MAC 2312 / ANALYTIC GEOMETRY & CALCULUS II

SYLLABUS

SPRING 2014

Contact Information:

Course Coordinator	**Discussion Leader (TA)/Section**
Name: Kwailee Chui	_____
Office: Little 376	_____
Office Hours: MWF6	_____
Phone: 352-392-0281 x231	352-392-0281 x_____
Email: Use Sakai mail tool	_____

Course homepage, www.math.ufl.edu/~chui, can be accessed from Sakai: http://lss.at.ufl.edu

Text: Calculus, Early Transcendentals by Rogawski, 2nd Edition (ebook bundle)

Course Lecturer

Name: _____

Office: _____

Office Hours: _____

Phone: 352-392-0281 x_____

Email:_____

MAC 2312 -- ANALYTIC GEOMETRY & CALCULUS II

MAC 2312   **SPRING 2014**   **CALENDAR**

Exam Exam 1~3: 8:30 - 10 PM.   **Final Exam: 10AM - 12 Noon**

Mon	Tue	Wed	Thr	Fri	Sat	Sun
L1 1-Jan Class Begins	First 7 Discussion	L2 8	9	L3 10 drop/add ends	11	12
L4 13	14 Q1	L5 15	16 Q1	L6 17	18	19
20 MLK Holiday	21 HW1	L7 22	23 HW1	L8 24	25	26
L9 27	28 Q2	L10 29	30 Q2	L11 31	1-Feb	2
L12 3	4 Q3	L13 5	6 Q3	L14 7 EXAM 1	8	9
L14 10	11 HW2	L15 12	13 HW2	L16 14	15	16
L17 17	18 Q4	L18 19	20 Q4	L19 21	22	23
L20 24	25 Q5	L21 26	27 Q5	L22 28	1-Mar	2
3 SPRING	4 BREAK	5 SPRING	6 BREAK	7 SPRING	8 BREAK	9
L23 10	11	L24 12 EXAM 2	13	L24 14	15	16
L25 17	18 HW3	L26 19	20 HW3	L27 21	22	23
L28 24	25 Q6	L29 26	27 Q6	L30 28	29	30
L31 31	1-Apr Q7	L32 2	3 Q7	L33 4	5	6
L34 7	8 Q8	L35 9 EXAM 3	10 Q8	L36 11 drop ends	12	13
L37 14	15 HW 4	L38 16	17 HW 4	LL38 18	10	20
L39 21	22	Review 23 Class ends	24	25	FINAL 26 HW 5	27

Exam 1: L1 ~ L13,   Exam 2: L14 ~ L23,   Exam 3: L24 ~ L35(review lecture)

Final: L1 ~ L23, L36 ~ L39

Be at the exam site at least 10 minutes early to avoid being late.

Students arriving at the exam 10 minutes or more late will not be allowed in.

2. INTRODUCTION

2.a COURSE CONTENT: This is the 2nd semester in a 3 semester calculus sequence. Intended topics will include techniques of integration (Integration by parts, trigonometric function, trigonometric substitution and partial fractions); Improper integrals; L'Hospital's Rule; Infinite sequences and series; Parametric Equations; Polar Coordinates and Polar Representation of plane curves and some application of integral.

A minimum grade of C (not C -) in MAC 2312 satisfies four credits of General Education requirement and also satisfies the pure math portion of the State Writing/Math.

2.b PREREQUISITES: This course assumes **strong** prior knowledge of algebra, trigonometry and calculus I. Calculators are N**OT** allowed in quizzes nor exams.

 A list of **prerequisite** topics/formulas is provided in section 6.   **Students must be competent with the topics covered in the list.**

2.c REQUIRED MATERIALS: Access to the **textbook** (or e-textbook) and the H-ITT clicker.   The solution manual is NOT required.

TEXT BOOK : Calculus, Early Transcendentals, 2nd edition, by Rogawski (e-book) will be used for this course.   Hard copies of the book and the solutions manual are available for in-library use at the reserve desk of UF Marston library.   Homework problems from the text are assigned and will be graded.

You may purchase the Access Card for the e-textbook from the UF bookstore. The access card allows a 12 months access to the entire e-book (covers both MAC 2312 and MAC 2313 material.)

