

MATH 2 Course Syllabus
Spring Semester 2012
Instructor: Brian Rodas

Class Room and Time: MC 73 MTWTh 9:30am-10:35am
Office Room: MC 35 **Office Phone:** (310)434-8673 **E-mail:** rodas.brian@smc.edu
Office Hours: M 11:00am-12pm & TTh 3:15pm-4:15pm; W 3:30pm-4:30pm(Math Lab) and by appointment
Class Website: <http://homepage.smc.edu/rodas.brian>
Homework Website: <http://webassign.net/student.html>
Text: Sullivan and Sullivan. *Precalculus-Concepts through Functions: A unit Circle Approach to Trigonometry* (2nd edition), Prentice Hall 2011

Course Description: This course is an **intensive** preparation for calculus. We will cover the following topics: algebraic, exponential, logarithmic and trigonometric functions and their inverses and identities, conic sections, sequences, series, the binomial theorem and mathematical induction. The prerequisites for this course are Math 20 and Math 32.

Homework: Homework will be assigned daily but not necessarily collected. The problems assigned are from the textbook and are meant to be practice problems in understanding the material covered for the day. It has been known that a genuine understanding and completion of the homework results in quality performance.

Web Assign: Supplemental homework is downloaded and submitted on line through web-assign. These on line assignments will be graded and must be completed and entered into the web by the due date for credit. Log-in at: <http://webassign.net/student.html>

Quizzes: There will be two or three quizzes before each exam. They will be approximately 10-15 minutes long. It has been my nature to give quiz problems identical to the homework. Therefore it would be in your best interest to do the homework. Each quiz is worth ten points. I am aiming to have fifteen quizzes of which I will drop the three lowest scores.

Exams: There will be five exams and a final. Each exam is worth 100 points. The lowest exam will be scaled out of 50 points. So if your test scores are 100, 90, 80, 70, and 60, then your test average is $(100+90+80+70+30)/450$. The final is worth 200 points and is cumulative. You must show all necessary work to receive full credit.

Grading:

| | |
|------------------|------------|
| Top four exams | 400 points |
| Lowest exam | 50 points |
| Quizzes | 75 points |
| On line Homework | 75 points |
| Final exam | 200 points |
| Total | 800 points |

The expectation is that a letter grade will be given using the following scale for the semester average: 90-100%(A), 80-89%(B), 70-79%(C), 60-69%(D), 0-59%(F).

Calculators: A graphing calculator is nice to have for this course but is not required. It can be used for tedious exercises, checking homework answers, and explorations but generally is not allowed for quizzes or exams.

Academic Conduct: You are expected to abide by Santa Monica College's code of academic conduct on all exams, quizzes and homework. Copying homework solutions or quiz or test answers from someone is considered cheating as is altering a quiz or examination after it has been graded or giving answers to someone during an exam or quiz. If caught cheating or using an electronic device during an exam, the parties involved will receive a zero on the exam and an academic dishonesty report will be filed. Note that cell phones are to be turned off for the duration of each class..

Since attendance is essential for normal progress in class, a student is expected to be in class regularly and on time. Missing classes puts you in danger of being dropped. **There are no makeup assignments, quizzes or exams. Late assignments will not be accepted.** No excuses. Students are responsible for all material and announcements given in class. Refer to the school's web page, www.smc.edu, for withdrawal dates. Note that the last day to withdraw with a guaranteed W is Sunday April 8, 2012 by phone/web. **IT IS THE STUDENT'S RESPONSIBILITY TO BE AWARE OF WITHDRAWAL DATES AND TO TAKE THE APPROPRIATE NECESSARY STEPS.** If a student does not withdraw and stops coming to class, the student will receive a failing grade.

Learning Mathematics: Learning mathematics takes time and consistent effort. Attending class regularly, completing all assignments and reading class notes are essential for success in this course for most students. Students in need of additional assistance should be encouraged to make use of the Math Lab where instructional assistants, tutors and mathematical tutoring software are available. The Math Lab is located in MC84 and is open Monday-Thursday 8am-10pm and Friday 8am-4pm. Forming study groups outside of class may also offer further support.

Supplemental Instruction: A Supplemental Instruction (SI) component will be provided for all students in MATH 2 this semester who want to improve their understanding of the material taught in this course. SI sessions will be led by a fellow student who has already mastered the course material and has been trained to facilitate group sessions where students can meet to compare class notes, review and discuss important concepts, develop appropriate strategies for studying, and prepare for exams. Attendance is free and voluntary. Students may attend as many times as they choose. There will be two (2) available SI sessions offered per week beginning the week of February 20. Once they are determined, session days and times will be given to you. This is a wonderful opportunity!

