 1)} \cdot \frac{(2x + 1)(x + 7)}{(x - 4)(x + 1)} = -\frac{3(x + 7)}{x + 1}$

Detailed **Chapter Summaries**, available with the digital resources, serve as excellent study tools.

Robust, Versioned Assessments

The **Chapter Test** assesses students on all the learning objectives covered in the chapter and can be used for self-study and review. Additional versions of **Lesson Quizzes** and **Chapter Tests** are available as part of the digital resources, alongside an expansive, editable question bank.

Chapter 1 Test

1. The endpoints of a diameter of a circle are $(-2, 3)$ and $(8, -5)$.

- **a.** Determine the center of the circle.
- **b.** Determine the radius of the circle.
- **c.** Write an equation of the circle in standard form.

2. Given $x = |y| - 4$,

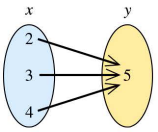
- **a.** Determine the x- and y-intercepts of the graph of the equation.
- **b.** Does the equation define y as a function of x?

3. Given $x^2 + y^2 + 14x - 10y + 70 = 0$,

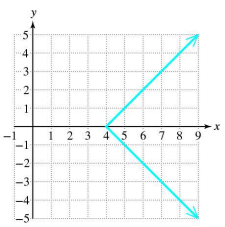
- **a.** Write the equation of the circle in standard form.
- **b.** Identify the center and radius.

For Exercises 4–5, determine if the relation defines *y* as a function of *x*.

4.



5.

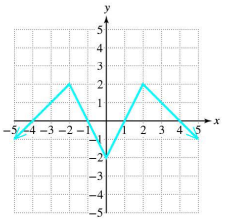


6. Given $f(x) = -2x^2 + 7x - 3$, find

- **a.** $f(-1)$.
- **b.** $f(x + h)$.
- **c.** The difference quotient: $\frac{f(x+h) - f(x)}{h}$.
- **d.** The x-intercepts of the graph of f.
- **e.** The y-intercept of the graph of f.
- **f.** The average rate of change of f on the interval $[1, 3]$.

7. Use the graph of $y = f(x)$ to estimate

- **a.** $f(0)$.
- **b.** $f(-4)$.
- **c.** The values of x for which $f(x) = 2$.



- **d.** The interval(s) over which f is increasing.
- **e.** The interval(s) over which f is decreasing.
- **f.** Determine the location and value of any relative minima.
- **g.** Determine the location and value of any relative maxima.
- **h.** The domain.
- **i.** The range.
- **j.** Whether f is even, odd, or neither.

For Exercises 8–9, write the domain in interval notation.

8. $f(w) = \frac{2w}{3w + 7}$

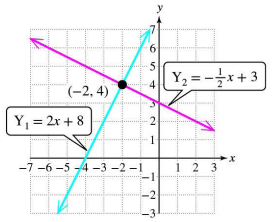
9. $f(c) = \sqrt{4 - c}$

10. Given $3x = -4y + 8$,

- **a.** Identify the slope.
- **b.** Identify the y-intercept.
- **c.** Graph the line.
- **d.** What is the slope of a line perpendicular to this line?
- **e.** What is the slope of a line parallel to this line?

11. Write an equation of the line passing through the point $(-2, 6)$ and perpendicular to the line defined by $x + 3y = 4$.

12. Use the graph to solve the equation and inequalities. Write the solutions to the inequalities in interval notation.



- **a.** $2x + 8 = -\frac{1}{2}x + 3$
- **b.** $2x + 8 < -\frac{1}{2}x + 3$
- **c.** $2x + 8 \geq -\frac{1}{2}x + 3$

About the Authors: Julie Miller and Donna Gerken

Julie Miller taught developmental and upper-level mathematics courses at Daytona State College for 20 years. Prior to teaching, she worked as a software engineer for General Electric in the area of flight and radar simulation. Julie earned a Bachelor of Science in applied mathematics from Union College in Schenectady, New York, and a Master of Science in mathematics from the University of Florida. She has written textbooks on developmental mathematics, trigonometry, and precalculus, as well as several short works of fiction and nonfiction for young readers.