A PDF file for the first week class material will be provided for you to use, temporarily, before drop/add ends on Friday, January 10. If you decide to stay in the course after the drop/add, you will need to purchase the access card in order to access the course material and the assigned homework problems.

H-ITT CLICKER: We use the H-ITT clicker to record class participation. Click on the 'HITT' link in Sakai for detailed information. Students are responsible for having a working clicker ready by Monday January 13.

CALCULATORS: A graphics calculator and/or the Wolframalpha (provided in the course webpage) are useful as a study and learning tool when used appropriately, but they are not essential. Calculus is a collection of ideas and process that are not mastered through calculator skills. No calculators are allowed on quizzes and the exams.

2.d E-LEARNING SAKAI: E-learning Sakai, a UF tool, is located at http://lss.at.ufl.edu. Use your Gatorlink name and passwork to login. **All course information** including your grade, course webpage, lecture note outlines, syllabus, make-up policy, office hours, free help information, test locations, mail tool, announcements, etc. can be accessed from this site.

- GRADEBOOK: You are responsible for verifying that your grades are accurate. **You have <u>one week</u> after a score has been posted to contact your TA if you believe there has been a grading or recording error. If you do not bring your concerns to your TA within the time frame, your TA does not have to adjust your grades. There is <u>no grade dispute</u> nor <u>grade adjustment</u> at the end of the semester.**

- MAIL: Important course information is communicated in the **syllabus** and in the **Announcement** in Sakai. Due to the volume of email received in this large course, your TA, your instructor, the course coordinator can not reply to each request. If you have any questions, especially math related questions, it's best to visit office hours to get a clear explanation.

  Questions you have most likely are addressed in the syllabus, mail and/or announcement. Please check these resources before sending out mails. If after careful research and you still can't find an answer, **contact your TA first**. If you have any personal matters that you can not communicate it with your TA, you may contact your instructor or the course coordinator during office hours (preferred) or use the **Mail tool** in Sakai. M**ake sure your TA's name and the section numbers are in the 'subject' line** in order to get a reply.

- ANNOUNCEMENT: Relevant course information will be posted in **Announcement.** Critical class announcements can reach you immediately where you live (phone, tablet, computer) without taking up lecture time in the classroom. Make sure you **check it regularly**.

2.e <u>**LECTURES AND CLASS EXPECTATIONS**</u>:   There are three 50-minute lectures and one 50-minute discussion section per week that students are required to attend.

Lectures will be used to introduce you to the fundamental concepts and theory of calculus and will follow as closely as possible the lecture outline and calendar provided in this guide. After each lecture, the completed lecture notes will be available to copy on the door of Little 376. Lecture serves as only one of several components of your education.

MAC 2312 is a 4 credit course, which means each student is responsible for spending **8 to 12 hours minimum per week** preparing for this course <u>outside the classroom</u>. Most of this time will be spent working on homework, students are also expected to review their notes and read ahead regularly. Keep in mind that the goal is to be able to **apply the techniques of calculus** to problems you will see in the future, **not just reproduce the problems you see in the class.**

Attendance in lecture is required.   You are responsible for learning lecture material missed due to an absence.

LECTURE OUTLINES: You may print out the outlines for the lecture notes which can be found in Sakai or you may purchase them at Target Copy Center on 1412 W. Univ. Ave. Students must bring the lecture outlines to each lecture.

Class Expectations:
- *Come to class prepared*. Before coming to class, read the appropriate topics from the book. Make note of any definition, concepts, and/or examples that you did not understand. During the lecture, these concepts should become more clear. If not, you will have already formulated the question you want answered. Also, having read the section ahead of time should eliminate the need to write down everything that is put on the board, allowing you to listen more attentively.
- *Be familiar with your notes*. Students should re-read and/or rewrite their notes on a daily basis. Actively rework each example completed in class, making sure you understand each step. Being familiar with your notes will make it easier to complete the homework assignments and will reduce the time and anxiety of studying for exams.

- *Do your homework daily*. A list of homework problems is available on Sakai and it is always recommended to attempt as many problems as possible, assigned or not. Make sure to start each homework assignment the day the material is presented in lecture. Do not wait until the last couple of days before the corresponding homework is due to start an assignment.