Entry Skills for Math 2: Students should be able to do the following:

- A. Simplify advanced numerical and algebraic expressions involving multiple operations.
- B. Perform operations on polynomials.
- C. Solve literal equations for a designated variable.
- D. Solve polynomial equations by factoring.
- E. Complete the square.
- F. Solve quadratic equations by using the quadratic formula and completing the square.
- G. Solve rational and radical equations.
- H. Use interval notation to express the solution to a linear, quadratic or rational inequality.
- I. Solve application problems using equations.
- J. Find the domain and range of linear, quadratic and absolute value relations.
- K. Graph linear, quadratic, absolute value relations.
- L. Find the domain of rational and square root functions.
- M. Determine the inverse of a function.
- N. Convert between exponential and logarithmic forms.
- O. Evaluate and graph exponential and logarithmic functions.
- P. Graph parabolas and circles by completing the square.
- Q. Solve elementary logarithmic and exponential equations.
- R. Solve systems of linear equations in two variables by elimination.
- S. Evaluate simple expressions involving sigma notation.

- T. Graph simple functions by vertical and horizontal translation.
- U. Distinguish between hypotheses and conclusion.
- V. Describe the relationship between a theorem and its converse, inverse and contrapositive.
- W. Set up and complete simple and indirect proofs.
- X. Perform basic geometric constructions.
- Y. Apply geometric theorems involving similar and congruent triangle; parallel lines; parallelograms and their properties; lines and circles and their properties; lines and circles and their relationships; right triangles (Pythagorean Theorem).

Exit Skills for Math 2: Upon completion of this course, students will be able to:

- A. Determine whether a relation represents a function. If it is a function, determine its domain and range; determine whether it is odd or even or neither based on its formula or its graph; and determine whether it is one-to-one, and if it is, determine its inverse function and its domain and range.
- B. Analyze and graph a given function, including but not limited to piecewise-defined, polynomial, rational, exponential, logarithmic, trigonometric, and inverse trigonometric functions, without the aid of graphing devices. Determine intercepts, coordinates of holes, and equations of asymptotes. Determine intervals on which polynomial and rational functions are positive and are negative.
- C. Use transformation techniques including vertical and horizontal shifts, compression, stretching, and reflection over the x- or y-axis to sketch the graph of a function.
- D. Use the language and standard mathematical notation of the algebra of functions.
- E. Determine algebraic combinations and compositions of functions and state their domains. Write a given function as a composition of two non-identity functions.
- F. Use techniques and facts including synthetic division, long division, the Fundamental Theorem of Algebra and the Rational Zeros Theorem to find all complex zeros of a polynomial function of degree three or higher, and write the function in a completely factored form.
- G. From memory, state and apply the definitions of the six trigonometric ratios of sides of right triangles; the definitions of the six trigonometric functions of real numbers using the unit circle; and the definitions, domains and ranges of the inverse sine, inverse cosine, and inverse tangent functions.
- H. Evaluate trigonometric functions at integer multiples of $\pi/6$ and $\pi/4$, including values outside of $[0, 2\pi]$, without the use of notes or calculators. Evaluate compositions of trigonometric functions and inverse trigonometric functions including ones for which cancellation equations do not apply.
- I. From memory, state and apply the fundamental reciprocal, quotient and Pythagorean trigonometric identities and the sum, difference, double-angle and half-angle identities for sine and cosine.
- J. Write algebraic and trigonometric relationships to solve application problems, including solution of right and oblique triangles by the Law of Sines and Law of Cosines.
- K. Prove trigonometric identities including those which require the use of sum, difference, double-angle and half-angle identities.
- L. Solve polynomial, rational, exponential, logarithmic, and trigonometric equations.
- M. Given a quadratic equation in variables x and y , with no xy term, put it into a standard form in order to classify its graph as one of the conic sections (circle, ellipse, parabola and hyperbola). Determine the directrix, center, vertex points, focus points, major/transverse axis, and minor/conjugate axis, if they exist, and sketch the graph of the conic section.
- N. Find terms of explicitly and recursively defined sequences. Find the n th term in a sequence whose first several terms are given.
- O. Evaluate, manipulate and interpret summation notation.
- P. Prove statements using mathematical induction.
- Q. Apply the binomial theorem to expand an integer power of a binomial and find a required term.
- R. Synthesize multiple skills and techniques in order to solve a complex, multi-step problem.

