



Chesapeake Bay Governor's School  
For Marine and Environmental Science  
Glenns Campus

**College Algebra (MTH 158)**  
**Fall 2015**  
Phillip L. Sanderson

**Course Description (RCC MTH 158):**

College Algebra is taught to the students in the fall semester of their sophomore year. The course will provide students with the algebraic foundation for Pre-Calculus I and II. College Algebra will take many of the concepts students have been exposed to and give them a more thorough treatment. Students will study radicals and radical equations, polynomials, rational expressions and functions, solving quadratics, domain and range, transformations, and inverses.

**Text:**

Precalculus, 4th Ed.; Blitzer: Prentice Hall; 2010

*Please cover this text and keep it covered throughout the year!*

**Course Credit:** 3 credits

**Contact Information:**

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I am available at CBGS from 7:30 AM to 3:00 PM by phone or email and at the home or cell number after school.

**Required Materials:** One 3-ring binder, pencils, a large block eraser, and a graphing calculator. Graph paper and colored pencils may be useful.

**Attendance:** Class attendance is, of course, required. Be reminded of the CBGS policy in the *Handbook* which you signed. Absences and tardiness will be reported daily to your home school and to parents on interims and grade reports. Check for assignments you may miss by accessing the web site and clicking "courses." You may also email or call me for assistance.

## Course Outline/Learning Sequence

### Ch. P Prerequisites: Fundamental Concepts of Algebra

*We will be starting the semester with P.6 (Rational Expressions) and skipping P.1 - P.5, all of which should be taken care of via the summer Math XL work or in Math Prep/New Student Orientation.*

*Please take some time to look over this material. If anything looks unfamiliar, please bring it to my attention.*

- Rational expressions (simplifying, multiplying/dividing, adding/subtracting, difference quotient, rationalizing)
- Solving rational equations
- Solving absolute value equations
- Solving quadratic equations (all methods), discriminant
- Solving radical equations
- Modeling with equations (word problems, literal equations)
- Solving linear inequalities and absolute value inequalities, interval notation

### Ch. 1 Functions and Graphs

- Relations, domain and range, functions, functions as equations, function notation, graphs of functions, domain and range of a function from a graph
- Increasing/decreasing functions, relative extrema, even/odd functions, symmetry, evaluating and graphing a piecewise function, functions and difference quotients
- Graphs of common functions, vertical and horizontal translations, reflections of graphs, vertical stretching and shrinking, sequencing transformations
- Domain of a function, operations with functions, composition of functions, decomposing functions
- Definition of function inverses, finding the inverse of a function, horizontal line test and one-to-one functions, graphs of inverse functions

### Ch. 2 Polynomial and Rational Functions

- Complex numbers, operations with complex numbers, quadratic equations with imaginary solutions
- Graphs of quadratic functions, graphs of quadratic functions from vertex form and standard form, applications of quadratic equations, solving quadratics to maximize and minimize
- Polynomial functions, end behavior, zeros of polynomial functions, intermediate value theorem, graphing polynomial functions
- Long division of polynomials, synthetic division, remainder theorem and factor theorem
- Zeros of polynomial functions, rational zero theorem, finding roots of polynomial equations, fundamental theorem of algebra, Descartes' rule of signs
- Rational functions, domain of rational functions, graphs of rational functions and vertical asymptotes, horizontal asymptotes, graphs of rational functions
- Using direct and inverse variation to model real world applications

**Make-up work policy:** I will not be using class time to remind you of any work that you have missed—our time together is too brief. That will be your responsibility and yours alone. Work that is severely late will be penalized and work that is still missing at the end of the grading period will be a zero.

**Honor Code:** Students are expected to follow the rules and procedures as outlined in the Student Honor Code. Please refer to the Student Handbook if you need guidelines. Failure to do so may result in dismissal from the course. Tests, quizzes, and other work as requested will be pledged.

**Emergency Evacuation Plan:** In each classroom, laboratory or other places where students are assembled for the purpose of instruction, a fire evacuation plan will be posted indicating the direction of travel from the room in the event it becomes necessary to evacuate the building as a result of fire or other emergency. This plan will be posted in a conspicuous place near the exit from the room.

