

Harford Community College
Science, Technology, Engineering & Mathematics Division

MATH 101: COLLEGE ALGEBRA

15-Week Session

Instructor's Name: Mrs. Lynne Petzold Telephone Number: 443-412-2642
Email Address: lpetzold@harford.edu Office Location: Fallston Hall room 155

Office Hours:

TEXTBOOK:

Optional: Rockswold, Gary. Essentials of College Algebra with Modeling and Visualization (Fourth Edition). Addison-Wesley, Pearson Education, 2012.
ISBN 10: 0321-71528-4

Required: MyMathLab Code

PREREQUISITES:

A qualifying score on the Math Placement Test or the successful completion of Intermediate Algebra Math 017 or STEM Track III Math 026.

CATALOG DESCRIPTION:

This course presents linear, quadratic, logarithmic, polynomial and inverse functions. Additional topics include linear systems and inequalities, complex numbers, and piecewise-defined functions. Emphasis is placed on solving application problems related to business and social sciences.

LEARNING OBJECTIVES : Upon completion of the course, students will be able to :

1. Explore properties of functions from an algebraic, a graphing, and a numerical point of view
2. Investigate the solutions to linear systems of equations and inequalities both algebraically and graphically
3. Perform basic operations on functions and determine composition of functions
4. Determine and graph the inverse of a function
5. Identify exponential and logarithmic models and solve problems related to their applications
6. Develop models to solve a variety of application problems related to real world issues

NOTE: The instructor reserves the right to modify or change the course syllabus as needed with reasonable notification to students.

CALCULATORS:

Calculators will be used in the course. Should you decide to purchase a graphing calculator, a TI-83 or TI-83 PLUS or TI-84 is recommended. The TI-92 and the TI-89 will not be allowed in testing. **CELL PHONES WILL NOT BE USED AS CALCULATORS AND THERE IS NO SHARING OF CALCULATORS!**

HOMEWORK/WRITING/ATTENDANCE:

1. All homework will be completed by using MyMathLab, an on-line computer based resource. All of the homework will be worth a total of **50 points**. All homework for the chapters covered on an exam must be completed by the day of the exam. For example: all of chapter 1 and 2 homework must be completed by the day that we have the first exam. You will receive a zero on each assignment that is not completed by the due date.

It is each student's responsibility to complete their homework in a timely manner. Students are strongly encouraged to complete the on-line homework assignment that corresponds to the sections covered in class **prior to** the next class meeting!

Your Course ID(for MyMathLab): _____

*To calculate your grade for homework in your grade sheet, take your cumulative percent average and divide by 2. That will give you the number of points you have earned out of 50. For example: if you have a cumulative average of 84%, you will have 42/50 points.

2. You may get help in the Student Learning Center (Fallston Hall - 103) on any homework problems you are unable to complete. Please do your homework elsewhere and come to the center with questions.
3. If you have been absent and/or are behind, please try to help yourself first by doing the following:
 - a) Reading your text and working through the examples.
 - b) Studying with a group of classmates, create study groups.
 - c) Using the interactive problems from www.interactmath.com.
4. After you have done what you can, the Tutoring staff will be happy to work with you. The center is **NOT** a substitute for class attendance which is required.
5. **Attendance Policy**. You are required to attend every class. Attendance is worth **20 points**. You are permitted to miss 2 classes for any reason with no penalty. Each class missed after the second one will be a **5 point** deduction per missed class. Any tests missed **cannot** be made up!

TESTS:

1. All tests will be given in class and graded by the instructor.
2. The Final Exam will be given on: _____
3. There are no retakes for failure of tests. Students will strive to do better on the following test.

COLLEGE ALGEBRA GRADES:

Grades will be assigned according to the following standards, unless otherwise noted by your instructor.

Items	Points
4 Exams (100 Points each)	400
1 Take Home Project	30
1 Cumulative Final Exam	100
Homework	50
Attendance	20
TOTAL POINTS	600

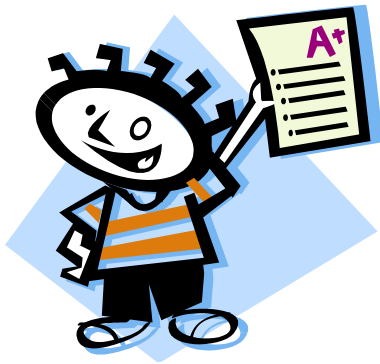
Grade Assignments
A = 540 – 600 points (90%-100%)
B = 480 – 539 points (80% - 89%)
C = 420 - 479 points (70% - 79%)
D = 360 – 419 points (60% - 69%)
F = 359 and below (< 60%)

W = Withdrawal from course by the deadline,

I = Incomplete An instructor has the option to award an incomplete grade only when *extenuating circumstances* exist.

