

HB5 College Prep Course Mathematics Breakout

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Paper Tower Challenge

Challenge: Using only 20 pieces of paper build the tallest tower possible.

Materials: 20 pieces of 8.5" x 11" paper (standard printer paper size)

Guidelines:

1. You may use up to 20 sheets of 8.5" x 11" paper. No cardboard or card stock.
2. You may not support the structure with any materials or objects other than the 20 sheets of paper.
3. You may fold, cut, or do anything to the paper. You can use scissors to cut the paper but not to support your tower in anyway.

Let's Get to Know Each Other!



Introduce yourself.



What school do you teach at?



How long have you been teaching the College Prep course?

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Access To Course Materials



**EDUCATION SERVICE
CENTER**

Region 19 • El Paso, TX

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Gear Up

House Bill 5



House Bill 5



HB5 Math College Prep Course

HB5 English College Prep Course



Other Resources & Updates

Approved Course Resources

Textbook Options

Textbook Option 1: Martin-Gay, Elayn, 2017. Beginning & Intermediate Algebra, Pearson Education 6th Edition. ISBN: 978-0134-19309-0

Textbook Option 2: Marecek, L., & Honeycutt Mathis, A. (2020). Intermediate Algebra (2 ed.). Houston, TX: OpenStax. Retrieved from <https://openstax.org/details/books/intermediate-algebra-2e>

and

Marecek, L., & Honeycutt Mathis, A. (2020). Prealgebra (2 ed.). Houston, TX: OpenStax. Retrieved from <https://openstax.org/details/books/prealgebra-2e>

Textbook Option 1: Martin Gay and MyMathLab

RESOURCES



MATH COLLEGE PREP COURSE SEMESTER I RESOURCE NOTEBOOK REVISED 05/23/2019



MATH COLLEGE PREP COURSE SEMESTER II RESOURCE NOTEBOOK REVISED 9/23/2019



MY MATH LAB HELP



MYMATHLAB - HOW TO CREATE A COURSE



MYMATHLAB - HOW TO CREATE A HOMEWORK



MYMATHLAB- INSTRUCTOR RESOURCES

Blanca Lopez

Higher Education Sales Representative

(915)238-6465

blanca.lopez@pearson.com

Textbook Option 2: OER NOTEBOOK & MyOpen Math

2020 COLLEGE PREP MATH NOTEBOOK

Based on OER textbooks
available on

<https://openstax.org/>

Extra practice problems
available after each
section.

Homework system:

<https://www.myopenmath.com/>

College Preparatory Integrated Mathematics Course I Notebook

This notebook is based on

Marecek, L., & Honeycutt Mathis, A. (2020). *Intermediate Algebra* (2 ed.). Houston, TX: OpenStax. Retrieved from <https://openstax.org/details/books/intermediate-algebra-2e>

Marecek, L., Anthony-Smith, M., & Honeycutt Mathis, A. (2020). *Prealgebra* (2 ed.). Houston, TX: OpenStax. Retrieved from <https://openstax.org/details/books/prealgebra-2e>

Notebook developed by

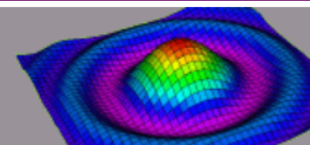
Edith Aguirre, El Paso Community College
Fan Chen, El Paso Community College
Ivette Chuca, El Paso Community College
Sandra Cuevas, El Paso Community College
Shahrbano Danesh Talab, El Paso Community College
Lorena Gonzalez, El Paso Community College
Jose Ibarra, Ysleta Independent School District

Signing Up for MyOpenMath

myOpenMath

Welcome | Student Self Study | For Instructors | LTI | About Us

Welcome



Free and Open

Students

Are you a student looking to study mathematics on your own, and want to do exercises with immediate feedback as you work through a free and open textbook? Then read more about our [self study courses](#).

Instructors

Are you an instructor who wants to adopt an open textbook, who feels online interactive homework is valuable, but doesn't want their students to have to pay an additional fee? Then read more about [using MyOpenMath in the classroom](#).

Getting Started

If you already have an account, you can log on using the box to the right.

If you are a new student to the system, [register as a new student](#)

If you are an instructor, you can [request an instructor account](#)

Login Error. Try Again

Login

Username:

Password:

Login

[Register as a new student](#)

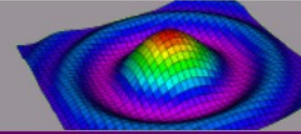
[Forgot Password](#)
[Forgot Username](#)



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Signing Up for MyOpenMath

Instructor Account Request



New Instructor Account Request

Step 1

Step 2

Step 3

School Affiliation

What kind of institution do you work for?

Note: We do not provide instructor accounts to parents, home-schools, or tutors

A Public K-12 School ▼

Where is it located?

United States or U.S. Territories ▼

If your school or state requires a signed contract with service providers, be aware that being a free service we often cannot sign those contracts. Talk to your school before using MyOpenMath with students.

Select your state

Texas ▼

Please enter the name of your school or school district and click Search, then select your school from the list.

79925

Search

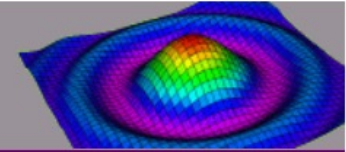
Select your institution:

Eastwood High School (Ysleta ISD) K12 TX, US ▼

Continue

Signing Up for MyOpenMath

Instructor Account Request



New Instructor Account Request

Step 1

Step 2

Step 3

Verification

To verify you are an instructor, you will need to provide one of the following:

1. A school website that lists you as a teacher. This could be a school directory, a class schedule, a department website, or a faculty website.
2. An email from a supervisor, colleague, or school HR verifying you are a teacher. Have that person send the email to support@myopenmath.com. The person sending the email must be listed on a school website.
3. Upload a picture of a school ID indicating you are a teacher.

What method would you like to use?

Select... ▼

Select...

Provide a website

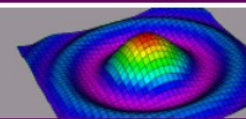
Send an email

Upload a school ID

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Signing Up for MyOpenMath

Instructor Account Request



New Instructor Account Request

Step 1 Step 2 Step 3

Account Details

Given Name:

Family Name:

Email:

This email *must* be the one listed on the verification website provided, or be an official college email address, or your request *will* be denied.