> *"My father was a medical researcher, and I got hooked on math and science when I was young and would visit his laboratory. I remember doing simple calculations with him and using graph paper to plot data points for his experiments. He would then tell me what the peaks and features in the graph meant in the context of his experiment. I think that those applications and hands-on experiences made math come alive for me, and I'd like to see math come alive for my students."*
>
> **— Julie Miller**

Donna Gerken was a professor at Miami Dade College where she taught developmental courses, honors classes, and upper-level mathematics classes for decades. Throughout her career she has been actively involved with many projects at Miami Dade, including those on computer learning, curriculum design, and the use of technology in the classroom. Donna's Bachelor of Science in mathematics and Master of Science in mathematics are both from the University of Miami.

Author's Note

Precalculus serves as a gateway course for students interested in many disciplines. For some students, it is the entrance into the higher mathematics needed for careers in science, technology, engineering, and mathematics. For others, precalculus serves as the primary resource needed to understand the complexities of a modern world awash with statistics, investment strategies, financial planning, and even medical decisions. With the broad scope of this foundational course in mind, we worked to make the textbook, the digital tools, and the supplements as clear, relevant, and accessible as possible.

The modern content with up-to-date data sets and contemporary topics are germane to all of today's students. Inside the program, you will find data and information relating to healthcare costs and ethics, income tax rates, the development of modern computers, extreme weather, and the work of modern scientists and inventors.

The exercise sets include mixed exercises that require multiple tools to complete their solutions. Additional "challenge" exercises promote more critical thinking and less rote repetition. We are excited for teachers and students to join an amazing journey in mathematics.

Best to all,

Julie Miller

Donna Gerken

Best in Class Digital Resources

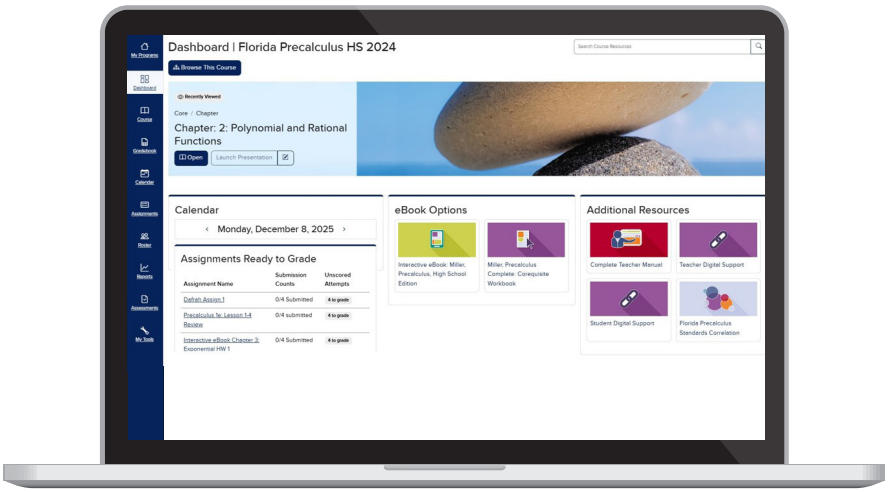
***Florida Precalculus* is enriched with multimedia content that enhances the teaching and learning experience both inside and outside of the classroom.**

Developed with the world's leading subject matter experts and organized by chapter level, our digital resources provide students with multiple opportunities to contextualize and apply their understanding. Teachers can save time, customize lessons, monitor student progress, and make data-driven decisions in the classroom with the flexible, easy-to navigate instructional tools.

Student Assignments

Resources are organized at the chapter level. To enhance the core content, teachers can add assignments, activities, and instructional aids to any lesson. The chapter landing page gives students access to:

- Assigned activities.
- Customizable, auto-graded assessments.
- An interactive eBook.
- Data sets, data projects, and classroom activities.
- An interactive and printable Corequisite Workbook for additional math skills practice.



Chapter landing page links students to resources that support success.