GRADE SHEET

Assignment	Grade Earned	Total Points Possible	Letter Grade
Exam 1 – Ch. 1 & 2		100	
Exam 2 – Ch. 3		100	
Exam 3 – Ch. 4		100	
Exam 4 – Ch. 5		100	
Take Home Project		30	
Homework		50	
Attendance		20	
Final Exam		100	
Total		600	



NOTE: The instructor reserves the right to modify or change the course syllabus as needed with reasonable notification to students.

DISABILITY SUPPORT SERVICES:

HCC is committed to serving students who have documented physical, learning, psychological, or other disabilities. Students who have a disability are responsible for contacting Disability Support Services at 443-412-2402 to discuss their needs for accommodations. All information shared with Disability Support Services will be held in confidence.

ACADEMIC DISHONESTY:

Students will be familiar with and adhere to the policy governing academic dishonesty and its sanctions as outlined in the *Code for Student Rights, Responsibilities and Conduct*, which can be found on OwlNet under the “My Academic Life” Tab or in the HCC Catalog online. For this course, cheating on an in-class test will result in an automatic grade of **F** for the test. This includes incidents that occur in the testing center. Students may be referred to the Dean of STEM or Associate Vice-President for Student Development for a student code violation. Other topics on academic honesty may be found in the student handbook.

STUDENT CONDUCT:

HCC students are bound by the academic policies outlined in the most current HCC Catalog*. It is the student’s responsibility to review these policies prior to the start of each semester. Students who violate these policies may be subject to disciplinary action from the instructor and/or dean of the division and/or the Associate Vice President for Student Development. The HCC Catalog may be accessed online at: <http://www.harford.edu/Catalog/default.asp?FA=Welcome>

CELL PHONES AND OTHER TECHNOLOGY:

Students will be expected to keep their cell phones OFF and away from their pockets and desks at all times. If there is an emergency when you need to keep your cell phone on, then students

- a. Must keep it on “silent” or “vibrate” mode
- b. Must inform your instructor of the situation

Students are also expected to keep their pagers, PDA’s and any other personal communication devices off and out of view as well, keeping with the policies above. Additionally, students will not be permitted to use laptops in the classroom. Students should be writing and working problems during the class in their notebooks.

Finally, students will keep MP3 players and other musical devices off and away from his/her person. Students will remember to take ear plugs out of their ears when in the classroom.

FEDERAL CREDIT HOUR DEFINITION STATEMENTS:

For a 15-week semester, each credit hour represents one hour of classroom or direct faculty instruction and a minimum of two hours of outside class-work per week. For terms that are less than 15 weeks, students should also spend a minimum of two hours outside of class for every hour in class. Academic activities include, but are not limited to reading, writing, studying, research, and completing worksheets. In addition, at least an equivalent amount of out of class work is required for laboratory work, internships, practica, studio work, etc.

At Harford Community College, for all credit courses, students are expected to spend a minimum of 37.5 combined hours of direct instructional time and related coursework time per credit hour. This course is a 3 credit course. This course achieves the minimum of 112.5 hours of combined instructional time by requiring 37.5 hours of direct instructional time and 75 hours of student work outside of direct instructional time.

Title IX Education Policy & Sexual Misconduct: Harford Community College (HCC) is committed to providing a working and learning environment free from sexual misconduct, including sexual harassment, sexual assault, intimate partner violence/abuse, sexual exploitation and sexual intimidation. Sexual misconduct is a form of sex discrimination prohibited by state and federal laws, including Title IX of the Education Amendments of 1972 as amended (“Title IX”) and Title VII of the Civil Rights Act of 1964 as amended, and also may constitute criminal activity. HCC will not tolerate sexual misconduct. The College has implemented measures to ensure that all allegations of sexual misconduct are investigated and resolved in a timely, discreet, fair, and impartial manner. All incidents of sexual misconduct should be reported to the Title IX Coordinator, Dr. Deborah Cruise, by calling 443-412-2233. The complete Sexual Harassment and Misconduct Procedure can be found on OwlNet – My Academic Life Tab (for students) and Work Life Tab (for employees).

HCC Student Attendance Policy: Students are expected to attend all classes and to participate in all learning activities. Missed class time due to obligations such as religious practice, jury duty, military service, or participation in authorized College extracurricular activities will be considered excused absences. Students are responsible for contacting their instructors regarding all attendance matters. Documentation may be required for any excused absence.

Violation of the Student Attendance Policy could result in loss of financial aid, removal from the course, and/or failure of the course. **Faculty are required to report students who are absent or stop attending.**

Students will be considered in violation of the HCC Attendance Policy if any of the following apply:

Face-to-face classes: If at any time, a student has consecutive unexcused absences from scheduled classes equal to 13% of the instructional term.