SCHEDULE OF LECTURES, HOMEWORK & EXAMS

| Date | Section | Material | Homework |
|------|-------------|--|--|
| 2/13 | A.4 A.8 | Factoring Solving Equations | 5-121* 9-65odd |
| 2/14 | A.7 A.10 | n th Roots Inequalities | 7-23odd,47,53-73odd,75-97odd 11-87odd |
| 2/15 | 1.1 1.2 | Functions Graphs of Functions | 15-61odd 9-21odd,23,25 |
| 2/16 | F3 F4 | Lines Circles | 11-89* 11-25 odd |
| 2/20 | | President's Day (No class) | |
| 2/21 | 1.3 | Properties of Functions | 11-67odd |
| 2/22 | 1.4 | Library of Functions | 9-53odd |
| 2/23 | 1.5 | Transformations | 7-67odd,69,71(omit g) |
| 2/27 | 1.1 4.1 | Combining Functions Composite Functions | 63-73odd 9-57odd |
| 2/28 | 1.6 | Math Models | 1-23odd |
| 2/29 | | Review for Exam 1 | |
| 3/1 | | Exam 1 on Ch. 1, F.3,F.4,A.4,A.7,A.8,A.10 | |
| 3/5 | 2.3 2.4 | Quadratic Functions Properties of Quadratic Functions | 11-105* 11-27odd |
| 3/6 | 2.4 2.6 | Properties of Quadratic Functions Building Quadratic Models | 29-79odd 7,9,11a-c,15,18 |
| 3/7 | 2.5 3.4 | Quadratic Inequalities Polynomial and Rational Inequalities | 7-23odd 19-45odd,49-59odd |
| 3/8 | 3.1 | Polynomials | 1-47odd |
| 3/12 | 3.1 3.2 | Polynomials Properties of Rational Functions | 49-85odd,95-107odd 13-53odd |
| 3/13 | 3.3 | Graph of Rational Functions | 7-53odd,55,59 |
| 3/14 | A.5 3.5 | Synthetic Division Real Zeros of a Polynomial Function | 5-25odd 11-67odd,77-81odd,91-109odd |
| 3/15 | | No class | |
| 3/19 | A.11 | Complex Numbers | 9-51odd |
| 3/20 | 3.6 | Complex Zeros | 7-39odd |
| 3/21 | | Exam 2 on Ch 2&3,Sections A.5,A.11 | |
| 3/22 | 4.2 | Inverse Functions | 19-81odd |
| 3/26 | 4.3 | Exponential Functions | 33-95odd,101-107odd |
| 3/27 | 4.4 | Logarithmic Functions | 9-47odd,59-111odd,117,119 |
| 3/28 | 4.5 | Properties of Logarithms | 13-97odd |
| 3/29 | 4.6 | Logarithmic and Exponential Equations | 5-85odd |
| 4/2 | 4.8 | Growth and Decay Models | 1-19odd |
| 4/3 | | Review | |
| 4/4 | | Exam 3 on Chapter 4 | |
| 4/5 | 5.2 | Trigonometric Functions | 13-63odd,77-101odd |
| | | SPRING BREAK(4/9-4/19) | |
| 4/16 | 5.3 | Properties of Trig Functions | 11-87odd,95-99odd,113-117odd |
| 4/17 | 5.4 | Graphs of Sine and Cosine | 9-69odd |
| 4/18 | 5.5 | More Trig Graphs | 7-43odd,49 |
| 4/19 | 5.6 | Phase Shift | 3-25odd |

| Date | Section | Material | Homework |
|------|---------|--|----------------------------|
| 4/23 | 6.1 | Inverse Trig Functions | 13-63odd |
| 4/24 | 6.2 | More on Inverse Trig Functions | 9-77odd |
| 4/25 | 6.3 | Trig Equations | 11-43,57-79 |
| 4/26 | 6.4 | Trig Identities | 19-93* |
| 4/30 | 6.5 | Sum and Difference Formulas | 11-39odd,47-65odd,73,77,83 |
| 5/1 | 6.6 | Double Angle & Half Angle Formulas | 7-27odd,47-57odd,79-89odd |
| 5/2 | | Review | |
| 5/3 | | Exam 4 on Chapters 5 & 6 | |
| 5/7 | 5.1 | Angles and their Measures | 11-21odd,35-93odd |
| 5/8 | 7.1 | Right Triangle Trigonometry | 9-47odd,51-69odd |
| 5/9 | 7.2 | The Law of Sines | 9-57odd |
| 5/10 | 7.3 | The Law of Cosines | 9-51odd |
| | 7.4 | Area of a Triangle | 5,7,13,15,17,25,27,33 |
| 5/14 | 9.2 | Parabola | 11-61odd, 67-73odd |
| 5/15 | 9.3 | Ellipse | 13-63odd,69-75odd |
| 5/16 | 9.4 | Hyperbola | 15-73odd,77 |
| 5/17 | 11.1 | Sequences | 9-79odd |
| 5/21 | 11.2 | Arithmetic Sequences | 11-53odd |
| 5/22 | 11.3 | Geometric Sequence | 13-81*,88 |
| 5/23 | 11.4 | Mathematical Induction | 1-21odd |
| 5/24 | 11.4 | Mathematical Inductions | 23-27odd,31 |
| | 11.5 | Binomial Theorem | 5-28 |
| 5/28 | | Memorial Day (No class) | |
| 5/29 | 11.5 | Binomial Theorem | 29-42 |
| 5/30 | | Review | |
| 5/31 | | Exam 5 on Chapters 7,9 & 11 | |
| 6/4 | | Review of the entire course | |
| 6/7 | | FINAL EXAM 8-11am | |

* Every other odd

The instructor does reserve the right to add or modify the syllabus.