Username:

Password:

Reenter Password:

☐ I have read and agree to the [Terms of Use](#)

Request Account

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Copying HB5 Course Shell

 [Home](#) | [My Classes](#) ▼ | [User Settings](#) | [Log Out](#) 

Welcome to MyOpenMath, [Messages](#) | [Help](#)

Courses you're teaching

To add a course, click the button below

[Add New Course](#)

Courses you're taking

Support Course	Posts (1580)	x
Training Course	Posts (41)	x

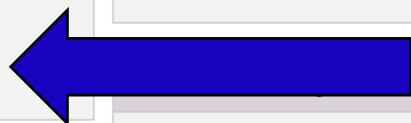
[Enroll in a New Class](#)

[Change Course Order](#)

New messages

No new messages

Thread	Started By	Course	Last Post
LatePass Dates Not working for some assignments?	Boudwin, Mandy	Support Course	Wed 8/25/21, 7:03 pm
Allow students to see feedback before due date	Masaros, America	Support Course	Wed 8/25/21, 5:06 pm
Pushing the Grade at Due Date to Canvas	Butenko, Anton	Support Course	Wed 8/25/21, 4:29 pm
Best way to branch successive parts based on student answers	Chura, Nick	Support Course	Wed 8/25/21, 3:42 pm



Copying HB5 Course Shell

myOpenMath

[Home](#) | [My Classes](#) ▼ | [User Settings](#) | [Log Out](#)



[Home](#) > [Add New Course](#)

Add New Course

How would you like to start this course?

Start with a blank course

Copy a template or promoted course

Copy from my or a colleague's course



Copying HB5 Course Shell

myOpenMath

[Home](#) | [My Classes](#) ▼ | [User Settings](#) | [Log Out](#)



[Home](#) > [Add New Course](#)

Add New Course

How would you like to start this course?

Start with a blank course

Copy a template or promoted course

Copy from my or a colleague's course

Select a course to copy

- ☐ My Courses
- ☐ My Group's Courses
- ☐ Other's Courses

Or, lookup using course ID:

Look up course

Enter course ID: 76384

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Copying HB5 Course Shell

myOpenMath

[Home](#) | [My Classes](#) ▼ | [User Settings](#) | [Log Out](#)



[Home](#) > [Add New Course](#)

Add New Course

How would you like to start this course?

[Start with a blank course](#)

[Copy a template or promoted course](#)

[Copy from my or a colleague's course](#)

Select a course to copy

- [+ My Courses](#)
- [+ My Group's Courses](#)
- [+ Other's Courses](#)

Or, lookup using course [Look up course](#)

☒ HB 5 (Chuca, Ivette) ©

For courses marked with ©, you must supply the course enrollment key to receive permission to copy the course.

Enrollment key:

[Continue](#)

Enrollment key:
Math

Copying HB5 Course Shell

myOpenMath

[Home](#) | [My Classes](#) ▼ | [User Settings](#) | [Log Out](#)



[Home](#) > [Form](#)

Add New Course

Copying: **HB 5** [Change](#)

Course name:

Enrollment key:

▶ Course Copy Options

▶ Availability and Access

▶ LMS Integration (LTI)

▶ Additional Options

Submit

Optional: Enrollment key protects your course by only allowing those with the key to enroll into your course. When students register for your course they will be asked for the course ID and enrollment key if you created one.

Copying HB5 Course Shell

myOpenMath

[Home](#) | [My Classes](#) ▼ | [User Settings](#) | [Log Out](#)



[Home](#) > [Form](#)

Add New Course

Copying: **HB 5** [Change](#)

Course name:

Enrollment key:

▶ Course Copy Options

▼ Availability and Access

Available? ☒ Available to students

Course start/end dates:
Blank for no limit

Start:  End: 

Default start/end time for
new items:

Start: , end:

Self-enrollment

☒ Allow students to self-enroll using Course ID and Key

Allow other instructors to copy
course items:

- ☒ Require enrollment key from everyone
☐ No key required for group members, require key from others
☐ No key required from anyone

Don't forget to make the course available to students by checking the box.

Copying HB5 Course Shell



Your course has been created!

For students to enroll in this course via direct login, you will need to provide them two things:

1. The course ID:
2. Tell them to leave the enrollment key blank, since you didn't specify one. The enrollment key acts like a course password to prevent random strangers from enrolling in your course. If you want to set an enrollment key, [modify your course settings](#)

If you plan to integrate this course with your school's Learning Management System (LMS), it looks like your school may already have a school-wide LTI key and secret established - check with your LMS admin. If so, you will not need to set up a course-level configuration. If you do need to set up a course-level configuration for some reason, the key and secret can be found in your course settings

[Enter the Course](#)

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Accessing HB5 Course

myOpenMath

[Home](#) | [My Classes](#) ▼ | [User Settings](#) | [Log Out](#)



Welcome to MyOpenMath,

[Messages](#) | [Help](#)

Courses you're teaching

HB 5



[Add New Course](#)

[Change Course Order](#)

New messages

No new messages

New forum posts



Setting Up HB5 Course

myOpenMath

[Home](#) | [My Classes](#) ▼ | [User Settings](#) | [Log Out](#)

[Course](#) | [Messages](#) | [Forums](#) | [Roster](#) | [Calendar](#) | [Gradebook](#)

Home > HB 5

Communication

[Messages](#)
[Forums](#)

Tools

[Roster](#)
[Gradebook](#)
[Calendar](#)
[Course Map](#)
[More...](#)

Questions

[Manage Libraries](#)

Course Items

[Copy From...](#)
[Export](#)

Mass Change

[Assessments](#)
[Forums](#)
[Blocks](#)

HB 5

Add An Item... ▼

▶ [Instructor Course Syllabus](#)
Showing Expanded Always

▶ [Student Course Overview](#)
Showing Expanded Always

 [Course Textbook](#)
Showing Always

▶ [Unit I](#)
Showing Collapsed Always

▶ [Unit II](#)
Showing Collapsed Always

▶ [Unit III](#)
Showing Collapsed Always

▶ [Unit IV](#)

View: [Instructor](#) [Student](#) [Quick Rearrange](#)

Use the gear to change view date and other settings.

