

# Math 102, Intermediate Algebra

Shasta College, Fall 2012, Section F1608

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**Course:** Math 102, Intermediate Algebra  
MTWThF, 8 to 8:50 am  
Room 1119  
5 Credit Hours

**Instructor:** Thomas Glass

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**Office Hours:** TTh: 9 to 10 am  
MWF: 10:00 to 11:00 am

1. **Catalog Description.** A second course in algebra at the developmental level. This course prepares the student to take a baccalaureate level general education mathematics course. Topics covered include equations and functions of the following types: quadratic, exponential, logarithmic, rational, and radical. The course also covers systems of linear equations and inequalities in two variables and quadratic inequalities in one variable. Applied problems are encountered throughout the course.

- (a) Pre-requisite: A grade of C or higher in MATH 101 or MATH Placement Level 3 or higher.
- (b) Advisory: A grade of C or higher in ENGL 190 or English Placement Level 6 or higher.

## 2. Course Objectives.

Upon successful completion of this course, the student should be able to:

- (a) Graph the solution set for a linear equation in two variables.
- (b) Find  $x$  and  $y$  intercepts from an equation or a graph.
- (c) Compute the value of the slope algebraically by using  $\frac{y_2 - y_1}{x_2 - x_1}$
- (d) Graph the solution set of a linear inequality in the plane.
- (e) Find solutions to systems of linear equations algebraically.
- (f) Find the equation of a line.
- (g) Solve applied problems involving linear equations.
- (h) Explain the definitions of the expressions  $A^{\frac{m}{n}}$  and  $\sqrt[n]{A^m}$ .
- (i) Solve equations involving radical expressions.
- (j) Graph the functions  $y = x^{\frac{1}{n}}$ , for all  $n \in \mathbb{N}$ .
- (k) Solve applied problems involving radical expressions.
- (l) Add, subtract, multiply and divide simple rational expressions.
- (m) Solve an equation involving rational expressions.

- (n) Divide a polynomial by a binomial to produce a quotient and a remainder.
  - (o) Solve applied problems involving rational expressions.
  - (p) Use function notation.
  - (q) Sketch the graph of a function given a formula.
  - (r) Explain the meaning of a one-to-one function.
  - (s) Find the inverse of a linear function.
  - (t) Solve a quadratic equation in one variable by factoring.
  - (u) Solve a quadratic equation in one variable by using the quadratic formula.
  - (v) Sketch the graph of  $y = ax^2 + bx + c$  by finding the vertex and the  $x$  and  $y$  intercepts.
  - (w) Identify the standard form of a parabola.
  - (x) Solve applied problems involving quadratic functions.
  - (y) Solve a quadratic inequality in one variable.
  - (z) Use the definition of a logarithm function.
- (a) Use the definition of an exponential function.
  - (b) Use the property  $A = C$  implies  $\log(A) = \log(C)$  to solve equations.
  - (c) Solve equations involving exponential expressions, e.g.  $a^y = x$ .
  - (d) Solve equations involving logarithmic expressions, e.g.  $\log_a x = y$ .
  - (e) Calculate the value of a logarithmic expression.
  - (f) Graph exponential and logarithmic functions.
  - (g) Solve applied problems involving exponential expressions.
  - (h) Solve applied problems involving logarithmic expressions.

3. **Student Learning Outcomes.** Upon successful completion of the course, a student should be able to accurately apply steps of problem solving to solve a problem as follows:

- (a) Demonstrate understanding of the problem.
- (b) Choose an appropriate problem-solving strategy.
- (c) Effectively solve the problem using the chosen strategy.
- (d) Clearly state the correct solution to the problem.

**Example.** Sophie Germain took her life savings (\$150) to a tax-free clearance sale at Media Warehouse where she wanted to buy some Blu-Rays and some CDs. She could buy 4 Blu-Rays and 8 CDs and have \$6.28 left or she could buy 6 Blu-Rays and 4 CDs and have \$2.66 left. At this sale, all Blu-Rays are the same price and all CDs are the same price. Find the sale price of one Blu-Ray and the sale price of one CD.