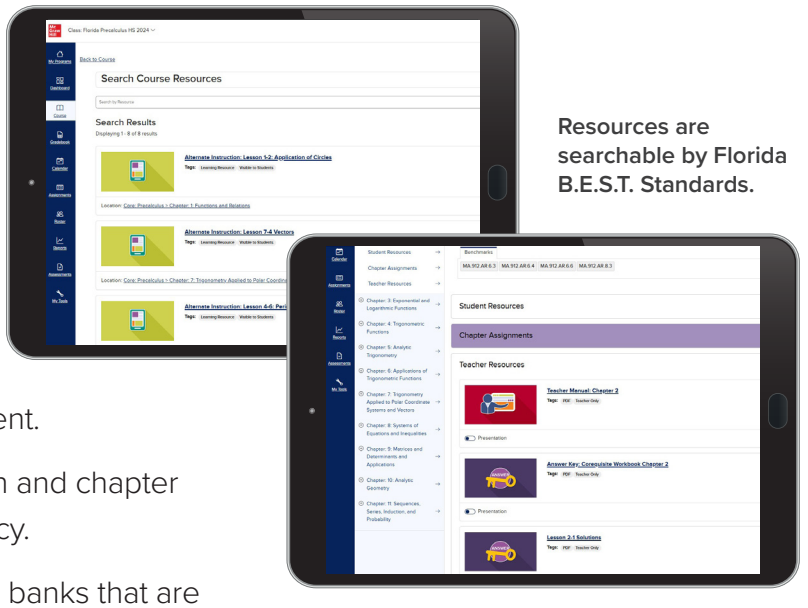
Mobile Ready

Access to course content on-the-go is easier and more efficient than ever before with the McGraw Hill K–12 Portal app.

Teacher Resources

Teachers have access to the interactive eBook, plus a wealth of customizable chapter resources and powerful gradebook tools. Resources include:

- A solutions manual with answers to the end-of-chapter questions in the Student Edition.
- Actionable reporting features that track student progress with data-driven insights.
- Customizable PowerPoint presentations, visual aids, and additional ideas for lecture enrichment.
- EL support activities for every lesson and chapter featuring multiple levels of proficiency.
- Customizable assignments and quiz banks that are automatically graded and populate easy-to-read reports.

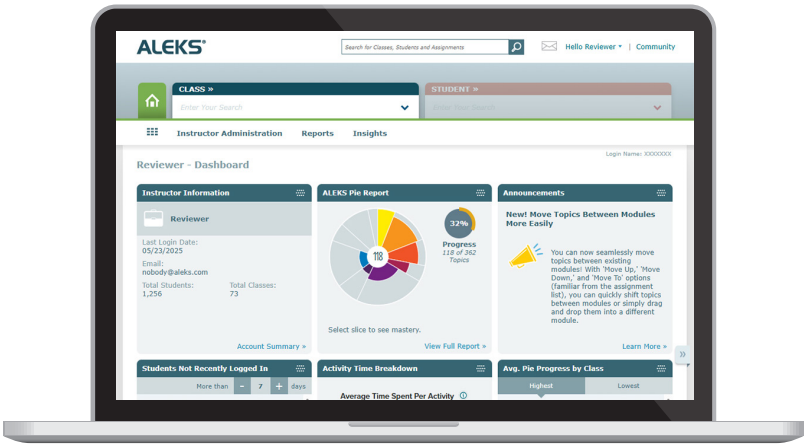


Resources are searchable by Florida B.E.S.T. Standards.

Adaptive Learning with *ALEKS*®

Available with the digital subscription, *ALEKS* uses adaptive questioning to quickly and accurately determine exactly what math topics a student knows and doesn't know before instructing each of them on the topics they are most ready to learn. With *ALEKS*, teachers can:

- Assess a student's proficiency and knowledge with an "Initial Knowledge Check."
- Track which topics have been mastered.
- Identify areas that need more study.
- Build student confidence with preparatory modules, video tutorials, and practice questions.