Lastly, make sure to turn off and put away all electronic devices during class. If you must use your phone (for a family emergency only), then quietly leave the classroom and return as soon as possible. If you know you will have to leave class early, please sit close to the back exit so that you do not disturb your classmates. Comprehending math requires focus. Turn off phones, emails, facebook and the likes while you study.

Upon successful completion of MAC 2312, the student should be able to:

1. Use the formula to integrate by parts. Recognize integrands for appropriate parts.
2. Use techniques for integrals of products of sines and cosines.
3. Use techniques for integrals of secants and tangents, cosecants and cotangents.
4. Use techniques of trigonometric substitution to integrate some forms of integrands.
5. Complete the square to express an irreducible quadratic polynomial as a sum or difference of squares to prepare for trigonometric substitution.
6. Perform polynomial long division to make a rational function proper.
7. Use technique of partial fraction decomposition to reduce an integrand to a more easily integrable form.
8. Given a random integration problem, choose the proper method and proceed with integration.
9. Identify indeterminate limit forms.
10. Evaluate limits using L'Hospital's Rule.
11. Recognize and evaluate improper integrals.
12. Determine if an improper integral diverges or converges (and if so, to what?)
13. Identify and compare different types of infinite sequences.
14. Determine if a sequence diverges or converges (and if so, to what?)
15. Recognize famous series in standard and non-standard forms.
16. Apply infinite series tests for convergence and divergence.
17. Determine the error associated with a partial sum of an alternating series.
18. Find the interval of convergence and radius of convergence for a given power series.
19. Generate power series representations of some functions from a geometric series perspective.

20. Generate power series representations of some functions from a Taylor series perspective.
21. Recognize and manipulate series using the substitution, differentiation, and integration of the geometric series. Recognize these series in summation and non-summation forms.
22. Recognize and manipulate important MaClaurin series (e^x , sin x, cos x, $\tan^{-1}$ x,etc.)
23. Sketch the graphs of curves defined parametrically.
24. Use calculus techniques to analyze the behavior of graphs of parametrically defined curves- arclength, tangent lines, slope, concavity.
25. Sketch graphs of polar equations.
26. Find points of intersection of two or more polar functions.
27. Find slopes of tangents to polar-defined curves, areas enclosed by polar curves.
28. Synthesize concepts from two or more separate sections from MAC 2312.
29. Determine the area between two curves.
30. Determine the volume of solids of revolution using Disk, Washer and Shell methods.
31. Determine the volume of solids of non-revolution.
32. Evaluate amount of Work in rope, spring and drainage problems.

2.f DISCUSSION SECTIONS,   which meet once a week (either Tuesday or Thursday, depending on the section in which you are registered) give you a valuable opportunity for open discussion of the lecture material and assigned problems in a smaller class setting. A significant portion of the points that determine your grade are earned in discussion class. Go to   http://www.math.ufl.edu/courses/mathematics-department-classes-and-instructors-spring-2014/
to see when and where your discussion sections meets.

Your main resource person is your TA, a teaching assistant who is the discussion leader, in the mathematics department. He or she is available during office hours (or by appointment) to answer your questions about any course material.

Your TA is responsible for grading/recording your discussion quizzes, homework, tear-offs on exams. **You must retain all returned papers** in case of any discrepancy with your course grade. Y**ou MUST check the gradebook in Sakai regularly and consult with your TA if you have any questions about the recorded grades. All grade concerns must be taken care of within one week of the posting of the score with your TA**.   Your grade is subject to being raised or lowered if there is a recording error, computational error, bubbling error, 'padding' error, etc.

If you have concerns about your discussion class which <u>can not</u> be handled by your TA, please contact your instructor. (use Sakai Mail tool or **office hours**).

2.g <u>**FREE HELP**</u>: **In addition to attending your lecture and discussion section regularly, visit your TA, instructor's office hours. In addition,** the following aids are available. Don't fall behind and no need to struggle on your own.

- Feel free to go to **<u>any</u>** office hours that suit your needs. (A link to these hours is posted in Sakai).