Setting Up HB5 Course

HB 5

View: **Instructor** Student Quick Rearrange

Add An Item... ▾

▼ **Instructor Course Syllabus**
Showing Expanded Always

Add An Item... ▾

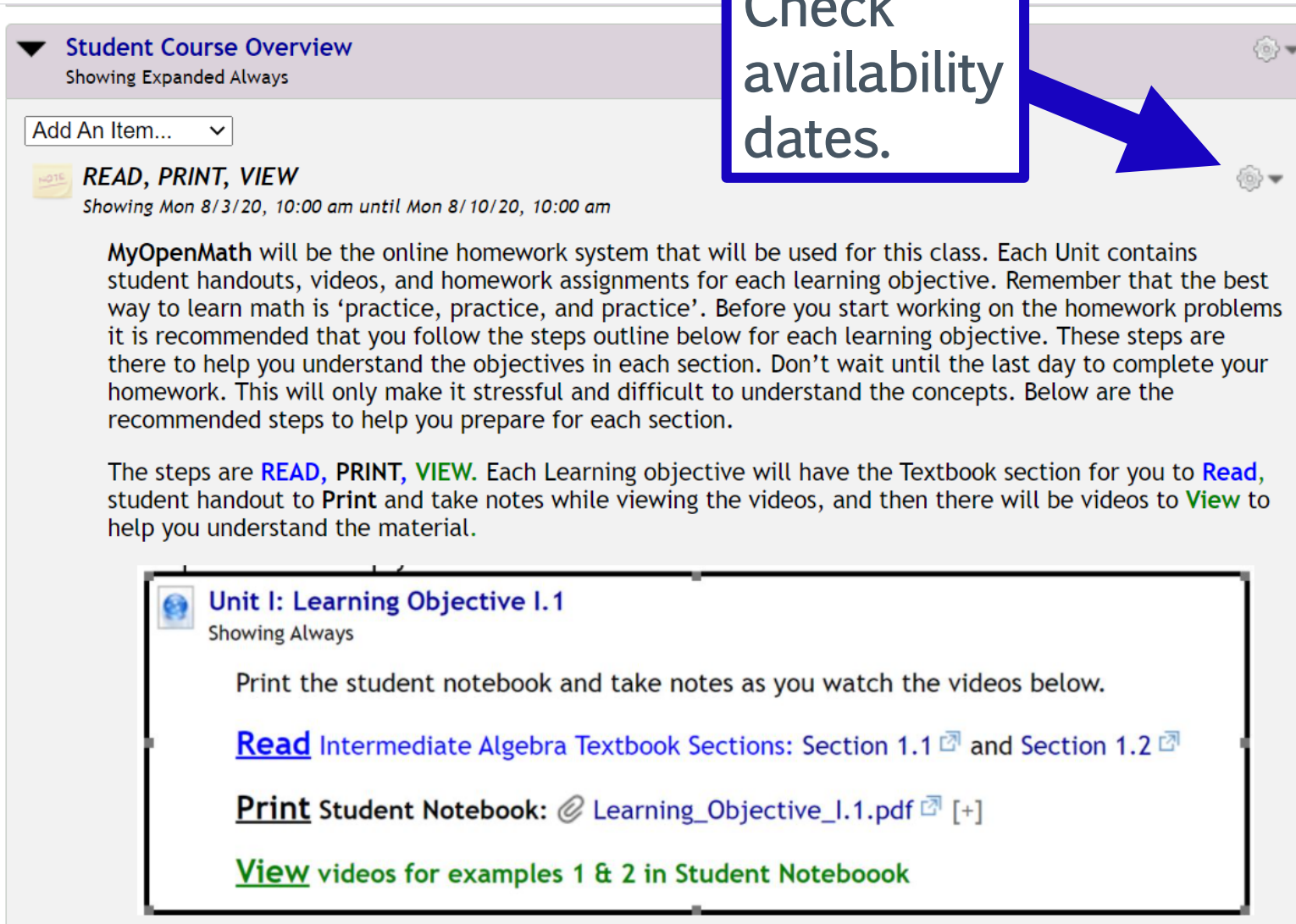
▶ **Student Course Overview**
Showing Expanded Always

 **Course Textbook**
Showing Always

To add your syllabus,
click “Add An Item...”
Then, “Add Inline Text.”
Use the Attachment
feature to upload your
document.

HB5 Course Set Up

Check
availability
dates.



Student Course Overview
Showing Expanded Always

Add An Item... ▾

 **READ, PRINT, VIEW**
Showing Mon 8/3/20, 10:00 am until Mon 8/10/20, 10:00 am

MyOpenMath will be the online homework system that will be used for this class. Each Unit contains student handouts, videos, and homework assignments for each learning objective. Remember that the best way to learn math is 'practice, practice, and practice'. Before you start working on the homework problems it is recommended that you follow the steps outline below for each learning objective. These steps are there to help you understand the objectives in each section. Don't wait until the last day to complete your homework. This will only make it stressful and difficult to understand the concepts. Below are the recommended steps to help you prepare for each section.

The steps are **READ**, **PRINT**, **VIEW**. Each Learning objective will have the Textbook section for you to **Read**, student handout to **Print** and take notes while viewing the videos, and then there will be videos to **View** to help you understand the material.

 **Unit I: Learning Objective I.1**
Showing Always

Print the student notebook and take notes as you watch the videos below.

Read [Intermediate Algebra Textbook Sections: Section 1.1](#) and [Section 1.2](#)

Print Student Notebook: [Learning_Objective_I.1.pdf](#) [+]

View videos for examples 1 & 2 in Student Notebook

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HB5 Course Set Up

Messages
Forums
Calendar
Course Map

Gradebook

Log Out
Help Using MyOpenMath

▶ Instructor Course Syllabus

▶ [Student Course Overview](#)