Whenever the fire alarm sounds, the building will be evacuated. The instructor will ensure the fire door is closed upon leaving the area (doors with automatic closures on them). Instructors are also responsible for assisting disabled students.

If a classroom does not have an evacuation plan posted, the student or instructor should notify the academic dean.

### ***Course Expectations and Information:***

1. **Be Prepared:** Regardless of whether homework is graded or not, it will be essential to your *survival*. Promise. No siestas, no holidays. If you fall behind, you will have to work at least twice as hard to catch up. Always do homework, always take notes, always ask questions, always be prepared.
2. **Class Participation:** You **MUST** ask questions about concepts that you feel need better clarification. Do not worry about anyone's reaction, ask. Be engaged from the beginning and stay that way. Remember, I do not start actually teaching until you start asking questions. Until that point, I might as well be working from a script.
3. **Notebook:** As mentioned earlier, you will want a 3-ring binder. All materials I give you (quizzes, tests, worksheets, handouts, ...) will be three-hole punched and need to be kept in your binders. **BE ORGANIZED.** Very few sloppy students can be successful math students. Many of you find that if you are physically disorganized, you will also be mentally disorganized...not good for mathematics.
4. **Homework and Assessments:** Homework will be assigned daily to correspond to the classroom lecture. Assignments will be Math XL assignments and posted for the week by Monday afternoon and will be due by the following Monday. Because there is no limit to the number of times you can work a specific type of problem to get it correct, these homework assignments will be built into your grade *for at least the first nine-weeks*. There will be an opportunity each class period to ask questions about anything you are having difficulty with, though this should be minimal because of the on-line resources provided by Math XL.

5. **Grading:** I use a “total points” system. Every assignment (quiz, test, classwork, homework) will be given a number of points it is worth (the sum of the points from all of the questions). Your grade will be the points you earned relative to the points the assignment was worth. To compute your average at any point in the semester, take the total points earned and divide by the total points available.
  
6. **Cell Phones:** All cell phones and other electronic devices must be silenced and are not to be used during class, unless permission is given otherwise. If used in an unauthorized manner, electronics will be confiscated and returned at the end of the class period. Repeat offenders will be referred to the CBGS director.
  
7. **Tips on how to survive this and other college level courses:**
  - Do not fall behind.
  - Do all homework.
  - Ask questions.
  - Form a study group or just do homework with a partner.
  - Be organized!!
  - Schedule your time and use it effectively!
  - You need to be self-motivated in college!

## Inclement Weather and School Closings Policy

- Closing of the Chesapeake Bay Governor's School is determined by the site (Rappahannock Comm. College-Glenns, Rappahannock Comm. College- Warsaw, or Caroline County School Board). For example: Essex County Schools may be closed due to weather but RCC-Warsaw is open; therefore CBGS will be in session.
- If a school system is closed due to inclement weather and the CBGS is open, students from the *closed* school system may attend pending the safety of the roads and permission from parents.
- There may be an emergency in which the CBGS is closed and the particular school system is open. Students shall report to their respective school instead of going to CBGS.
- If there is a one-hour delay for the CBGS site (RCC- Glenns/Warsaw and Caroline), CBGS will open one hour late.
- If there is a two-hour delay for the CBGS site, CBGS will be closed and students are to report to their home high school.
- If the home high school opens one hour late, and CBGS opens on time, students from the home high school are to report to CBGS, one hour late.
- At the Glenns site (and other sites as well) we have a phone tree to notify students directly of CBGS closings.

### **CBGS Statement on Safety:**

What to know and do to be prepared for emergencies at CBGS/RCC:

- Sign up to receive RCC text messaging alerts and keep your information up-to-date  
<<https://alert.rappahannock.edu/index.php?CCheck=1>>
- Know the safe evacuation route from each of your classrooms. Emergency evacuation routes are posted in campus classrooms.
- Listen for and follow instructions from CBGS/RCC or other designated authorities.
- Know where to go for additional emergency information.
- Report suspicious activities and object

### **Statement on Americans with Disabilities Act**

Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 require Schools to provide an 'academic adjustment' and/or a 'reasonable accommodation' to any qualified individual with a physical or mental disability who self-identifies as having such. Students should contact/ inform CBGS faculty for appropriate academic adjustments or accommodations.