

College Algebra

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Office Hours: T, F 7:45-8:30 am

Classroom communication: blogs.4j.lane.edu/blackburn

Prerequisites: Algebra 2A and Algebra 2B with a B- or better.

Course Description: College algebra is the study of basic functions and their applications. This includes polynomial, rational, exponential, and logarithmic functions and their inverses. Other topics include an introduction to sequences and nonlinear systems of equations. In accordance with national recommendations, this course emphasizes skill building, problem solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of technology. A graphing calculator is required. However, students will be held accountable for many skills without a calculator. See current calculator recommendation chart.

Course Objectives: In order to successfully complete this course, the student should have demonstrated the ability to:

1. Maintain, use, and expand the skills and concepts learned in previous mathematics courses.
2. Apply the midpoint formula, distance formula, properties of lines, and equations of circles to the solution of problems from coordinate geometry.
3. Use and apply the concepts, language, notation, and evaluation of functions, including input-output ideas, domain, range, increasing, decreasing, maximum values, minimum values, symmetry, odd, even, composition of functions, and inverses.
4. Use substitution to create an equation defining one quantity as a function of another.
5. Apply principles of transformations (shifts, reflections, and stretches) to equations and graphs of functions.
6. Recognize, sketch, and interpret the graphs of the basic functions without the use of a calculator:

$$f(x) = c, x, x^2, x^3, x^n, \sqrt{x}, |x|, e^x, a^x (a > 0), \log_a x (a > 1), \ln x, \frac{1}{x}, \frac{1}{x^2}.$$

7. Identify and apply properties of polynomial functions.
8. Identify and apply properties of rational functions with and without a calculator.
9. Identify and apply properties of exponential and logarithmic expressions and functions.
10. Analyze a function by interpreting its graph, using a graphing calculator.
11. Translate a set of numerical data into graphical form, choose a function (linear or exponential) to model the data, and interpret the implications of the model.
12. Translate word problems into mathematical expressions, solve the problems, and interpret the solutions.
13. Communicate ideas of college algebra through English statements and mathematical sentences.
14. Use the language and skills of precalculus that are important for success in calculus.
15. Write and evaluate the notation of sequences and series including n th terms, summations, and factorials.
16. Solve nonlinear systems of equations algebraically and graphically (optional – time permitting).
17. Identify sequences as arithmetic, geometric, or neither and apply appropriate formulas related to those sequences to solve problems (optional - time permitting).
18. Accurately apply the mathematics learned in college algebra to topics from the student's world.

Required Materials:

- a. Required Text: *Precalculus*, 3rd edition, by Sullivan & Sullivan
- b. A programmable graphing calculator: TI 83 Plus or TI 84 Plus is recommended. TI 83s will work.
- c. A spiral notebook or binder to organize lesson notes, classwork, and homework.
- d. Pencils or pens.

We will have a classroom set of textbooks to use in class. If you would like to have one at home you can check one out from the library. You are responsible for purchasing the other required materials.

Class Format

Most classes will begin with a warmup. The warmups will be turned in on Fridays with your other work. If you are absent ask your classmates what the warmup was and complete it. During warmup time, attendance will be taken. After the warmup, we will go over homework questions, then proceed to new material. There will be quizzes or in-class assignments on some days instead of new material.

Tests and Quizzes

On the last day of most weeks we will have either a test or a quiz. You will be allowed to use notes on most of the quizzes but not on the tests.

Classwork and Homework

Homework and class work are extremely important parts of your learning. Math is a very interactive discipline where practice is vital to your understanding. You will turn in these assignments on the last day of each chapter. When time is given in class to work on class work or homework you are expected to be working on it. This means you will be working on Precalculus and no other subject. Since my class is Precalculus you will lose credit for the assignment given if you are working on another subject's work.

Late Work

Homework and class work will be collected on the last day of each chapter. If you are absent on that day you will turn it in the first day you get back. If you are absent during the week you need to request an extension from me. Otherwise you will turn in your assignments on the last day of the week. Late work will be accepted within one week of the due date for half credit. If you miss a test or quiz you have one week from your return to make it up. Otherwise you will receive 25% reduced credit for every week beyond the first week of your return.