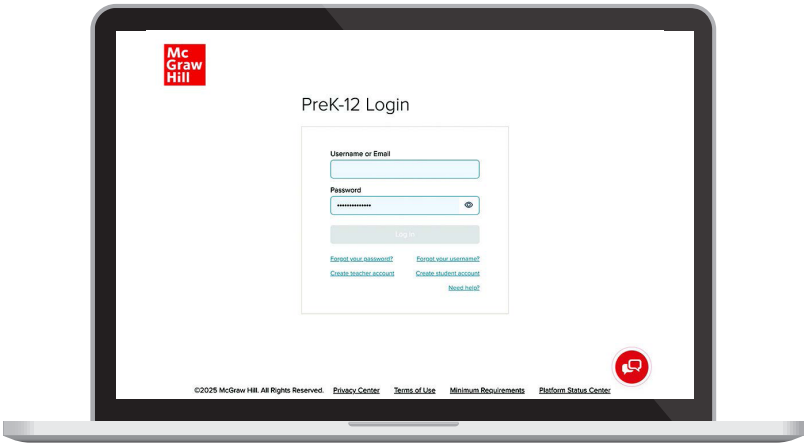
Digital Review Guide

Use this guide to help you get familiar with a variety of digital tools, resources, and support to meet the needs of your classroom and students.

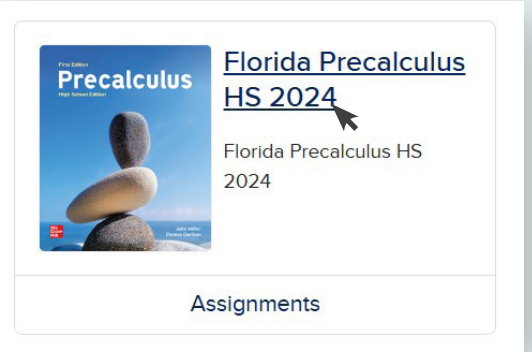
Digital Experience

Log in to **my.mheducation.com** using the credentials below.

Username & Password: Contact your rep



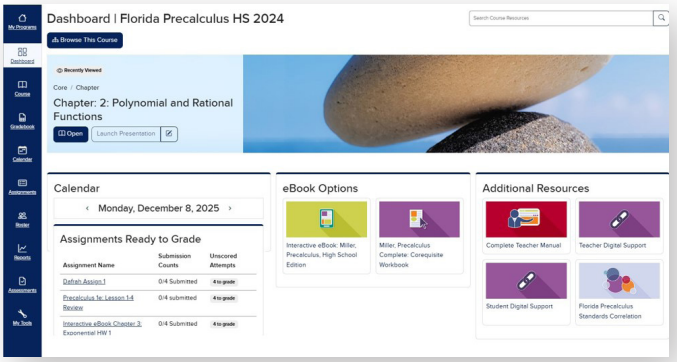
Locate the *Florida Precalculus* course and **click the title to begin**.



Your Course Dashboard

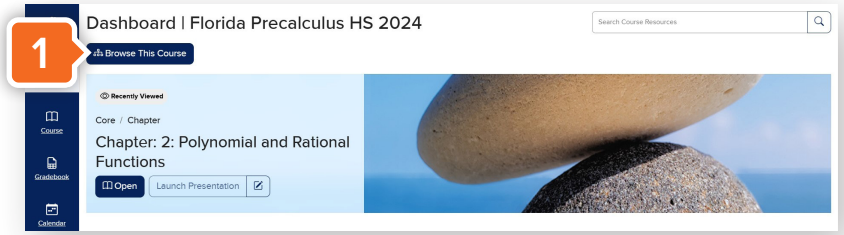
This is the Digital Dashboard. It's your home base for resources such as:

- The Full Teacher Manual
- The Interactive eBook
- The Corequisite Workbook
- Florida Standards Correlations
- The Assignment Calendar
- Digital Teacher Support
- Digital Student Support



