

Math 7 – Calculus 1
Santa Monica College – Fall 2009
TTh 5:00-7:25pm (Section 4324)
Room MC 70

Instructor: Dr. Andrew Nestler

Office: MC 61

Contact: (310) 434-8515, http://homepage.smc.edu/nestler_andrew/

Class Homepage: http://homepage.smc.edu/nestler_andrew/math7/math7.htm

Office Hours: MW 3:45-4:45pm and T 3:30-4:30pm, and Math 7 workshop Th 3:30-4:30 in Math Lab

Catalog description: This course is intended for computer science, engineering, mathematics and natural science majors. Topics in this first course in calculus include limits, continuity, and derivatives and integrals of algebraic and trigonometric functions, with mathematical and physical applications.

Text: Earl Swokowski, *Calculus*, Classic edition, Brooks/Cole Publishing Co., 1991

Prerequisite course: Math 2 (Precalculus)

Entry skills: Upon enrolling in Math 7 at SMC, it is your responsibility to know how to:

- Determine domain, range, symmetry and inverse, if it exists, of a function.
- Analyze and graph a given function, including but not limited to piecewise-defined, polynomial, rational, exponential, logarithmic, trigonometric, and inverse trigonometric functions.
- Use transformation techniques including vertical and horizontal shifts, compression, stretching, and reflection over the x - and y -axis to sketch the graph of a function.
- Use the language and standard mathematical notation of the algebra of functions.
- Determine algebraic combinations and compositions of functions and state their domains.
- State and apply the unit-circle and right-triangle definitions of trigonometric functions and their inverses.
- State and apply fundamental trigonometric identities and the sum, difference, double-angle and half-angle identities.
- Factor polynomials using rational and complex zeros.
- Solve polynomial, rational, exponential, logarithmic, trigonometric and inverse trigonometric equations.
- Write algebraic and trigonometric relationships to solve application problems, including solution of triangles.
- Prove trigonometric identities.
- Classify, analyze and graph conic sections given any quadratic equation in two variables. (Excludes rotation)
- Solve systems of nonlinear equations.
- Prove statements using mathematical induction.
- Apply the binomial theorem to expand a binomial and find required intermediate term.
- Use the language and notation of sequences and series. Determine any term in a sequence.
- Evaluate, manipulate and interpret summation notation.

Note: If you last completed a Precalculus course with trigonometry at a different school more than 1 year ago, then I recommend that you complete Math 2 (Precalculus) at SMC prior to enrolling in Math 7.

Exit skills / Course objectives: Upon successful completion of Math 7, you should be able to:

- Evaluate limits using basic limit theorems and the epsilon-delta definition.
- State and apply the definition of continuity to determine a function's points of continuity and discontinuity.
- Differentiate elementary functions using basic derivative theorems and the definition of the derivative.
- Integrate elementary functions using basic integral theorems and the definition of the definite integral.
- Approximate definite integrals using numerical integration (trapezoidal and Simpson's rules).
- Solve derivative application problems including optimization, related rates, linearization, curve sketching and rectilinear motion.
- Solve integral application problems including area, volume, arc length and work.
- State and apply the Mean Value theorems, Extreme Value Theorem, Intermediate Value Theorem, Fundamental Theorem of Calculus, and Newton's Method.

Homework: On most days I will give a list of suggested homework problems. You will not turn in homework to me. It is absolutely essential that you spend a considerable amount of time and effort to master these problems. A general rule is to spend at least two hours outside of class for each hour spent in class. I strongly recommend that you consider asking questions of the tutors in the Math Lab (MC 84), open 8am-10pm Monday through Thursday and 8am-4pm on Friday. Practice writing formal definitions and statements of important theorems over and over until you know them well. Study so that you can solve exercises without the use of notes or the help of others. **I strongly recommend that you show me some of your homework solutions prior to exams, so that I may offer feedback.** An exam is your opportunity to demonstrate what you have learned as a result of your studying and my assistance. It is not the place for a first attempt at solving problems.

Exams: There will be five in-class midterm exams. The approximate dates are:

Thursday, September 24

Tuesday, October 13

Tuesday, November 3

Thursday, November 19

Tuesday, December 8

The final exam will be cumulative and will be at 3:30pm on Thursday, December 17, according to the page

http://www.smc.edu/schedules/2009/fall/guides/final_exam_schedule_093.htm

All you need to bring for exams is pens or pencils, and perhaps an eraser. You will do all of your writing on paper provided to you. Scratch paper, notes, books, calculators and electronic devices are not permitted. Ordinarily you are expected to show all relevant work for full credit, and indicate and explain your answers clearly. **Solutions presented during lectures are models for your work.** Unless you think that there is a typographical error, or you are unable to read part of the exam, you may not ask any questions during an exam. You will be told in advance which material may be covered on an exam. **Questions regarding the format or length of the exams are inappropriate and will not be answered.**

Grading: The weight of each exam score is given by:

Each of 5 midterm exams	15%
Final exam	25%

The score for the first midterm exam that you miss will be the same as your score on the final exam. Missing additional exams will result in scores of zero on those exams. **If you take all five midterm exams**, your final exam score can replace your lowest score on midterm exams 2 through 5, but not your score on the first midterm exam.