Grading

You will be assigned a letter grade on your transcript based on the following breakdown: 60% of your grade will be based on tests, 20% on quizzes, and 20% on homework and other assignments. Pass/no pass is an option for this course. This must be arranged prior to midterms and agreed upon by me, your parents, and the counselors.

Percentage	Letter Grade		Percentage	Letter Grade
98 - 100.00%	A +		77 - 79.99%	C+
93 - 97.99%	A		73 - 76.99%	C
90 - 92.99%	A-		70 - 72.99%	C-
87 - 89.99%	B+		67 - 69.99%	D+
83 - 86.99%	B		63 - 66.99%	D
80 - 82.99%	B-		60 - 62.99%	D -
			< 60%	F

Attendance Policy

By district policy, I am required to submit attendance online within the first ten minutes of class. If you come to class after the ten minutes are up, you will be marked very late.

Getting Help

1. I am available for office hours before school on Tuesday and Friday for extra help from 7:45-8:30.
2. Consult with classmates and form study groups – math doesn't have to be a solitary struggle.
3. Get help from a free or paid tutor.
4. Consult my website for lesson notes and videos.

Si necesita más información en Español sobre esta clase, por favor comuníquese con Paola Massingham al 541-790-5151 o por correo electrónico massingham_p@4j.lane.edu

Classroom expectations

Work Hard & Be Nice to People

Procedures are a part of life. We follow procedures for using a telephone, boarding an airplane, approaching a traffic light and attending a wedding. The reason we have procedures in life is so that people can function in society knowing the acceptable and efficient ways people do things. There are also procedures in this classroom. These procedures establish our classroom culture. Procedures are not rules; they are set guidelines and expectations on how things will happen in this classroom.

Entering the classroom

After you find your seat, take out your notebook and other supplies so that you are ready when the bell rings.

Asking a question

If you have a question that would be beneficial for the rest of the class to know the answer to, please raise your hand and wait to be called on; otherwise, please wait to ask quietly during work time or after class.

When you need supplies

If you need a paper or pencil, please help yourself at the supply station. Please do so quickly and quietly as to not disrupt the class.

Using the supplies

Please use the supplies for their intended purpose (putting information in your notebook). Scissors should only be used for cutting paper. Recycle all scraps in the recycling bin

Responding to a request for your attention

When you hear the cue, "Folks, may I have your attention," quiet your voices, put your pencils down and be ready to listen. If it takes longer than five seconds to gain the classes' attention, the additional time will be taken from passing time.

When you are absent

Notes missed in class will be posted on my blog. Please have those copied into your notebook before you come back to class. Ask me for any worksheets you may have missed.

When you need to use the restroom

If you need to go to the bathroom, ask for permission & take the hall pass. Only one person is allowed out of the room at a time, so if the pass is gone, you will need to wait until they return (exceptions for emergencies). Please go to the restroom and return quickly (≤ 5 minutes) out of respect for anyone else who may need to go.

Working with others

We will frequently be working in groups or partners. You will be expected to work cooperatively regardless of whether you've been assigned to work with friends. Voices should remain low enough that only those in your group can hear you. If desks need to be moved (in order to get into groups or back into rows), please do so quickly and quietly as to not disturb the classroom next door. More expectations for working in groups will be decided as a class and posted in the classroom for reference.

Electronic devices

Texting, snapchatting, tweeting and checking Instagram, etc. are not appropriate activities during class time. Cellphones should be silenced and away during class-time. Headphones and earbuds should be out of sight. If you are using your cellphone during class time, it will be taken away for the remainder of the class period and daily points will be deducted.

How to be Successful as a Mathematics Student

Teachers always tell you to work hard. But why? If it comes easy and you get an easy A that's what's important, right? Wrong!! The reason you should work hard is because it makes you smarter – you gain intelligence. Yes, that's right, you can *grow your intelligence!* Each and every one of you has a chance to develop into an outstanding mathematician. So we're back to this work harder thing. In my class working harder means to try every single problem that is put in front of you. You will make mistakes, and that's a *good thing!* By making mistakes you will learn how to deal with adversity. How do you think astronauts are chosen for a mission? They choose the ones that bounce back from failure, not the ones who are successful all the time. So if you love challenges, are intrigued by mistakes, enjoy effort, seek new strategies, and keep on learning you're going to do great!