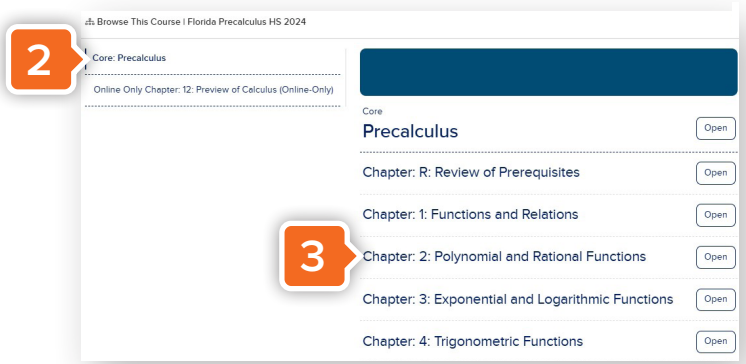
Browse Your Course

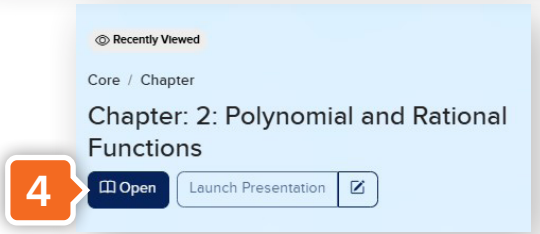
1. Click **Browse This Course** to expand the menu and explore chapters, assignments, activities, assessments, and more.



Browse Core Course Material

2. From the left navigation select **Core: Precalculus** to open the digital table of contents.
3. Click on the **chapter title** or the **Open** tile to access chapter level content.
4. Alternatively, you can select **Open** from the course dashboard to reopen the last chapter you or your students visited.

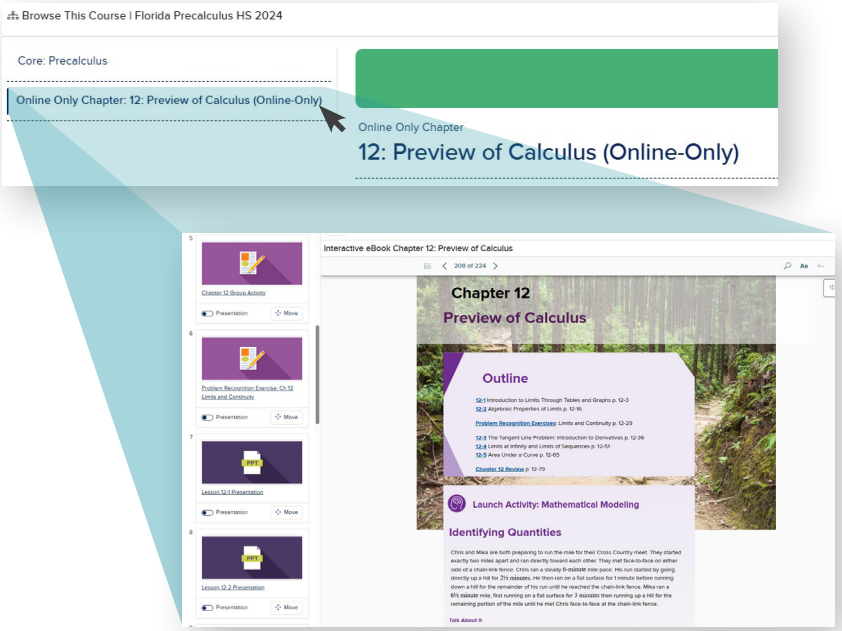




Browse Enrichment Material

Revisiting the course dashboard, select the exclusive online **Preview of Calculus** chapter and click on the **chapter title** or the **Open** tile to review the enrichment material.

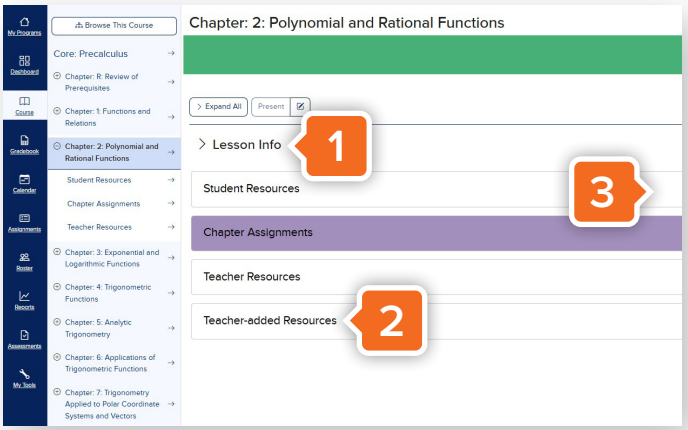
This preview offers more rigorous content for accelerated learners and students who are ready to try learning calculus.



