

Moravian College
Math 166 – Analytic Geometry and Calculus with Review-Part II
Spring 2016

Instructor – K. Moser

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Office hours: Monday and Friday 1-2:30pm, Wednesday Noon-1pm, Other times by appointment.

Course Materials – *Calculus, Single Variable, 3rd Edition* by Jon Rogawski and Colin Adams
A Companion to Calculus, 2nd Edition by Ebersole, Schattschneider, Sevilla, Somers
Calculator: The TI 83+ or TI 84+ calculator is recommended and will be used for presentations, but any comparable graphing calculator with which the student is familiar with is acceptable. Please refrain from using your cell phone or smartphone during class. NOTE: for all tests and quizzes electronic devices (cell phones, smartphones, laptops, iPads, etc.) must be away and are NOT permitted to be used.

Course Goals – Each student will

- review basic concepts of limits and derivatives
- review basic definitions and identities for trigonometric functions
- develop and use the derivatives of the trigonometric functions
- develop the rules for derivatives of inverse trigonometric functions and logarithmic functions
- use L'Hopital's rules to find limits of indeterminate forms
- will review how to differentiate formulas implicitly
- understand the relationship between the graph of a function and its derivative
- sketch the graph of a function using derivatives and limits
- apply the concept of derivative to solving problems including optimization, related rates and economics concepts
- find antiderivatives of the basic functions
- explore the relationship between definite integrals and derivatives
- gain an appreciation of the Fundamental Theorem of Calculus
- find areas, distances and net change using definite integrals

Class Participation and Attendance – Regular and active class attendance and participation is expected of all students and necessary in order to be most successful. You are responsible for all material assigned or covered in class. If you do miss a class for any reason, it is your responsibility to keep on track and up to date with class topics. You should see a classmate or the instructor for notes, homework assignments, and any announcements from class. Attendance will be taken during each class meeting.

Behaviors that will negatively affect your class participation grade:

- poor attendance (including absences, lates, and leaving during class)
- using cell phones or other devices during instructional time

Behaviors that will positively affect your class participation grade:

- coming to class, and being on time!
- asking questions

- answering questions
- actively working on any in-class assignments

Student Expectations – Students should be spending approximately 7-8 hours per week outside of scheduled class times on assigned reading and exercises, completing graded problem sets and studying for quizzes and tests.

After completing this course, students are expected to be able to

- apply the rules of derivatives learned in Math 106 to trigonometric functions
- find the derivatives of logarithmic functions
- use logarithmic differentiation when appropriate
- use L'Hopital's rule when appropriate
- sketch polynomial and rational functions by identifying extreme points, inflection points and asymptotes
- use implicit differentiation while solving related rates problems
- solve real world extreme value problems
- find antiderivatives of simple functions
- use the Fundamental Theorem to determine areas and solve net change problems

Evaluation and Grading – Practice is vital for developing the required Calculus skills. All given assignments are designed to give students opportunities to practice using all of the concepts presented in class. Final grades will be determined on the basis of class participation, Web Works assignments, mini-quizzes, three tests and a cumulative final exam.

Final grades will be computed based on the weights below*.

- Class Participation (5%)
- WeBWorK (15%)
- Mini-Quizzes (15%)
- Tests (45%)
- Cumulative final exam (20%)

Final grades will be based on the following rubric.

Average	Grade
$x \geq 92$	A
$90 \leq x < 92$	A-
$88 \leq x < 90$	B+
$82 \leq x < 88$	B
$80 \leq x < 82$	B-
$78 \leq x < 80$	C+
$72 \leq x < 78$	C
$70 \leq x < 72$	C-
$68 \leq x < 70$	D+
$62 \leq x < 68$	D
$60 \leq x < 62$	D-
$x < 60$	F

Homework – Working together: When faced with difficulty in mathematics, it helps to work through problem with a colleague. I welcome and encourage you to work with friends, tutors and myself in working through completing homework assignments. When you work through the problems connected with each reading, you are welcome and encouraged to work with your friends and classmates. Feel free to exchange ideas as your work through the problems. **HOWEVER:** when writing your homework response, you must work on your own. The final response you write on your homework should be yours and yours alone. I recommend that while you may complete the scratch work for all of your homework with a classmate, you should write the final copy of your homework when you are alone. Ultimately, **YOU** are responsible for understanding how to find a solution to each assigned problem. It is necessary to do all homework exercises assigned.

WeBWorK – You will be assigned problems from the textbook as well as the online homework system WeBWorK. The text problems will not be graded but should be completed for practice. Your scores on the WeBWorK problems will make up your homework grade. The WeBWorK homework from a given lesson is due after the next class. This gives ample time to ask questions, correct any mistakes, and make any necessary revisions.

Mini-Quizzes – On each non-test day there will be a mini-quiz on the homework assignment from the previous lesson day. These will be given at the beginning of the class session. **There will be absolutely NO makeups.** If you come to class late, you will not get extra time to complete the mini-quiz. Also, if you are extremely late and miss the mini-quiz, you may not make it up. There will be a total of 38 of these mini-quizzes. The best 34 scores will be counted (the lowest 4 scores will be dropped).