Online Classes: If a student does not complete assignments, quizzes or tests directed by the instructor and/or outlined in the course syllabus for a consecutive time equal to 13% of the instructional term. Logging into a class without active participation as defined above does not count as attendance.

Hybrid classes: If a student has any combination of consecutive unexcused absences or missed on-line assignments, quizzes or tests equal to 13% of the instructional term.

Stopped Attending Class Chart

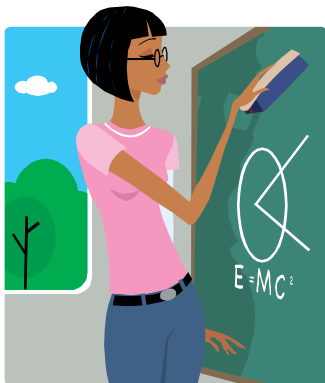
The chart below indicates how many unexcused classes a student must miss consecutively before being considered to have stopped attending. The number of unexcused classes a student can consecutively not attend before being considered to have stopped attending the class is based on 13% of the scheduled classes.

Class Meetings per Week	15 week course	13 week course	10 week course	8 week course	7 week course	6 week course	5 week course	3 week course
1	2	2	*	*	*	*	*	*
2	4	3	3	2	2	2	*	*
3	6	5	4	3	3	2	2	*
4	8	7	5	4	4	3	3	2
5	10	8	7	5	4	4	3	2

* A minimum of two consecutive classes missed are required in order to be listed as stopped attending.

SELF TUTORIAL SUPPLEMENTS:

1. www.interactmath.com Math Tutorial Website provided by Pearson
2. www.mathtv.com Math VDO Tutorial
3. www.algebrahelp.com a collection of Algebra lessons, and worksheets
4. www.analyzemath.com Free Algebra questions and problems with Answers
5. www.coolmath.com An amusement park of math and more
6. www.mathforum.org/math.topics.html Math resources by topics
7. www.purplemath.com The math forums in algebra
8. www.sosmath.com
9. http://en.wikipedia.org/wiki/List_of_curves The lists of fascinating curves



The tentative schedule for MATH 101 COLLEGE ALGEBRA

NOTE: The instructor reserves the right to modify or change the course syllabus as needed with reasonable notification to students.

15-Week section

Class	Topics	Dates
1	Introduction 1.2 Visualizing and Graphing Data	
2	1.3 Functions and Their Representations 1.4 Types of Functions	
3	1.5 Functions and Their Rates of Change 2.1 Linear Functions and Models	
4	2.1 cont. Linear Functions and Models 2.2 Equations of Lines	
5	2.3 Linear Equations 2.4 Linear Inequalities	
6	2.5 Absolute Value Equations and Inequalities	
7	EXAM 1: Chapters 1 & 2	
8	3.1 Quadratic Functions and Models	
9	3.2 Quadratic Equations and Problem Solving	
10	3.3 Complex Numbers	
11	3.4 Quadratic Inequalities	
12	3.5 Transformations of Graphs	
13	EXAM 2: Chapter 3	
14	4.1 More Nonlinear Functions and their Graphs 4.2 Polynomial Functions and Models	
15	4.3 Division of Polynomials 4.4 Real Zeros of Polynomial Functions	
16	4.5 The Fundamental Theorem of Algebra	
17	4.6 Rational Functions and Models	
18	4.7 More Equations and Inequalities (Rational Equations and Inequalities)	
19	4.8 Radical Equations and Power Functions	
20	EXAM 3: Chapter 4	
21	5.1 Combining Functions	
22	5.2 Inverse Functions and Their Representations	
23	5.3 Exponential Functions and Models	
24	5.4 Logarithmic Functions and Models	
25	5.5 Properties of Logarithms	
26	5.6 Exponential and Logarithmic Equations	
27	5.6 (cont'd)	
28	EXAM 4: Chapter 5	
29	6.1 Functions and Systems of Equations in Two Variables	
	Spring Break: March 27 – April 3, 2016	
	CUMULATIVE FINAL EXAM	

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Algebra Review

The distributive law: $a(b + c) = ab + ac$

Laws of Exponents:

$$a^{-n} = \frac{1}{a^n} \quad \sqrt[n]{a} = a^{1/n}$$

$$a^m a^n = a^{m+n} \quad \frac{a^m}{a^n} = a^{m-n}$$

$$(ab)^n = a^n b^n \quad \left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

$$(a^m)^n = a^{mn} \quad a^0 = 1$$

Absolute Value:

$$|x| = \begin{cases} x, & \text{if } x \geq 0 \\ -x, & \text{if } x < 0 \end{cases}$$