- The Teaching Center Math Lab, located at SE Broward Hall, offers free tutoring. You may want to attend different hours to find the tutors with whom you feel most comfortable. For more information(hours, etc.), go to their website www.teachingcenter.ufl.edu. You can also request free one-on-one tutoring. You may also attend tutoring with the SI designated to our class. Students are strongly encouraging to use the Math Lab.

- Multiple copies of the text book and solution manual are located at the reserve desks at Marston Library.

- Private Tutors: If after availing yourself of these aids, you feel you need more help, you may obtain a list of qualified tutors **<u>for hire</u>** (not free) at www.math.ufl.edu. Search 'tutors'.

- The Counseling Center has some informative information on developing math confidence. Go to http://www.counseling.ufl.edu/cwc/Developing-Math-Confidence.aspx for information on math confidence and information on joining the Academic Confidence Group.

2.h <u>**SUCCESS**</u>: Success in MAC 2312 depends largely on your attitude and effort. Attendance and participation in class is critical. It is not effective to sit and copy notes without following the thought processes involved in the lecture or during office hours. For example, you should try to answer the questions posed in the lecturer, at least mentally . Students who actively participate generally have greater success.

Did I mention that it's important that you do not fall behind?

Be aware that much of the learning of mathematics at the university takes place outside of the classroom. You need to spend time reviewing the concepts of each lecture **before** you attempt homework problems. It is also important to spend some time

looking over the textbook sections to be covered in the next lecture to become familiar with the vocabulary and main ideas before the next class.   That way you will better be able to grasp the material presented by your lecturer.   As with most college courses, you should expect to spend a **minimum** of 2 hours working on your own for every hour of classroom instruction. (And do you know that it takes roughly 39 lecture hours in colleges vs. 142 lecture hours in high school to complete a calculus course? The fact of the matter is that college course goes almost 3+ times faster and that you probably won't do well if you wait till the week of the exam to start preparing for the exam.)

I **strongly encourage** students to work together, discuss concepts and misconceptions together in a timely. Students learn to ask questions, and to learn by helping each other. It helps the students' engagement outside of class, helps students work through problems and learn together.   You get your questions answered quickly, instead of waiting for office hours or the next lecture.   It's a good way for students to collaborate, and the exchanges that students have help you be more engaged in the course and be more prepared and confident in classroom and in exams.

This type of cooperative learning is encouraged, but be sure it leads to a better conceptual understanding.   You must be able to work through the problems on your own. Even if you work together, be with a group or with a tutor, **each student must turn in his or her own work**, **not a copied solution, on any collected individual assignments**.

When it comes to math questions, there are no dumb math questions, but you should always go over your notes first to make sure you can follow the worked out problems in the lecture. you should ask your questions by stating what you have tried and what you are stuck on to allow others to better assist you, instead of a general statement like 'can someone tell me how to do number 3?'

Each of us learns differently, each of us teaches differently too. If after you have done all that are suggested above, and put in great effort, and you are still not doing well in class, please do not suffer on your own, come talk to your TA and/or your instructor and let us find out together how to better help you succeed in this class.

2.i STUDENTS WITH DISABILITIES: UF welcome students with disabilities into the UF programs. If you have a disability-related need accommodations in this course, you must first contact the office of Disability Resources Center (352-392-8565, www.dso.ufl.edu/drc). The DRC will provide documentation to the student who must

then provide this documentation to the course coordinator, Ms. Chui, Little 376, to be signed when requesting accommodation.   Visit the DRC office as soon as possible to find out the details.

2.j <u>**ACADEMIC HONESTY GUIDELINES**</u>: All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust, and respect. Students are expected to pursue knowledge with integrity. Exhibiting honesty in academic pursuits and reporting violations of the Academic Honesty Guidelines will encourage others to act with integrity.   **Violations of the Academic Honesty Guidelines shall result in judicial action** and a student being subject to the sanctions in the Student Code of Conduct. The conduct set forth hereinafter constitutes a violation of the Academic Honesty Guidelines (University of Florida Rule 6C1-4.017),

https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/

When submitting your lecture <u>clicker</u> points, each student sends in his or her own responses. Clicking in for another student is in violation of the Academic Honesty Guidelines. In such case, both students will receive a zero for the attendance participation points for the entire course.