WEB ASSIGN

Web Assign is a web based homework system. The purpose of this is to practice more involved problems to supplement the problems in the textbook. See the Notes from Web Assign section on the last page of the syllabus. for system requirements and tips. The website for web assign is

<http://webassign.net/student.html>

To use web assign, you will need a user name, password, and an access code. I will provide you with the user name and password. The sign-in sheet has your username. Please write it down in your notebook. **YOUR PASSWORD IS YOUR STUDENT ID NUMBER.** To get the access code, you must purchase the code on line. Note that you will need a credit card. If for some reason you can't purchase the code online, you can purchase the code at the bookstore. Tell the cashier at the bookstore that you need a stand alone web assign access code for Professor Rodas' Math 2 class.

When you go to the website, you will be asked for your user name, institution and password. The institution is SMC. Once you have logged in, web assign will inform you that you have not entered your access code. You can then purchase it online. **NOTE:** For the first 14 days you will not need an access code. This is a grace period should you decide not to continue in this course. After the 14 day grace period if you decide to stay in the course, you will have to purchase the access code. You will not be able to do any of the assignments after the grace period without having entered the access code. This is a one time thing.

Once you have logged into web assign, you are then able to complete any and all assignments listed by their due dates. All assignments will be due at 11:59pm. There are no extensions granted. No excuses. If you don't have access to the internet at home, you can use one the computer labs at school including the Math Lab, the Cayton Center lab, and the Library.

If you have any problems entering answers into web assign, there is an online student handbook that can help. Also feel free to come by my office and I will be glad to help you. Note that I will not take class time to go over web assign problems. Also note that everyone has different versions of the same problem. Cheating will not be tolerated, however, I do encourage you to form study groups. These problems will take you some time to do so do not wait until the last minute to do them. For the majority of the problems, you will have up to five chances to enter in answers. If you enter an answer three times and are convinced it is right, double check your syntax. If that is correct review the problem with me during my office hours. **DO NOT HAVE THE MATH LAB TUTORS DO THE PROBLEM FOR YOU.** They are familiar with the system and have been informed not to give you answers. They will aid you in solving the problem.

One final note: Once you submit all your answers for a particular assignment, web assign will grade it and give you immediate feedback. That's great. However, do not spend all your time on web assign. You must do the homework in the book as well. **The concepts you will learn are a culmination of development from class lectures, textbook homework, online homework, quizzes, and reviews.**

MY ADVICE: *Don't procrastinate. Never assume. FORM STUDY GROUPS. Read the textbook. Visit the Math Lab. Come to office hours. ASK QUESTIONS.*

Notes from WEB ASSIGN

System Requirements:

WebAssign is tested and supported for the following Web browsers:

- Mozilla Firefox, version 3 or later, for Linux, Mac OS X, and Windows
- Google Chrome, version 12 or later, for Mac OS X and Windows
- Microsoft Internet Explorer, version 7 or later, for Windows
- Apple Safari, version 3 or later, for Mac OS X and Windows

Current releases of other modern browsers are expected to work but have not been fully tested.

Some WebAssign content and tools require the following browser plug-ins:

- Adobe Acrobat Reader, version 8 or later
- Adobe Flash Player, version 10 or later
- Adobe Shockwave Player, version 11 or later
- Java, version 6 (build 1.6.0) or later

If you encounter problems when using advanced features of WebAssign such as mathPad, calcPad or eBooks, check to be sure that you have supported versions of these plug-ins installed.

Note: Additional learning resources provided by textbook publishers might require other plug-ins or software. Some eBooks are hosted by our publishing partners and may support all browsers.

Required Connectivity and Recommended Connection Speeds:

WebAssign is a Web-based application and requires Internet access. For best performance, especially when working with media-enhanced eBooks or assignments, use a broadband connection such as Cable or DSL. If broadband Internet access is not available in your area, use a dial-up connection speed of at least 56K.

Additional Support:

For a more detailed review of system requirements and links to download and install the most popular plug-ins and browsers, please see our System Requirements Page

http://www.webassign.net/user_support/student/system_requirements.html

For additional concerns about our application, our customer support team is here for you.

Contact us at 800-955-8275 for additional assistance.