Your course grade is based on your total T of points out of 1000 given by the formula $T = 1.5(E) + 2.5(F)$, where E is the sum of your 5 midterm exam scores out of 500, and F is your final exam score out of 100. There is no extra credit. Your total score may decrease if your cell phone makes a sound in class. With one exception, the following scores will guarantee you the corresponding grades:

<u>Points</u>	<u>Letter grade</u>	<u>Meaning</u>
900-1000	A	Excellent
760-899	B	Good
640-759	C	Satisfactory
500-639	D	Passing, less than satisfactory
0 – 499	F	Failing

The exception is that you must earn a score of at least 50% on the final exam in order to earn a course grade of C or higher.

Class Meetings: The length of each class meeting is 2 hours 25 minutes, which will be divided roughly into two equal lecture periods and a 15-minute break. The majority of each meeting will consist of lectures that introduce new material and relate it to previous material. Occasionally lectures are prepared to last less than the full period, specifically to allow you time to solve exercises and receive assistance and feedback in class. On those days leaving early is to your great disadvantage.

Attendance: You are responsible for all material covered and all announcements and assignments made at each class, whether you are present or not. Therefore I recommend that you share contact information with at least one other student in this class, so that you can find out what you missed in the event of an absence. Students who do not attend each class meeting of the first week may be withdrawn. Unexcused absences may result in your being withdrawn from the course. It is your responsibility to withdraw from the course if you wish to do so.

Email: I may answer questions about the course material sent to my email address anestler@smc.edu. Here are the rules that apply when sending me email for this purpose:

- (1) To ensure that I distinguish your email from unsolicited spam, you must send the message using an SMC student email address, which you may obtain for free at the webpage <http://accounts.smc.edu/>.
- (2) You must include the course designation “Math 7” in the subject line, and your first and last name and SMC ID number in the body of the email.
- (3) You may send me an email only to ask questions about the course material.
- (4) Please do not send attachments.

Email messages that do not follow these rules may be deleted without being read and do not guarantee a response.

Classroom Conduct: When in the classroom, you are expected to give your full attention to the lectures and problem-solving periods. Food, drinks and gum are not allowed in the classroom. Please do not use or check cell phones, pagers, text messaging or recording devices, headphones or any other electronic device when class is in session. **When you come to class, please turn off such devices, put them into a bag, close the bag, and place the bag on the floor. Failure to respect this instruction may result in your removal from the classroom.**

Each student has the right to feel comfortable asking questions, making mistakes and offering good guesses and correct solutions. Students learn at different rates and prefer a variety of instruction methods. Please be courteous to and respectful of your classmates and myself.

Important College Policies

Withdrawal Policy: It is your responsibility to make sure that all conditions of eligibility are met. According to the schedule of classes, Monday, October 26 is the last day to withdraw from a class with a guaranteed W. From then until Monday, November 23, a student with extenuating circumstances making withdrawal **necessary** may ask the instructor to be withdrawn with a W. In my opinion, any such circumstances would make it necessary for you to drop and stay withdrawn from all classes at SMC for the remainder of the term. **It is extremely unlikely that students will be dropped from this class after October 26. You should consider October 26 the last day to withdraw from this class with a W.** Withdrawn students will not be readmitted except in case of administrative error. Auditing classes (attending while not enrolled) is not permitted.

Codes of Conduct: All SMC students are required to affirm their commitment to the College Honor Code. As testament to your commitment and readiness to join the Santa Monica College academic community, you and all students are expected to uphold the Honor Code. By enrolling in courses at SMC, you are certifying the following statement:

In the pursuit of the high ideals and rigorous standards of academic life, I commit myself to respect and uphold the Santa Monica College Honor Code, Code of Academic Conduct, and Student Conduct Code. I will conduct myself honorably as a responsible member of the SMC community in all endeavors I pursue.

I will vigorously pursue any suspected cases of plagiarism or cheating or other violations of the SMC Code of Academic Conduct, whether completed or merely attempted. An occurrence of academic dishonesty will result in an exam score of zero or even a grade of F in the course, and an Academic Dishonesty Report form will be filed with the Campus Disciplinarian. If your cell phone makes a sound in class, then you may receive a disciplinary sanction for violating the SMC Student Conduct Code.

Please turn over.

Some information for me

Please fill out this entire page and return this entire syllabus to me by Thursday, September 10 in order to remain enrolled. You may obtain another copy of this syllabus from our class homepage.

Print your name:

SMC ID number:

Have you enrolled in this course before? If yes, when?

How did you place yourself in this course? Circle one of these four options:

- Grade of C or better in Math 2 at SMC
 - If yes, please give your grade, teacher's name and when you took it:

- Grade of C or better in a Precalculus course at another school
 - If yes, please give the school's name and your grade:

- SMC Math Assessment Test
 - If yes, when did you take the test?

- Counselor waiver
 - If yes, please explain why you have a waiver:

Has it been more than 1 year since you completed a Precalculus course with trigonometry?

Note: If you last completed a Precalculus course with trigonometry at a different school more than 1 year ago, then I recommend that you complete Math 2 (Precalculus) at SMC prior to enrolling in Math 7.

When did you last complete a math class (examples: "Spring 2009," "Three years ago"), and what was it?

How many units of college coursework are you taking this term?

If you are employed, how many hours are you working at your job each week, on average?

Are you enrolled in high school?