Browse Instructional Resources

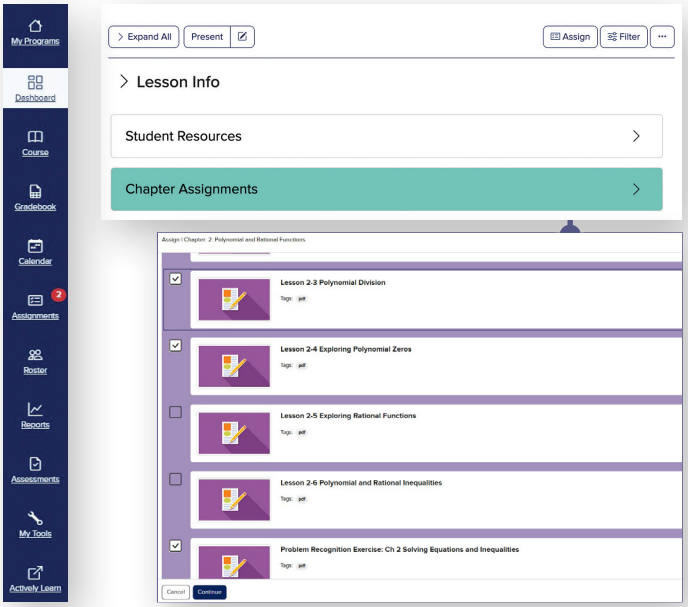
From either core or enrichment, explore the chapter content on the **Chapter Landing Page**.

1. Click on the **Lesson Info** and use the tabs to explore Overviews, Pacing, Instructional Strategies, Suggested Assignments, and Benchmarks.
2. Your own materials can be uploaded and assigned to students in **Teacher-added Resources**.
3. The arrows to the right open to reveal **Student Resources, Chapter Assignments, and Teacher Resources**.



Assign Resources

- Click on the program resource you wish to assign to preview the resource or click **Assign** to open the course calendar and access options for assigning.
- As you navigate your program, the Program Menu is always visible at the left side of the screen to help you quickly access the **Gradebook, Calendar, Assignments, Roster, Reports, Actively Learn, and Assessments.**



Read Offline Anytime, Anywhere

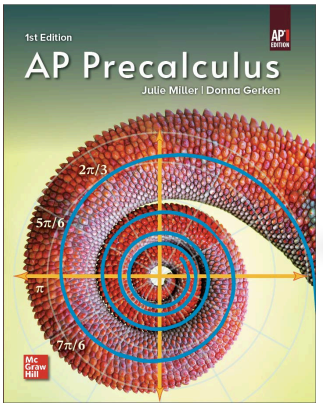
K-12 Portal

Mobile ready! With the **McGraw Hill K–12 Portal app**, students can access their content any time on any device, with or without Internet access.

AP® and Electives Math

AP Precalculus

1st Edition ©2027, Miller



Coming Fall 2026

Accessible Instruction and Precise AP Alignment

Engage students with accessible language and a friendly writing style that makes complex mathematics meaningful and relevant to their lives. Packed with robust applications, mathematical modeling opportunities, and high-quality exercises that range in difficulty, this program ensures clarity, rigor, and lock-step alignment with the AP Precalculus framework.

Exclusive Features for AP Success:

- **Student-Centered Content**: Examples and exercises leverage real-world data to showcase contemporary topics and diverse perspectives.
- **AP Exam Preparation**: Prep tools include test-taking strategies, practice exams, and chapter and unit review activities aligned with AP rigor and objectives.
- **Enhanced Visual Learning**: Explore graphical, numerical, analytical, and verbal representations, plus concise definitions and inclusive content.
- **Teacher Support**: Resources include a Teacher Manual, available in print and online, that contains pacing guides, teaching tips, sample syllabi, activities, and discussion questions to extend learning. Additionally, AP-specific correlations, English learner support, lesson plans, and strategies to address common student challenges are available at point of use.
- **Robust Digital Resources**: An interactive eBook and adaptive *SmartBook*®, AP test banks, practice exams, customizable assessments, gamified learning with Kahoot!, PowerPoint presentations, summaries, and problem-recognition worksheets enhance and enrich instruction.
- ***ALEKS***®: Use adaptive questioning to determine what math topics students know, don't know, and are most ready to learn.