 Course Textbook

▶ Unit I

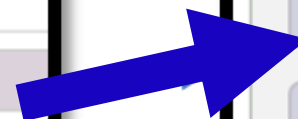
▶ Unit II

▶ Unit III

▶ Unit IV

▼ Unit V

 Learning Objective V.4



▼ Unit I

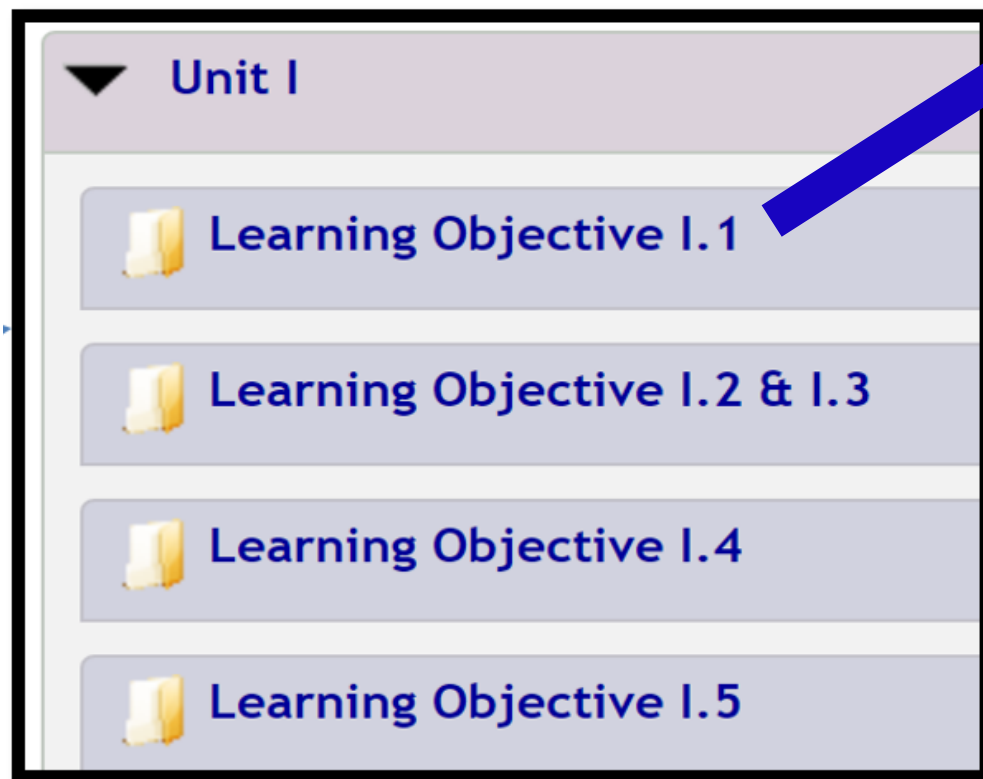
 Learning Objective I.1

 Learning Objective I.2 & I.3

 Learning Objective I.4

 Learning Objective I.5

HB5 Course Set Up



Unit I

- Learning Objective I.1
- Learning Objective I.2 & I.3
- Learning Objective I.4
- Learning Objective I.5

A blue arrow points from the 'Learning Objective I.1' item in this menu to the 'Learning Objective I.1' box on the right.

Learning Objective I.1



Lecture



Homework

Lecture



Unit I: Learning Objective I.1

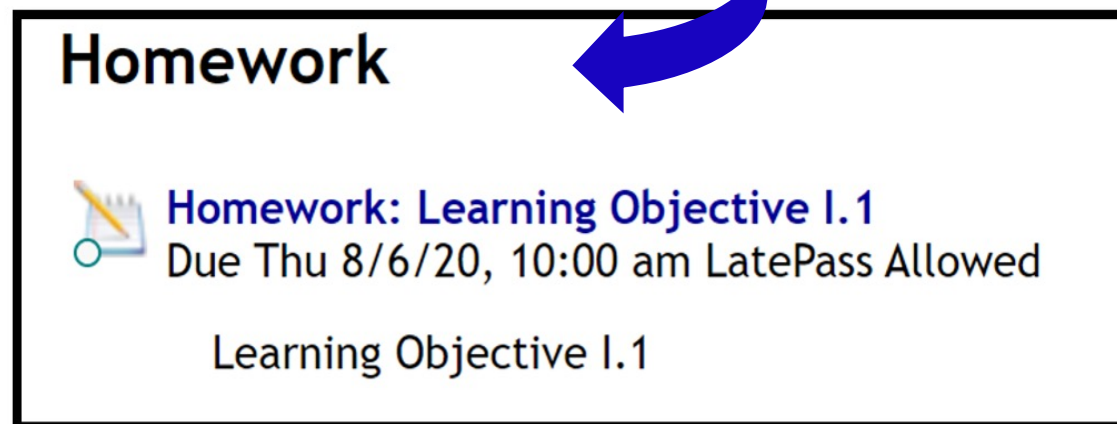
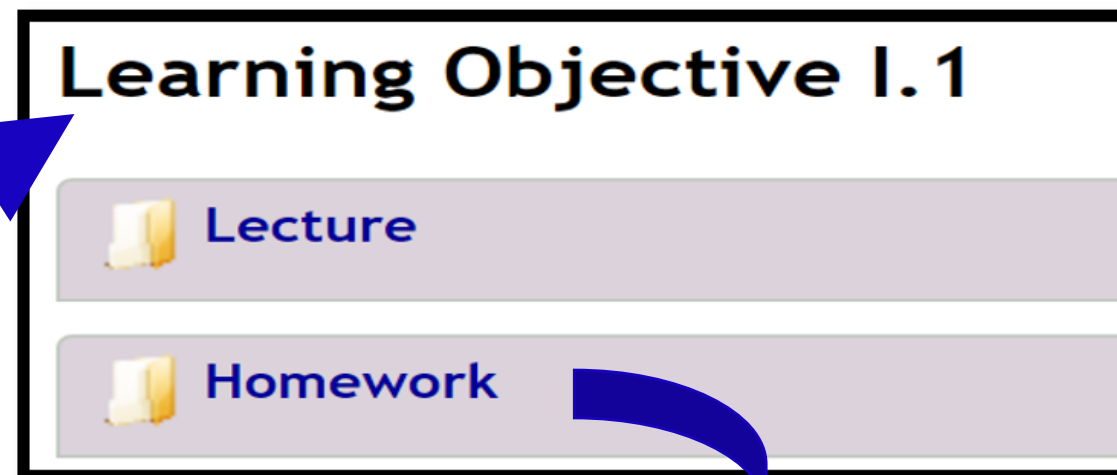
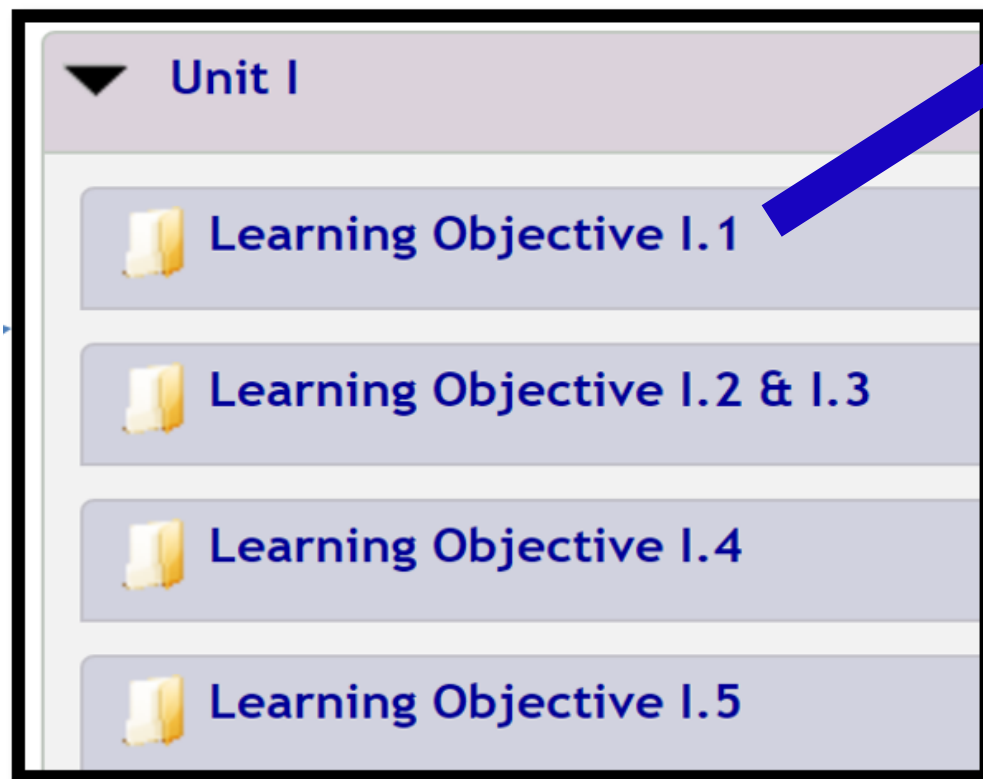
Print the student notebook and take notes as you watch the video

