



Course Number/Title: MA178 College Algebra

Term/Year: Fall 2015

Credit Hours: 3

Days/Time: M-F 10:54 – 11:44

Department: Mathematics

Prerequisite: MA177 Intermediate Algebra with a grade of "C" or better or placement. Mandatory placement based on ACT Score or Compass Test Score

Required Text: Larson. (2006). *College Algebra Concepts and Models* (5th ed.). Boston, MA: Houghton Mifflin ISBN #: 0-618-49281-X

Instructor Email: diane.wetter@colbycc.edu or dwitter@ruraltel.net

Website: www.usd292.org

Instructor Phone: 785-673-4223 (high school office)

Fax: 785-673-4234

CCC MISSION:

The mission of Colby Community College is engaging others in learning and service opportunities to positively affect their world.

RATIONALE:

An understanding of the concepts of algebra and the ability to use mathematics are fundamental skills of a well-educated individual. This course will fulfill the general education requirement in mathematics for many students as well as preparing students who intend to take more advanced courses in mathematics.

COURSE DESCRIPTION:

This course will enable the student to work and solve mathematics and quantitative problems involving functions and graphs, the algebra of functions, inverse functions, linear functions, exponential and logarithmic functions, quadratic and other polynomial functions and their zeros, rational functions, circles, absolute value equations and inequalities, radical equations, rational equations and inequalities, quadratic inequalities, systems of equations and inequalities.

COURSE REQUIREMENTS/TIMELINE:

Attendance in class is expected. Participation in class is expected.

The course textbook is required.

Homework is assigned and listed on the course schedule. Assignments are expected on the due date and will not be accepted later. Assignments will not be accepted unless they are complete, have your name, date, page number, and problem numbers assigned. The original problem must be copied and all work shown as appropriate. Circle the answer or mark it in such a way that it is

obvious that it is the conclusion. Keep assignments neat and legible. If an assignment is unreadable, it will not be accepted and will be redone. For remote ITV sites, faxing is the preferred method to submit assignments. Please note that faxed assignments must be dark enough to transmit legibly. Alternatively assignments may be scanned and e-mailed to the instructor in PDF format. When faxing or scanning a document, please put your name on each page and number pages, i.e. 1 of 3, 2 of 3, 3 of 3.

Tests are given over each chapter. Tests are announced on the course schedule and must be taken on that date unless the absence is excused and prior arrangements are made. Chapter tests are paper pencil test and taken in class. Work will be required on tests as appropriate to the problem and as directed by the instructor.

A comprehensive final exam will be given at the end of the course.

A graphing calculator is highly recommended. Online graphing calculators or apps may be used for homework. Cell phones are not permitted to be used for tests. Only approved online applications may be used on tests. I will give support for the TI-83 and TI-84 series of calculators.

Graph paper is available from online resources.

Students are required to sign a Student ITV Contract and abide by the rules of that contract.

COURSE LEARNING OBJECTIVES:

The learning objectives and competencies detailed below meet or exceed the learning outcomes and competencies specified by the Kansas Core Competency Project for this course, as sanctioned by the Kansas Board of Regents.

Upon completion of the course the student will be able to:

1. Solve equations and inequalities
2. Graph equations in the Cartesian plane
3. Graph functions and transformations of functions
4. List characteristics of polynomial and rational functions
5. Solve and graph exponential functions
6. Solve and graph systems of equations and inequalities
7. Use matrices to model systems of equations

COURSE OBJECTIVES AND COMPETENCIES:

The student will demonstrate a mastery of the following skills:

1. Compute the distance between two points.
2. Find the midpoint between two points.
3. Graph the equation of a line.
4. Compute the slope of a line passing through two points.
5. Identify the slope and y-intercept from the equation of a line.
6. Determine the equation of a line passing through a given point, given the slope of the line.
7. Find the equation of a line passing through two points.
8. Determine the equation of a line passing through a given point and parallel to a given line.
9. Determine the equation of a line passing through a given point and perpendicular to a given line.