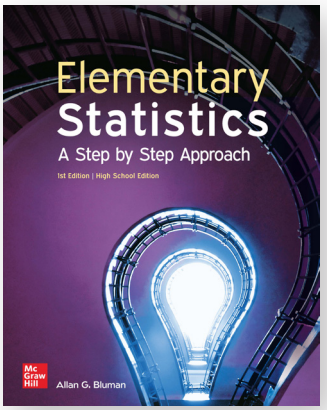
5 STEPS TO A 5

Tried and True Test Prep

5 Steps to a 5: AP Precalculus, available in print and digital formats, guides students through an effective five-step study plan to help them build skills, knowledge, and test-taking confidence.

Elementary Statistics: A Step by Step Approach

1st Edition ©2024, Bluman



Empower the Statistician in Every Student

The quintessential text for students interested in a nontraditional math pathway, *Elementary Statistics: A Step by Step Approach*, High School Edition, is accessible to, and engaging for, a wide range of third- and fourth-year math students. The instructional design follows a nontheoretical approach and only assumes students have completed algebra.

Perfect for Introductory Statistics

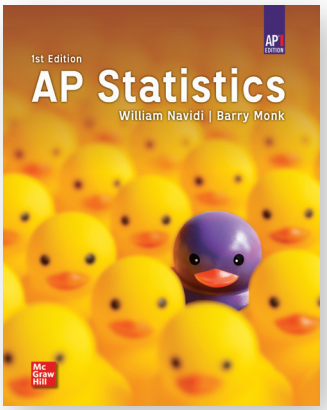
- A visually appealing layout with considerate text, fully worked examples, and real-world data supports and engages students.
- Relevant and diverse chapter-level Statistics Around Us case studies, Speaking of Statistics features, and Data Projects reinforce concepts and challenge students to apply what they have learned, deepening their conceptual understanding.
- A Teacher Manual, available in print and online, delivers pacing information, lecture support, and answers to the questions in the Student Edition.

A Heightened Digital Experience

- An interactive eBook and a Corequisite Workbook provide diagnostic tools for teachers and offer students leveled, guided practice with math skills necessary for course success.
- Additional Technology Step-by-Step instructions, data activities, pre-made assessments, and a Student Solution Manual support and assess understanding.
- *ALEKS*® uses adaptive questioning to determine what math topics students know, don't know, and are most ready to learn.

AP Statistics

1st Edition ©2027, Navidi, Monk



Clear, Concise, and 100% Aligned

Available for back to school 2026–2027! This first AP edition features the most current statistics and examples, enhanced visual support, and precise alignment to the AP Statistics framework updated for the 2027 exam.

Organized to support the five units in the CED with complete coverage of the AP Topics and Statistical Practices, the program incorporates special features to address the most challenging concepts and skills for students, including working with probability and random variables; providing sufficient mathematical support when justifying an answer; identifying and defining a parameter of interest completely and correctly; describing statistical processes such as random assignment; and interpreting different statistics correctly and in context.

Built for AP Success

- Chapter- and lesson-level tools provide targeted instruction and exploration of the AP Statistical Practices.
- Extensive writing skills practice prepares students for free response questions on the AP exam.
- Core content offers discrete guidance on AP topics for understanding and crafting investigative questions and related statistical studies.
- Hands-on, real-world, data-based activities encourage collaboration and application of concepts.
- Robust teacher supports include chapter-level pacing guides, a sample syllabus, suggested activities, correlations to the updated AP Topics and Practices, and English learner support.
- Dynamic digital resources include an interactive eBook, adaptive *SmartBook*®, two complete AP practice exams, and gamified Kahoot! activities.
- *ALEKS*® uses adaptive questioning to determine what math topics students know, don't know, and are most ready to learn.

Tried and True Test Prep

5 Steps to a 5: AP Statistics, available in print and digital formats, guides students through an effective five-step study plan to help them build skills, knowledge, and test-taking confidence.

Florida
Precalculus
Honors

Empower the Mathematician in Every Student

Fuel student engagement and deepen conceptual understanding with third- and fourth-year math electives for Florida's high school students.

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