Any suspicious activity during quizzes or exams will be considered as cheating and violators will be taken to honor court where you may face automatic failure or even expulsion. At the very least, you will receive a zero for this quiz/exam and you will not be allowed to retake the quiz/exam nor the opportunity to take the make up for this quiz/exam.

3. TESTING: There are three 90-minute evening exams and one two-hour semi-comprehensive final exam. The first three exams are at 8:30 pm.   See the course calendar for the dates and each exam coverage. The semi-cumulative final is on April 26, Saturday at 10AM. Room locations will be posted in the Announcement in Sakai one week prior to the exams. See section 4a for grade information. There is **NO DROP** for any exams.

3.a Students are responsible for material covered in the lecture notes (including Now You Try It (NYTI) problems that we may not have had time to work out during lecture), all assigned written homework problems.   Some sample exams are included in

the Lecture Outlines packet and more (along with answers) are available from the Teaching Center one week prior to the exam. Sample exams serves as an example the format of the exam and gives you problems to practice. **Exam coverage and format may vary from semester to semeste**r. **Check announcement for the detailed information for your exam this semester.**

3.b No books, notes or calculators may be used on the exams. You must bring to each exam only* the following:
- your UF Gator One Card.
- Soft lead #2 pencils.
- Knowledge of your section number.

*It is suggested that you do not bring anything of value to the exam since you are NOT allowed to take items such as backpacks to your seat.

NO CALCULATORS ARE PERMITTED. All electronic devices must be turned off and put away. This includes cell phones. Scratch paper will be provided.

3.c The **Test Form Code**, as well as **your UFID**, name, and section number must be encoded correctly or you will **lose 1-point**.   You must also take the test in your assigned test location or you will **lose 3-points** on your exam.

3.d You should be at the exam site at least 10 minutes early. **No one will be admitted to the exam 10 minutes after the official starting time of the exam**. No one will be permitted to leave the test until 20 minutes after the official start time. Raise your hand if you have any questions or need to leave the room for emergency, in which case, you will be escorted by a TA.

4. GRADING
4.a **COURSE GRADE**: The course is based on 325 points accumulated as follows:

Written Homeworks (5 @ 5pts ea.)…………………………………	25 points	(7.69%)
Discussion Quizzes (best 6 of 8 @ 5 pts ea) …………………….	30 points	(9.23 %)
Exams (3 @ 60 pts) …………………………………………………….	180 points	(55.38%)
Semi-Cumulative Final Exam (@ 60) …………………………….	60 points	(18.46%)
HITT (80% of total points collected)……………………………	30 points	(9.23%)

Add your bonus points from the Self-Evaluation Assessment(2 points) on Sakai, then use the grade scale below to determine your final letter grade. **The course grade is determined by the number of points you have, not by the percentage**.

A : 292.5 – 325   A - : 282.8 – 292.49
B +: 273 – 282.79   B : 260 – 272. 9   B - : 250.3 – 259.9
C + : 240.5 – 250.29   C : 224.25 – 240.49   C - : 217.8 – 227.49
D + : 211.3 – 217.79   D : 201.5 – 211.29   D - : 195 – 201.49   E : below 195

55 points of your 325 points will come from homework and class participation. It will be difficult to get a good grade without doing the homework and attending class.

For information on dropping courses and withdrawals go to
https://catalog.ufl.edu/ugrad/current/regulations/info/drops.aspx

4.b SELF-EVALUATION QUIZ(Bonus): The Self-evaluation quiz which is found on the **Assessment link in Sakai** is after Exam 2. Its purpose is to let you know your approximate standing in the class after two exams .

4.c WRITTEN HOMEWORK: The written assignments posted on Sakai presents the minimum number of problems you should do in each section and serve as a basis for your question in your discussion section.   Homework must be done **neatly** and **complete work must be shown** for credit.   Homework will be checked for **completeness** and a few problems will be graded for **accuracy**. **The work should be your own and not copied from other sources to avoid honor code violation.** Homework will be collected five times during the semester. See the calendar for collection dates.   The fifth set is to be collected around the final time so you will have your work to study for the final. Your TA will announce when and how it is to be collected.
Some homework problems suggest the use of a graphing calculator. They are designed to help you visualize important concepts and to reinforce the mathematical processes involved. The use of a calculator when doing homework is
not required. **Calculators are not permitted on quizzes nor tests**.