Factoring Sum & Difference of Powers

$$a^2 - b^2 = (a - b)(a + b)$$

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

The Perfect Square & Cube

$$(a + b)^2 = a^2 + 2ab + b^2$$

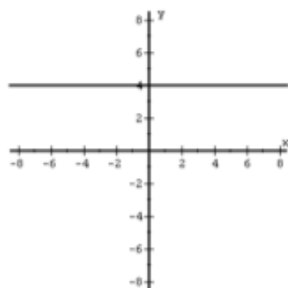
$$(a - b)^2 = a^2 - 2ab + b^2$$

$$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

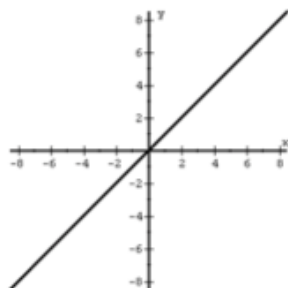
$$(a - b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$$

The Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

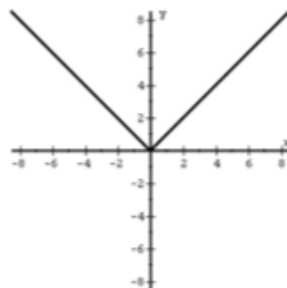
Parent Functions



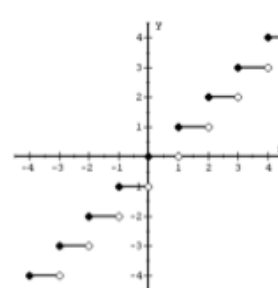
$f(x) = a$
Constant



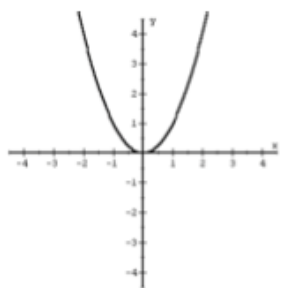
$f(x) = x$
Linear



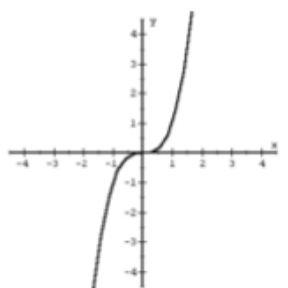
$f(x) = |x|$
Absolute Value



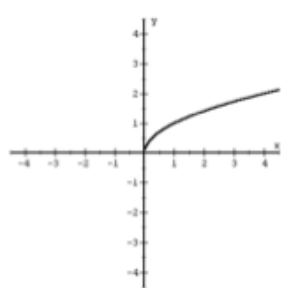
$f(x) = \text{int}(x) = [x]$
Greatest Integer



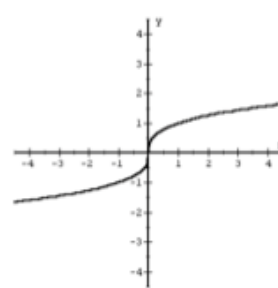
$f(x) = x^2$
Quadratic



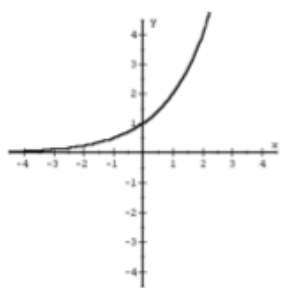
$f(x) = x^3$
Cubic



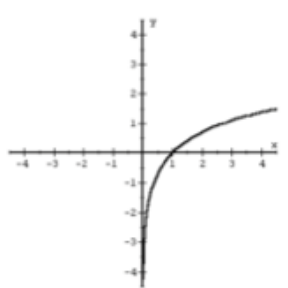
$f(x) = \sqrt{x}$
Square Root



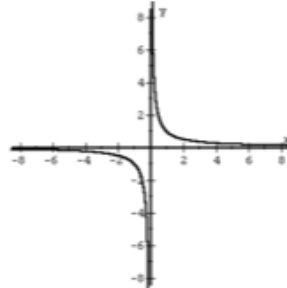
$f(x) = \sqrt[3]{x}$
Cube Root



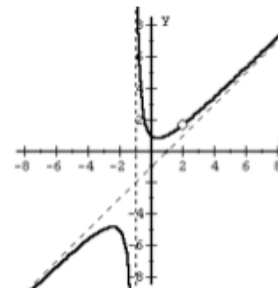
$f(x) = a^x$
Exponential



$f(x) = \log_a x$
Logarithmic



$f(x) = \frac{1}{x}$
Reciprocal



$f(x) = \frac{(x^2 + 1)(x - 2)}{(x + 1)(x - 2)}$
Rational