[Read](#) Intermediate Algebra Textbook Sections: Section 1.1  and

[Print](#) Student Notebook:  Learning_Objective_I.1.pdf  [\[+\]](#)

[View](#) videos for examples 1 & 2 in Student Notebook

HB5 Course Set Up



Use the gear to view all assignment settings.

Resources

- › Approved Course Resources
- › MyMathLab Help
- › 2020 College Prep Math Notebook, My Open Math
- › Syllabus Support Documents
- › Suggested Calendars
- › Additional Resources
- › Sample Parent Letters

FRAMEWORKS



**ESC Region 19 in partnership with EPCC and UTEP
Transition to College Math Course I – 1 Semester**

College Preparatory Integrated Mathematics Course I

Target Students: This course is appropriate for 12th-grade students whose performance on measures outlined in TEC §28.014 indicates that the student is not ready to perform entry-level college coursework in mathematics. This course is designed to advance college and career readiness.

Recommended Pre-requisites: Satisfactory completion of Algebra I, Geometry, and Algebra II. Completion of the Algebra I EOC exam.

Course Description as defined by El Paso Community College and The University of Texas at El Paso:

This course addresses a variety of mathematical topics needed to prepare students for success in college-level mathematics. Also, the course supports students in developing the skills and strategies needed to succeed in college. **Mathematics topics include real numbers, basic geometry, polynomials, factoring, linear equations, inequalities, rational expressions, and mathematical models with applications.** Successful completion of this **course (Course I and Course II)**, as defined by the memorandum of understanding (MOU) with the partnering institution(s), grants the student an exemption to TSI requirements for mathematics at the partnering institution(s). An overall grade for the semester of 75 or higher indicates that the student has met the college readiness standards established by the School Districts of Region 19, El Paso Community College (EPCC), and The University of Texas at El Paso (UTEP) indicating that the student is prepared for Integrated Mathematics Course II.

STUDENT LEARNING OUTCOMES	LEARNING OBJECTIVES	High School Equivalent
THE STUDENT WILL:		
1. Identify and apply properties of real numbers and perform accurate arithmetic operations with <u>numbers</u> in various formats and number systems. Apply <u>basic</u> geometric theorems and formulas.	1.1 Add, subtract, multiply and divide, using the order of operations, real numbers and manipulate certain expressions including exponential operations.	Algebra I & Geometry
	1.2 Find square roots of perfect square numbers.	
	1.3 Solve problems involving calculations with percentages and interpret the results.	
	1.4 Use estimation skills, and know why, and when to estimate results.	
	1.5 Find the perimeter and area of rectangles, squares, parallelograms, triangles, trapezoids, and circles; volume and surface area, relations between angle measures, congruent and similar triangles, and properties of parallelograms.	
	2.1 Solve problems using equations and inequalities, absolute value equalities and	

2. Demonstrate the ability to graph and solve linear equations and inequalities.	2.1 Solve problems using equations and inequalities, absolute value equalities and inequalities.	Algebra I & Algebra II
	2.2 <u>Solving linear equations.</u>	
	2.3 <u>Plot ordered pairs on a rectangular coordinate system and graph linear equations.</u>	
	2.4 <u>Graph linear equations & linear inequalities in two variables.</u>	
	2.5 <u>Finding intercepts graphically and algebraically.</u>	
	2.6 <u>Find the slope of a line & write its equation.</u>	Algebra I & Algebra II
3. Solve systems of equations using a variety of techniques.	3.1 <u>Solve systems of linear equations in two variables by graphing.</u>	
	3.2 <u>Solve systems of linear equations in two variables by substitution.</u>	
	3.3 <u>Solve systems of linear equations in two variables by addition.</u>	

4. Understand the operations of polynomial functions and solve problems using scientific notation.	4.1 Exponents	Algebra I & Algebra II
	4.2 Operations of polynomial functions to include addition, subtraction, multiplication, and division.	
	4.3 Solving problems using scientific notation.	
5. Understand, interpret, and make decisions based on financial information commonly presented to consumers.	5.1 Demonstrate understanding of common types of consumer debt and explain how different factors affect the amount that the consumer pays.	Mathematical Models with
	5.2 Demonstrate understanding of compound interest and how it relates to saving money.	

	5.3 Use quantitative information to explore the impact of policies or behaviors on a population.	Applications; Algebra I & Algebra II
	5.4 Factor polynomials using the techniques of the greatest common factor and grouping.	

Make sure all learning objectives are covered.
Final Exam is created based of the learning objectives.

FINAL EXAM AND GRADING POLICY

The students' overall grade will be calculated using the following:

- 50% of individual assessments to include a comprehensive Final Exam.
- 50% other such as daily grades, homework, etc.
- An overall grade for the semester of 75 or higher indicates that the student has met the criteria, and the student is prepared for Integrated Mathematics Course II without further assessment or remediation.

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Calculator Policy

Course I: No calculators allowed.

Course II: Scientific calculators allowed.

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Student's should be able to:

- draw on one's entire mathematical experience to figure out an appropriate next step in a problem.
- have multiple perspective on mathematical concepts.

Examples:

Function: familiar with different aspects of the idea of a function – as an equation, as a rule, as a graph, as a table, as an input-output machine – and be able to move back and forth easily among these representations.

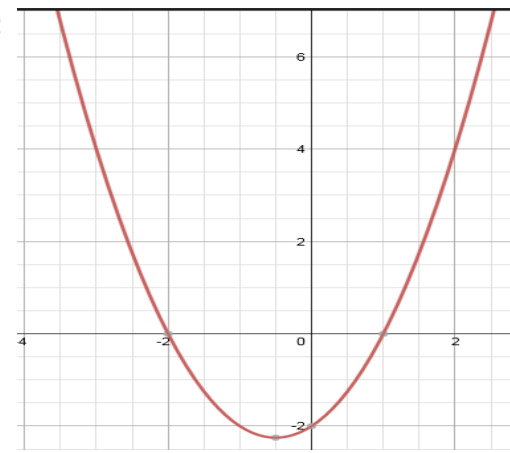
Quadratic Functions: Understanding what needs to be done to graph a quadratic function. Should also be familiar with all the names that identify solutions for quadratic functions.