4. **Assigned and Recommended Text and Materials.**

- (a) **Required Text.** *“Math 102 Intermediate Algebra Problem Set”*
- (b) **Required Materials.**
  - i. The “Required Text”.

- ii. Paper, pencil, eraser and notebook. I would suggest a 3-ring binder, but the choice is yours.
- iii. [www.SumOfCubes.weebly.com](http://www.SumOfCubes.weebly.com)
- iv. The Math Lab, located in the 700 Building has a reserve copy and solutions manual available.
- v. A scientific calculator. I can assist you in learning and using the TI 83, 84, Inspire and 89. Further, these calculators are standard in most colleges. Learning how to use one will assist you in your future learning endeavors.

## 5. Statement of Instructional Methods.

- (a) **Success.** Come to class ready to participate, take notes, and ask questions. Each class period will begin with an open session to review homework. This is your chance to ask questions regarding the assigned homework.

Be prepared for class by bringing all required materials and having completed or at least attempted homework assigned in the last class.

Find a study partner. You will find that the more you talk, write and see math, the better and easier it is to learn and remember.

If there is one piece of advice that works best, it is: “Repetition is the mother of all learning.” The more you see strategies to solve and utilize what you have learned, the easier the next concept becomes. I will show you how to solve and work in the math environment, and it may appear easy. But, at some point you need to do it on your own, without my guidance, to really “own” the concept.

Office hours are for the student, not the professor. Office hours are your time to ask me questions. If you are struggling with homework or something we did in lecture and you have a question, please come ask. Sometimes a little one-on-one help is all you need. My office hours are on the top of the first page, but if I’m in the office, and the door is open, you are welcome.

Shasta College staffs a full-time **Math Business Learning Center**. It is a place to get free math tutoring. It is staffed with helpful math tutors who like to talk math and are there to assist you. Put them to work and keep them busy. In addition to the tutors are videotapes, software, and solutions manuals. The Math lab is open **Monday-Friday**.

- (b) **Note.** This syllabus is subject to change by the instructor. Any changes will be announced in class and are the responsibility of the student.

## 6. Course Content.

- (a) Quadratic Polynomials
  - i. Solving quadratic equations in one variable.
  - ii. Graphs of quadratic functions.
  - iii. Quadratic inequalities in one variable.
  - iv. Applications of quadratic equations and functions.
- (b) Linear equations in two variables
  - i. Graphing
  - ii. Finding slope
  - iii. Writing equations

- (c) Linear systems
  - i. Systems of linear equations
  - ii. Systems of linear inequalities
  - iii. Applications of systems of linear equations and linear inequalities
- (d) Exponential expressions
  - i. Exponential equations in one variable
  - ii. Exponential functions
  - iii. Applications of exponential equations and exponential functions
- (e) Logarithmic expressions
  - i. Logarithmic equations in one variable
  - ii. Logarithmic functions
  - iii. Applications of logarithmic equations and logarithmic functions
- (f) Radicals and Rational Exponents
  - i. Definition of radical expressions
  - ii. Definition of rational exponents
  - iii. Equations involving radicals
  - iv. Equations involving rational exponents
  - v. Graphs of radical functions
  - vi. Applications of radicals and rational exponents
- (g) Rational expressions
  - i. Definition of rational expressions
  - ii. Arithmetic of rational expressions
  - iii. Division of a polynomial by a binomial
  - iv. Solve equations involving rational expressions
  - v. Applications involving rational expressions

## 7. Grading Policies.

- (a) **Exams.** There will be 4 exams and a final exam. Exam dates will be announced in class at least one class prior to the exam. Exams will comprise both written and multiple choice questions. Your lowest exam score will be dropped in determining your class grade. If you must miss a class for any reason, and your absence causes you to miss an exam, that is the exam you drop. *There are no make-up exams.*
- (b) **Final Exam.** The final exam is mandatory and is not dropped in calculating your grade. The final exam will only be administered on Monday, December 17<sup>th</sup> from 8:00 am to 10:00 am.
- (c) **Grading.** Grades will be posted online. You may view your grades at any time via SumOfCubes.com or via GradeSource.com. You will need a secret code to discern which grade is yours. If you would like to utilize this resource, make sure I have your correct email address.