See section 4f for the make-up policy

4.d DISCUSSION CLASS QUIZZES   will be administered in the discussion section by your TA. Quiz questions will be based on the previous lectures and homework assignments. Arrangements can be made to take a quiz **early** if you know you will be absent for a **UF related function**.
Best 6 out of 8 quizzes will be counted for your course grade.

If you feel there is a grading error or posting error on Sakai, you **must** discuss it with your TA **within one week** after the scores are posted. No aids may be used on the quiz. See section 4a for quiz grade information. See section 4f for the make-up policy.

4.e ATTENDANCE PARTICIPATION POINTS: We use H-ITT clicker to record attendance and class participation. Students are responsible for having a working clicker ready by Monday January 13. For each question, you'll receive a '0' for no response, a '0.5' for incorrect answers and a '1' for a correct answer.

Students are responsible for having a working clicker. **Check your clicker ID is displayed on the screen each time it's used in lectures**. Bi-weekly HITT grades report will be sent to student's email. Resolve any clicker issues immediately. **Any problems unresolved is students responsibility. No H-ITT points can possibly be recovered nor made up.** To accommodate for any short term or temporary clicker issues and allow students time to fix any clicker problems , we drop 20% HITT points. Keep your receipt, contact the merchant or the HITT company if you have issues.

You must register your clicker in order to receive points for your grade, but do so only **AFTER YOUR FIRST successful use** when you see your clicker ID is displayed on the screen in class. Go to the 'HITT' link in Sakai to see detailed information including how to register, how to set channel, how to calculate your HITT points, etc .

4.f **MAKE-UP POLICY**: **All** make-up work (except possibly the final exam) must be **completed** by Wednesday, April 23.

    i)   **Make-up – Exams:** (a)If you have a conflict due to participate in a UF sponsored event or another assembly exam of a higher course number, you need to bring your documentation to Ms Chui in LIT 376 **at least one week** (otherwise 3 point penalty) before the exam to sign up for the make-up. (b) If you miss for any emergency reasons, you must notify Ms. Chui within a week of the exam (otherwise 3 point penalty). There is a 6 points penalty for missing any exam or the final exam due to negligence.

        If other classes are scheduled during the exam time, University policy states that the assembly exam takes precedence over the evening class and the evening class instructor must provide make-up work and cannot penalize students who miss because of an assemble exam.

Instructions on make up Exam: The student is responsible for knowing the room and time of the makeup exam. This information will be emailed to students (who had signed up) at least three days before the makeup exam date. Each student must bring his or her UF Gator ONE ID card to the makeup exam. If a student **has not signed up** with the coordinator, the student may be allowed to take the makeup exam with an automatic **6 points deducted** from the course grade.

Makeup exam length and content may not match the regular exam exactly, and the format is all-multiple choices.

ii)   **Make-up – Discussion quizzes:** There are absolutely <u>no make-ups, unless</u>, **a)** you are participating in a UF sponsored event, for which you must bring your documentation **at least one week** prior t**o your TA. b)** you miss at least three discussion quizzes for which you have valid, documentable reasons for your absences. You will be allowed to make up the excused absences that are **in excess of two**. Bring your documentation to your TA <u>within one week</u> of your third discussion quiz absence. **c)** you miss because of a religious holiday, immediate-family events. You must notify your TA <u>within one week</u> prior . **d)** you miss because of a court-ordered obligation – see Ms. Chui <u>within one week</u>.

3 points penalty incurred if you don't meet the one week requirement.

iii)   **Make-up – Written Homework collection:**

If you are absent on a collection day, or you forget to bring your homework, you may bring your completed homework to your TA during his/her office hours before noon the next day. (**3-point penalty** incurred everyday late afterwards).

If you are participating in a UF sponsored event, you must bring your documentation **at least one week prior** to your TA to avoid the 3-point penalty as stated above. You must bring your completed homework within 48 hours.

You may always turn in your homework early, with a valid excuse stated above, to avoid penalty.