Given $f(x) = x^2 + x - 2$ determine if the graph crosses the x-axis. If the graph crosses the x-axis identify where the graph crosses the x-axis.

Solve $x^2 + x - 2 = 0$.

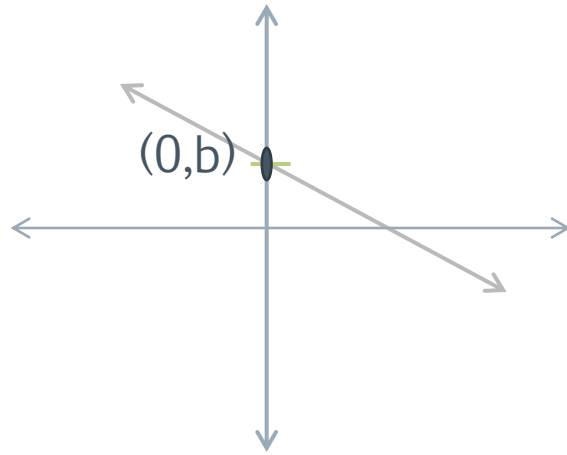
Find all the zeros of $f(x) = x^2 + x - 2$.

The graph of a quadratic function is given. Write the function's equation.



Linear Equations:

Write the equation of a line for the graph below.



$$y - y_1 = m(x - x_1) \quad \text{Point-Slope Form}$$

$$y - b = m(x - 0)$$

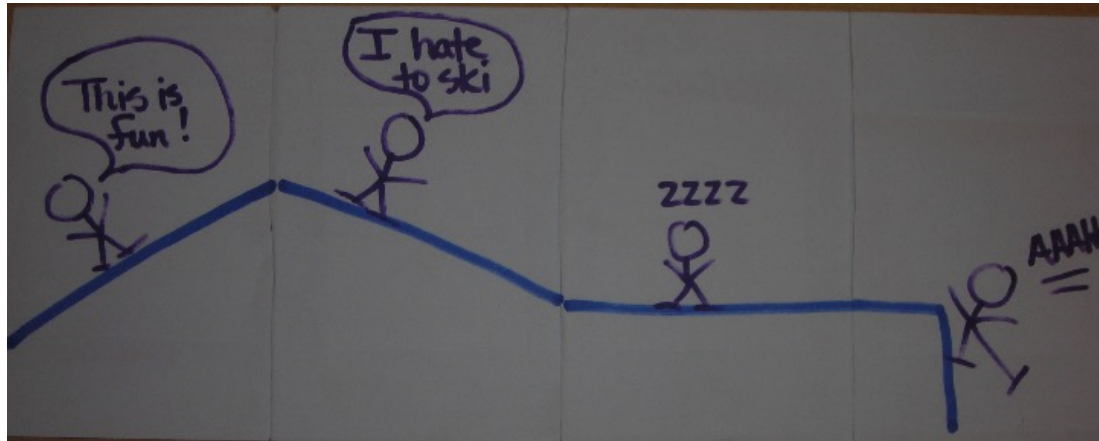
$$y - b = m(x)$$

$$y = mx + b$$

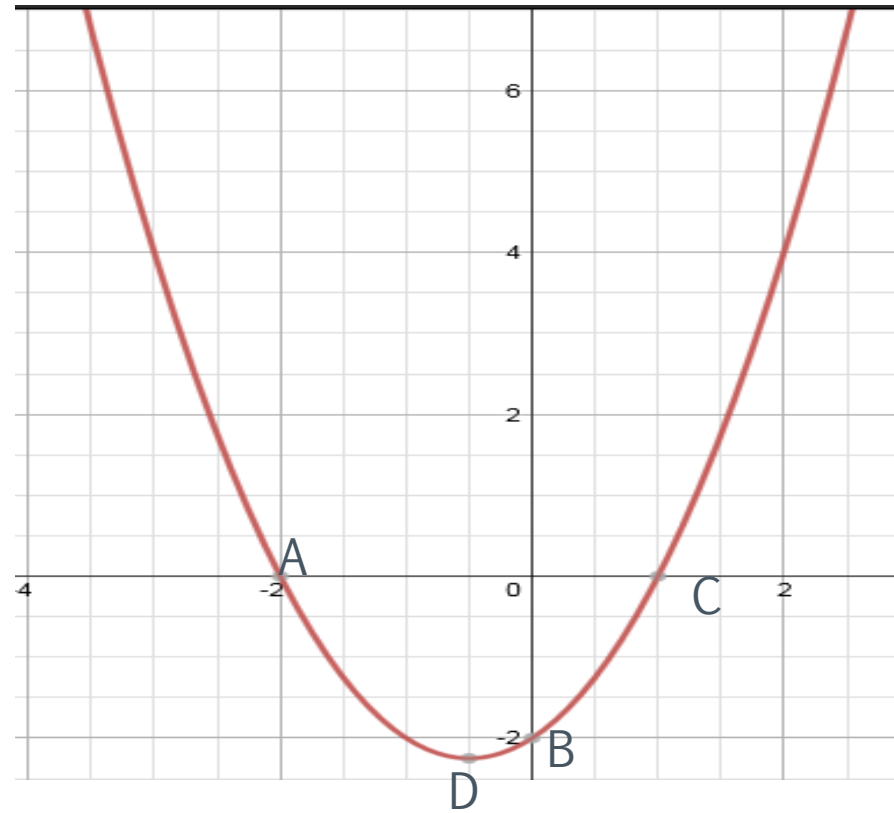
Slope-Intercept Form

Hands-On Activities

1. [Equations of Attack Activity Sheet](#)
2. [Linear Equations-Cut & Paste](#)
3. [Order of Operations-Bingo](#)
4. [Slope](#)



1. Use two names used to identify point A?
2. What determines if the graph opens up or down?
3. What is point B called?
4. What is point D and how is it determined?
5. How do you know if the graph will cross or touch at point A and C?



Unit I: Factoring

1. Factoring trinomials of the form $ax^2 + bx + c$.
2. Factor the difference of two squares, perfect-square trinomials, sum and difference of two cubes and trinomials that are quadratic in form.
3. Solve equations by factoring.
4. Solve applications involving above objectives.