10. Evaluate a function written in function notation.
11. Identify the domain of a function.
12. Identify the range of a function.
13. Determine whether the graph of an equation represents a function.
14. Graph an absolute value function.
15. Graph a quadratic function.
16. Sketch the graphs of similar functions using translation and reflection.
17. Identify the x-intercept and y-intercept of a function.
18. Identify the vertex of a parabola.
19. Use a linear model to solve an application problem.
20. Interpret data from a graph showing a relationship between two quantities.
21. Compute the algebraic combinations of functions.
22. Compute the composition of two functions.
23. Determine whether a function has an inverse function.
24. Find the inverse function of a function.
25. Given the graph of a function, graph its inverse function.
26. Graph an exponential function.
27. Determine the equation of an exponential function through a given point.
28. Solve an exponential equation.
29. Use an exponential growth model to solve an application problem.
30. Transform an exponential equation into an equivalent logarithmic equation.
31. Transform a logarithmic equation into an equivalent exponential equation.
32. Compute the value of a logarithm.
33. Graph a logarithmic function.
34. Simplify logarithmic expressions using the properties of logarithms.
35. Calculate common and natural logarithmic values using a scientific calculator.
36. Compute the value of a logarithm of any base using the change-of-base formula.
37. Solve a logarithmic equation.
38. Use a logarithmic model to solve an application problem.
39. Solve a quadratic equation.
40. Perform addition, subtraction, multiplication, and division on complex numbers.
41. Determine symmetry about the x-axis, y-axis, or origin for the graph of an equation.
42. Graph a polynomial function.
43. Determine the horizontal and vertical asymptotes of rational functions.
44. Graph a rational function.
45. Divide two polynomials using long division.
46. Divide two polynomials using synthetic division.
47. Find all zeros of a polynomial.
48. Write the equation of a circle in standard form, given the center and radius.
49. Graph the equation of a circle.
50. Solve absolute value equations.
51. Solve absolute value inequalities of one variable.
52. Solve rational equations.
53. Solve radical equations.
54. Solve linear systems of equations in two variables using substitution or elimination.
55. Create a system of equations from an application problem, solve for unknown quantities, and interpret the results.
56. Use matrices to solve linear systems of equations in three variables.
57. Solve nonlinear systems of equations in two variables using substitution or elimination.
58. Solve quadratic and rational inequalities of one variable.
59. Graph linear inequalities of two variables.

60. Graph linear systems of inequalities of two variables.

ASSIGNMENT AND TEST POLICY:

Daily homework is assigned. Homework is due the following day unless otherwise noted. Late homework will not be accepted. For excused absences, students have one day for every day missed to submit homework assignments.

Assignments will not be accepted unless they are complete, have your name, date, page number, and problem numbers assigned. The original problem must be copied and all work shown as appropriate. Circle the answer or mark it in such a way that it is obvious that it is the conclusion. Keep assignments neat and legible. If an assignment is unreadable, it will not be accepted and will be redone. For remote ITV sites, faxing is the preferred method to submit assignments. Please note that faxed assignments must be dark enough to transmit legibly. Alternatively assignments may be scanned and e-mailed to the instructor in PDF format. When faxing or scanning a document, please put your name on each page and number pages, i.e. 1 of 3, 2 of 3, 3 of 3.

Tests are given at the end of each chapter and announced on the course schedule. If students are absent on the day a test is scheduled, it is your responsibility to notify the instructor and make arrangements to make up the test. Tests are paper pencil test and taken in class. Work will be required on tests as appropriate to the problem and as directed by the instructor.

A comprehensive final exam will be given.