4.g INCOMPLETE: Students who are currently passing a course but are unable to complete the course because of illness or emergency may be granted an incomplete grade of I which will allow the student to complete the course within the first two weeks of the following semester. Note that incomplete grades are limited to those students who can verify and document a valid reason for not being able to take the final exam.

 If you meet the criteria and you wish to take an incomplete grade, you must see Ms. Chui (LIT 376) during office hours **at least one** week before finals week to be considered for an I.   An 'I' only allows you to make up your incomplete work, not redo your work.

3 points penalty incurred if you don't meet the one week requirement.

5. **WRITTEN HOMEWORK ASSIGNMENT: See Sakai** .

6. **FORMULAS YOU ARE EXPECTED TO KNOW:**

COMPLETING THE SQUARE $\qquad x^2 + ax + b = (x + \frac{a}{2})^2 + (b - (\frac{a}{2})^2)$

LAW OF EXPONENTS $\quad a^{n+m} = a^n a^m \qquad a^{n-m} = \frac{a^n}{a^m} \qquad (a^m)^n = a^{mn}$

PROPERTIES OF $\log |x|$

$$log_b |xy| = log_b |x| + log_b |y|$$

$$log_b \left| \frac{x}{y} \right| = log_b |x| - log_b |y|$$

$$log_b |a^m| = m \, log_b |a|$$

PARABOLA $\quad y = f(x) = ax^2 + bx + c \qquad\qquad$ CIRCLES $\qquad (x - a)^2 + (y - b)^2 = r^2$

$\qquad\qquad$ Vertex $\quad x = -\frac{b}{2a}, \ y = f(-\frac{b}{2a}) \qquad\qquad\qquad$ Center $\ (a, b)$, radius $= \ r$

Derivatives

$$\frac{d}{dx}(\sin x) = \qquad\qquad \frac{d}{dx}(\csc x) = \qquad\qquad \frac{d}{dx}(\cos x) = \qquad\qquad \frac{d}{dx}(\sec x) =$$

$$\frac{d}{dx}(\tan x) = \qquad\qquad \frac{d}{dx}(\cot x) = \qquad\qquad \frac{d}{dx}(\arctan x) =$$

$$\frac{d}{dx}(a^x) = \qquad\qquad \frac{d}{dx}(e^x) = \qquad\qquad \frac{d}{dx}(\log_a x) = \qquad\qquad \frac{d}{dx}(\ln x) =$$

Integrals

$$\int \frac{1}{x} dx = \qquad\qquad \int e^x \, dx = \qquad\qquad \int a^x \, dx =$$

$$\int \sin x \, dx = \qquad\qquad \int \cos x \, dx = \qquad\qquad \int \tan x \, dx = \qquad\qquad \int \cot x \, dx =$$

$$\int \sec^2 x \, dx = \qquad\qquad \int \csc^2 x \, dx = \qquad\qquad \int \sec x \tan x \, dx = \qquad\qquad \int \cot x \csc x \, dx =$$

$$\int \tan^2 x \, dx = \qquad\qquad \int \cot^2 x \, dx = \qquad\qquad \int \frac{1}{a^2 + x^2} \, dx =$$

Trig Identities

$$\sin^2 x + \cos^2 x = 1 \qquad\qquad \tan^2 x + 1 = \sec^2 x \qquad\qquad 1 + \cot^2 x = \csc^2 x$$

$$\sin^2 x = \qquad\qquad\qquad\qquad\qquad \sin 2x =$$

$$\cos^2 x = \qquad\qquad\qquad\qquad\qquad \cos 2x =$$

Know values of $\sin x$, $\cos x$, $\tan x$ at $x = 0$, $\frac{\pi}{6}, \frac{\pi}{4}, \frac{\pi}{3}, \frac{\pi}{2}$; arctan(a) at a=0, 1, sqrt(3), 1/sqrt(3).

(know the values of the other trig. functions at these angles and know the values of all trig functions at complementary and supplementary angels of the angles above)

Chain Rules $\qquad\qquad (f(g(x))' = f'(g(x))g'(x)$

Derivative of an Inverse $\qquad$ If $g = f^{-1}$, then $g'(x) =$