Factoring Example #1

Find all zeros of the following functions and give the multiplicity of each zero. State whether the graph crosses the x - axis or touches the x - axis and turns around at each zero.

$$f(x) = x^3 + 4x^2 - 3x - 12$$

Factoring Example #1 Solution

$$f(x) = x^3 + 3x^2 - 4x - 12$$

$$0 = (x^3 + 3x^2) + (-4x - 12)$$

$$0 = x^2(x + 3) - 4(x + 3)$$

$$0 = (x + 3)(x^2 - 4)$$

$$0 = (x + 3)(x - 2)(x + 2)$$

$$x + 3 = 0$$

$$x - 2 = 0$$

$$x + 2 = 0$$

$$x = -3$$

$$x = 2$$

$$x = -2$$

Multiplicity of 1
Crosses the x -
axis at $x = -3$

Multiplicity of 1
Crosses the x -
axis at $x = 2$

Multiplicity of 1
Crosses the x -
axis at $x = -2$

Factoring Example #2

Find all zeros of the following functions and give the multiplicity of each zero. State whether the graph crosses the x - axis or touches the x - axis and turns around at each zero.

$$f(x) = x^4 - 9x^2$$

Factoring Example #2 Solution

$$f(x) = x^4 - 9x^2$$

$$0 = x^4 - 9x^2$$

$$0 = x^2(x^2 - 9)$$

$$0 = x^2(x - 3)(x + 3)$$

$$x - 3 = 0$$

$$x + 3 = 0$$

$$x = 0$$

$$x = 3$$

$$x = -3$$

Multiplicity of 2
Touches the x -
axis and turns
around at $x = 0$

Multiplicity of 1
Crosses the x -
axis at $x = 3$

Multiplicity of 1
Crosses the x -
axis at $x = -3$

Unit IV: Quadratic Equations and Functions, non-linear inequalities

1. Understand and use the root square property, completing the square, and quadratic formula to solve quadratic equations.
2. Solve equations that are quadratic in form.
3. Solve nonlinear inequalities.
4. Graph quadratic functions using points, x - intercepts, and the vertex.
5. Solve applications using above objectives.

Quadratic Example #1

Find all the zeros of the function.

$$f(x) = x^3 + 2x^2 - 19x - 20$$

Quadratic Example #1 Solution

$$f(x) = x^3 + 2x^2 - 19x - 20$$

$$0 = x^3 + 2x^2 - 19x - 20$$

Possible Rational Zeros = $\pm 1, \pm 2, \pm 4, \pm 5, \pm 10, \pm 20$

Handwritten solution for finding rational zeros of the cubic equation $f(x) = x^3 + 2x^2 - 19x - 20$.

Synthetic division with 4:

4		1	2	-19	
20					
4					
24					
		1	6		

From the synthetic division, the quotient is $x^2 + 6x + 5 = 0$.

Factoring the quadratic:

$$(x + 5)(x + 1) = 0$$

Solving for x :

$$x + 5 = 0 \implies x = -5$$

$$x + 1 = 0 \implies x = -1$$

The solution set is $\{-5, -1, 4\}$.

Quadratic Example #2

Find all the zeros of the function.

$$f(x) = x^3 + 3x^2 - 24x - 26$$

Quadratic Example #2 Solution

$$f(x) = x^3 + 3x^2 - 24x - 26$$

$$0 = x^3 + 3x^2 - 24x - 26$$

Possible Rational Zeros = $\pm 1, \pm 2, \pm 13, \pm 26$

$$\begin{array}{r|rrrr} -1 & 1 & 3 & -24 & -26 \\ & & & -2 & 26 \\ \hline & & & & -1 \\ & & & & 2 \end{array}$$

zero

$$x^2 + 2x - 26 = 0$$

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(1)(-26)}}{2(1)} = \frac{-2 \pm \sqrt{4 + 104}}{2}$$

$$= \frac{-2 \pm \sqrt{108}}{2} = \frac{-2 \pm 6\sqrt{3}}{2}$$

Solution set $\bar{\theta}$

$$\{-1, -1 + 3\sqrt{3}, -1 - 3\sqrt{3}\}$$

$$x = \frac{-2 + 6\sqrt{3}}{2}$$

$$x = -1 + 3\sqrt{3}$$

zero

$$x = \frac{-2 - 6\sqrt{3}}{2}$$

$$x = -1 - 3\sqrt{3}$$

zero

Quadratic Example #3

Find all the zeros of the function.

$$f(x) = x^4 - 6x^3 - 3x^2 + 24x - 4$$

Quadratic Example #3 Solution

$$f(x) = x^4 - 6x^3 - 3x^2 + 24x - 4$$

$$0 = x^4 - 6x^3 - 3x^2 + 24x - 4$$

Possible Rational Zeros = $\pm 1, \pm 2, \pm 4$

$$\begin{array}{r|rrrrr} 2 & 1 & -6 & -3 & & \\ \hline & -4 & & & & \\ \hline -2 & 1 & -4 & -11 & -2 & \\ \hline & & & & & \end{array}$$

↑ zero
↑ zero

$$x^2 - 6x + 1 = 0$$

$$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(1)}}{2(1)} = \frac{6 \pm \sqrt{36 - 4}}{2}$$

$$= \frac{6 \pm \sqrt{32}}{2} = \frac{6 \pm 4\sqrt{2}}{2}$$

$$x = \frac{6+4\sqrt{2}}{2}$$

$$x = 3 + 2\sqrt{2}$$

↑
zero

$$x = \frac{6-4\sqrt{2}}{2}$$

$$x = 3 - 2\sqrt{2}$$

↑
zero

Solution set =

$$\{2, -2, 3 + 2\sqrt{2}, 3 - 2\sqrt{2}\}$$

1 0

Domain

3 Questions:

1. Are there fractions containing a variable in denominator?
2. Are there square roots containing variable in the radicand?
3. Are there logarithms?

No to all the above $\rightarrow$ Domain is all real numbers

Domain Example

Find the domain of the functions.

a. $f(x) = x + 3$ b. $f(x) = \sqrt{4x - 1}$

c. $f(x) = \frac{5}{x + 2}$ d. $f(x) = \log_5(3x + 45)$

Domain Example Solutions

a. $f(x) = x + 3$

Function has no fraction.

Function has no square root.

Function has no logarithm.

Domain: $(-\infty, \infty)$

Domain Example Solutions

b. $f(x) = \sqrt{4x - 1}$

Function has no fraction.

Function has no logarithm.

Function has a square root.

$$4x - 1 \geq 0$$

$$x \geq \frac{1}{4}$$

Domain: $\left[\frac{1}{4}, \infty\right)$

Domain Example Solutions

c. $f(x) = \frac{5}{x+2}$

Function has no square root.

Function has no logarithm.