Exams (drop the lowest)	75%
Final Exam	25%
<i>Total</i>	100%

Grade Scale	
90% ≤	A
80% ≤	B < 90
70% ≤	C < 80
60% ≤	D < 70
	F < 60

## 8. Classroom Policies.

- (a) **Electronic Devices.** This is a cell phone free class. All cell phones, blackberries, pagers, iPods, iPads, etc are to be turned off or silent. Students found using such devices during class will receive a zero on the next exam.
- (b) **Email.** Much of an education is the ability to clearly communicate and express ideas; thus, if you choose to communicate with me via email, it must be done using proper English grammar. I will not respond to any emails that are not properly composed.
- (c) **In Class Communication.** If you have a question, please raise your hand and ask. Do not converse with your neighbor during class unless instructed. Disruptive behavior is not appreciated. You will be asked to leave the classroom for the remainder of the class.
- (d) **Guests and Children.** Only authorized persons are allowed in the classrooms. College liability coverage does not extend to guests or children and thus they are not allowed in the classroom. If a student needs assistance with childcare during class time, please contact the EOPS office. EOPS may be able to help with long-term day care; however, it does not provide day-care service on a drop-in basis.

## 9. College Policies.

- (a) **Academic Honesty:** According to the Shasta College Student Handbook and the Shasta College Catalog, there are a number of unauthorized behaviors that violate the campus academic honesty policy. Each student should become familiar with the policy. Failure to acknowledge the work of other scholars constitutes an egregious breach of ethics and is a violation of civil law. You must, in all cases, do your own work, acknowledge sources, and document them appropriately. Otherwise, disciplinary sanctions will be applied. If you have any questions about plagiarism, please do not hesitate to contact me. In other words, cheating of any sort will not be tolerated and will result in an F for the assignment, quiz, or exam, and the case may be reported to the Dean of Students.
- (b) **Student Conduct and Discipline:** In accordance with the Student Code of Conduct (Board Policy 5500), students are expected to obey all California State laws and all Federal laws that pertain to behavior on a college campus. Shasta Colleges jurisdiction and discipline shall be limited to conduct that occurs on Shasta College premises or that is related to school activities. Any student found to have committed misconduct is subject to the disciplinary sanctions outlined in Board Policy, Section 5520.
- (c) **Dropping:** If a student misses two consecutive weeks of class or more it may be assumed they are no longer interested in the course. School policy notes that these students may be dropped by the instructor either on census day or via the instructor initiated drop process. Nevertheless, if the student decides to stop attending, it is always the students responsibility to officially drop or withdraw from the class.

(d) Academic accommodations imposed by a disability: If you feel that you will need academic accommodations in this class due to limits imposed by a disability then contact the office of Disabled Students Programs and Services (DSPS) (242-7790) to make the necessary arrangements. It is the student's responsibility to provide documentation that verifies the disability and the type of limitations that may result. The DSPS office has been delegated the authority to, 1) evaluate that documentation and determine if it is sufficient to justify accommodations, 2) determine which accommodations are appropriate, and 3) facilitate the provision of approved accommodations.

10. **Tentative Schedule.** This class will progress through the book, beginning with Chapter G. The first exam will cover Chapter L and S. The second exam covers Chapter F and V. The third exam covers Chapter Q, and the fourth exam covers Chapter E. Exam dates will be announced in class at least one class prior to the exam.

Please note that this is a tentative schedule and is subject to change by the instructor. Changes will be announced in class are the the responsibility of the student to be abreast of such changes.