ATTENDANCE POLICY:

Colby Community College views class attendance as a mandatory activity. However, if students must be absent, the students should make arrangements in advance with the instructors. Students absent as official college representatives (athletics, activities, or scholarship fulfillment) are not counted absent but **MUST** make advance arrangements with instructors to complete all course work. Punitive grades cannot and will not be assigned if the absence is excused by the college. It is always the student's responsibility to notify instructors of any absence due to illness or any other reason.

CELL PHONE POLICY:

It is your choice to be in this class. When you come to class, the instructor and fellow students demand your attention and respect. Cell phone usage, including text messaging, or usage of any other electronic device is not allowed in class. Any student who cannot meet these expectations will be asked to leave the classroom and will be counted absent for that day. Please do not bring cell phones into the classroom. Cell phones will not be allowed for calculator usage on tests.

METHOD OF EVALUATION:

Grades will be based on homework and tests.

Grades will be assigned according to the following scale:

90-100% A 80-89% B 70-79% C 60-69% D Below 60% F

ACADEMIC INTEGRITY POLICY:

Colby Community College defines academic integrity as learning that leads to the development of knowledge and/or skills without any form of cheating or plagiarism. This learning requires respect for Colby's institutional values of quality, service and integrity. All Colby Community College students, faculty, staff, and administrators are responsible for upholding academic integrity.

Cheating is giving, receiving, or using unauthorized help on individual and group academic exercises such as papers, quizzes, tests, and presentations through any delivery system in any learning environment. This includes impersonating another student, sharing content without authorization, fabricating data, and altering academic documents, including records, with or without the use of personal and college electronic devices.

Plagiarism is representing or turning in someone else's work without proper citation of the source. This includes unacknowledged paraphrase, quotation, or complete use of someone else's work in any form. It also includes citing work that is not used and taking credit for a group project without contributing to it.

The following procedure will be used for students who violate the policy for the Academic Integrity Policy begins with the notification of the first infraction and continues throughout the student's tenure at Colby Community College:

- **First Offense** – Student will receive a zero for the assignment and the student will be reported to the Vice President of Academic Affairs.
- **Second Offense** – The student will receive a failing grade in the class and be reported to the Vice President of Academic Affairs and removed from the class in which the offense occurred.
- **Third Offense** – The student will be reported to the Vice President of Academic Affairs and dismissed from the college.

Any questions about this policy may be referred to the Vice President of Academic Affairs.

ASSESSMENT:

Colby Community College assesses student learning at several levels: general education, program, and course. The goal of these assessment activities is to improve student learning. As a student in this course, you will participate in various assessment activities. An example of your work, a paper, some test questions, a presentation, or other work may be selected for assessment. This process will not affect your grade, will not require you do additional work and your evaluation will be confidentially handled. Results of these activities will be used to improve teaching and learning at Colby Community College.

SYLLABUS INFORMATION DISCLAIMER:

I reserve the right to change any information contained in this document, when necessary, with adequate notice given to the student. Notice shall be given in the classroom during class. No other notice is required. It is the students' responsibility to stay current with any changes, modifications, adjustments or amendments that are made to this document

Students should adhere to the attendance, cell phone, assignment, test and grading policies in the course syllabus.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES:

According to the Americans Disabilities Act, it is the responsibility of each student with a disability to notify the college of his/her disability and to request accommodation. If a member of

the class has a documented learning disability or a physical disability and needs special accommodations, he/she should contact Student Support Services, which is located in the Student Union.

NOTICE OF NON-DISCRIMINATION:

Colby Community College provides equality of opportunity to its applicants for admission, enrolled students, graduates, and employees. The College does not discriminate with respect to hiring, continuation of employment, promotion, tenure, other employment practices, application for admission or career services and placement on the basis of race, color, gender, age, disability, national origin or ancestry, sexual orientation or religion. For inquiries regarding the nondiscrimination policies, contact the Vice President of Students Affairs, Title IX and ADA Coordinator, Colby Community College, 1255 S. Range Ave., Colby, KS 67701 (785) 460-5490).

ACCREDITATION:

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