Function has a fraction.

$$x + 2 = 0$$

$$x \neq -2$$

Domain: $(-\infty, -2) \cup (-2, \infty)$

Domain Example Solutions

d. $f(x) = \log_5(3x + 45)$

Function has no fraction.

Function has no square root.

Function has a logarithm.

$$3x + 45 > 0$$

$$x > -15$$

Domain: $(-15, \infty)$

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Questions?

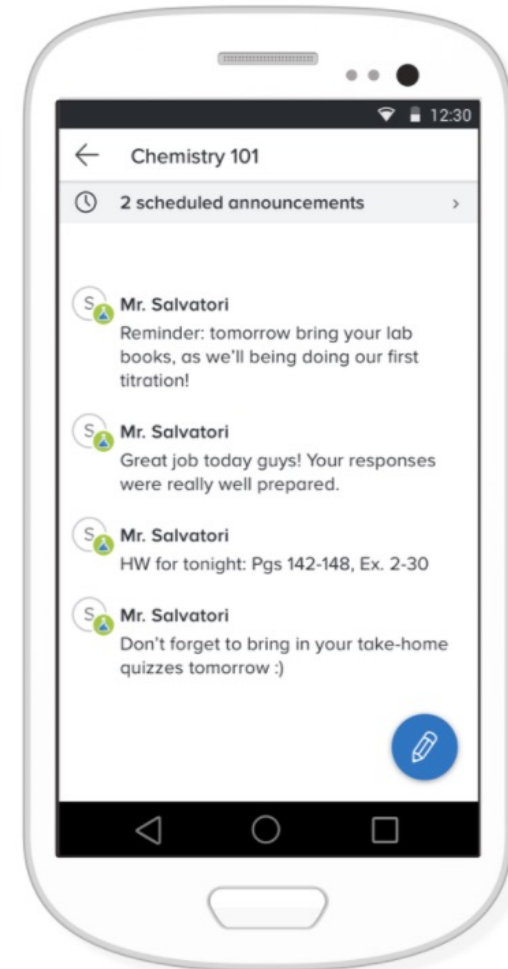
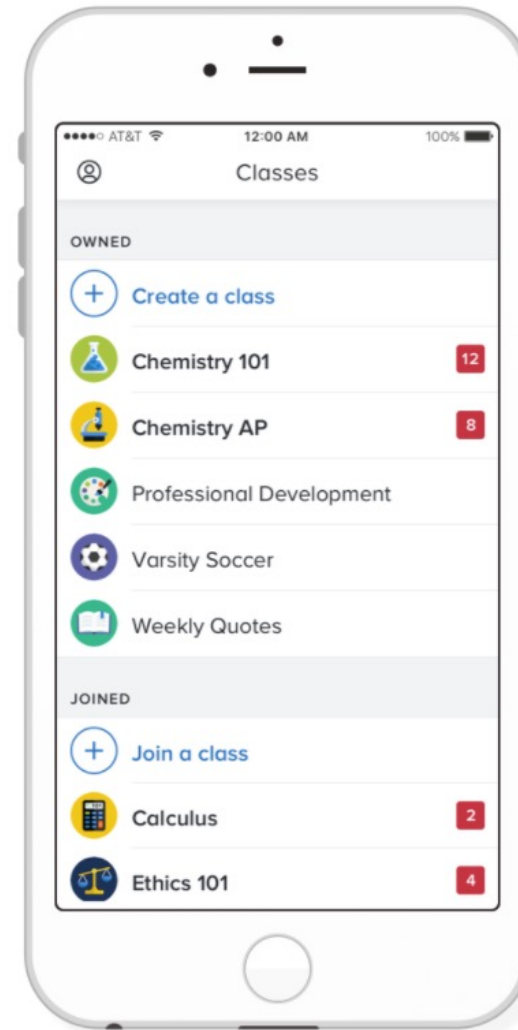
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Remind Example



Student



Handwritten math on lined paper:

$$(x-h)^2 + (y-k)^2 = r^2 \quad \searrow$$

Points: $(3, 4)$ and $(-13, -14)$

$$r = \sqrt{(x-h)^2 + (y-k)^2}$$
$$= \sqrt{(-13-3)^2 + (-14-4)^2}$$
$$= \sqrt{-16^2 + -18^2}$$
$$= \sqrt{256 + 324}$$
$$= \sqrt{580}$$
$$(x-3)^2 + (y-4)^2 = \sqrt{580}^2$$
$$(x-3)^2 + (y-4)^2 = 580$$

Write the standard form of the equation of the circle with the given characteristics.

Endpoints of a diameter: $(3, 4)$, $(-13, -14)$

$$(x - 3)^2 + (y - 4)^2 = 580$$



Need Help?

Read It

Submit Answer

21. [-/0 Points]

DETAILS

LARPCALC10 1.2.078.MI.SA.

This question has several parts that must be completed sequentially. If you skip a part of the question, part

YR

I'm sorry. I don't understand this problem.

Instructor Response

Hello. Did you see the step by step example that I posted on webassign. Its section 1.2 #19. You can find it under the announcements in webassign.

Basically since they give you the endpoints of a diameter you want to first use the distance formula with those points.

Once you have the distance you take half because the radius is half of the diameter

To get the center of the circle you want to find the midpoint of

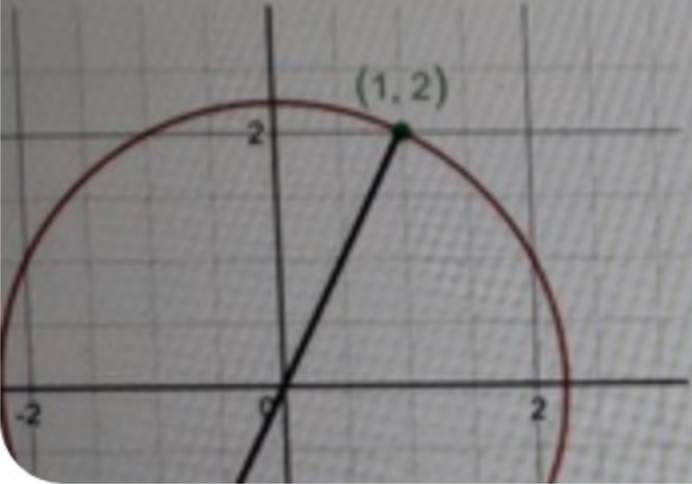
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vice Fed...

diameter. Once we know the diameter then the radius is just half of the diameter.


$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$
$$d = \sqrt{(1 - -1)^2 + (2 - -2)^2}$$
$$d = \sqrt{(2)^2 + (4)^2}$$
$$d = \sqrt{4 + 16} = \sqrt{20} = 2\sqrt{5}$$

This value $2\sqrt{5}$ is the diameter of the circle. For the