Tests – We will have three in class tests. If you will miss an test (with an approved excuse), you must notify me **PRIOR TO** the test. You will then be given a suitable (corresponding to the time beyond the test date) but more difficult test. Extenuating circumstances will be taken into account (with appropriate documentation).

Final Exams – The final exam will be cumulative. Please mark when your final exam is on your calendar and plan accordingly. Final exams are scheduled as follows:

- 166A: Wednesday, May 4, 8-10am
- 166B: Monday, May 2, 11:30am-1:30pm
- 166C: Wednesday, May 4, 11:30am-1:30pm

Disclaimers – This syllabus is subject to change through the semester. Any updates to the syllabus will be announced in class. The instructor reserves the right to apply qualitative judgment in determining final grades for the course.

Tutoring – Beginning the second week of class, the Mathematics and Computer Science Department offers tutoring Monday through Thursday 5:30-8:30pm in PPHAC 238. This is free drop-in tutoring and does not require an appointment. The Academic Support Center houses Disability Support and Greyhound Tutoring on the first floor of Monocacy Hall and can be reached at 610-861-1401. Greyhound Tutoring provides course-specific tutors to Moravian students, free of charge. If you would like to work with a Greyhound Tutor to boost your academic success, please request a tutor through <http://bit.ly/NeedTutorMC> (case-sensitive). Plan ahead! It takes 2-3 business days to connect you with a tutor.

Learning Disability Accommodations – Students who wish to request accommodations in this class for a disability should contact the Academic Support Center, located in the lower level of Monocacy Hall, or by calling 610-861-1401. Accommodations cannot be provided until authorization is received from the Academic Support Center.

Mathematics Department Academic Honesty Policy – The Mathematics Department supports and is governed by the Academic Honesty Policy of Moravian College as stated in the Moravian College Student Handbook. The following statements will help clarify the policies of members of the Mathematics Department faculty.

In all at-home assignments which are to be graded, you may use your class notes and any books or library sources. **When you use the ideas or thoughts of others, however, you must acknowledge the source. You also may not use a solution manual** or the help (orally or in written form) of any individual other than your instructor. If you receive help from anyone other than your instructor or if you fail to reference your sources, you will be violating the Academic Honesty Policy of Moravian College. **You may work with your fellow students on homework which is not to be graded. You are responsible for understanding and being able to explain the solution of all assigned problems, both graded and un-graded.**

All in-class or take-home tests and quizzes are to be completed by you alone without the aid of books, study sheets, or formula sheets unless specifically allowed by your instructor for a particular test

Math 166 Course Outline Spring 2016

Topic	Rog.	CTC	Daily Assignments (Tentative)
Derivative Review	Rev.		Pg 189 # 29, 33, 35, 57, 95, 107
Angle Measures		8-A	Pg 237 # 1, 2 (worksheet)
Definition of Trig Functions		8-B	Pg 247 # 1 (worksheet), 6bc, 7
Trigonometric Functions	1.4		Pg 29 # 1-4 all, 9, 11, 13, 19, 21
Prop. of Trig Functions		8-C	Pg 259 # 1, 2, 3
Domain, Range, Graphs		8-D	Pg 265 # 1, 2
Trigonometric Limits	2.6		Pg 93 # 17, 19, 21, 29, 31, 33, 37
Trig Functions Derivatives	3.6		Pg 158 # 1-27 odd, 31, 45
Chain Rule (revisited)	3.7		Pg 164 # 17, 19, 29, 37, 51, 55
Inverse Trig Functions	1.5		Pg 39 # 23, 27, 29, 31, 33
Inverse Function Derivatives	3.8		Pg 172 # 27, 29, 31, 33
Logarithm Review		15-A	Pg 385 # 5acf
Exp. and Log. Derivatives	3.9		Pg 180 # 1-11 odd, 15, 17, 21, 23, 25, 31, 41, 45
TEST 1			(Tentatively February 10)
Problem Solving for RR		11-B	Pg 319 # 2, 3
Setting up Equations for RR		11-A	Pg 320 # 2, 4, 6
Related Rates	3.10		Pg 186 # 1-17 odd, 23
Linear Approx. and Apps	4.1		Pg 198 # 1, 3, 7, 9, 13, 17, 37
Extreme and Critical Values		16-A	Pg 408 # 2, 3
Extreme Values	4.2		Pg 206 # 1, 3, 5, 9, 21, 31, 33, 35, 37, 39, 47, 51, 55, 61, 65
The MVT and Monotonicity	4.3		Pg 215 # 1, 3, 5, 15-25 odd, 31, 37, 43, 51
TEST 2			(Tentatively March 4)
The Shape of a Graph	4.4		Pg 221 # 1-11 odd, 17, 23, 25, 27, 31, 37-45 odd, 53, 55
Graphical Interpretation		17-B	Pg 432-433 # 1-3
L'Hopital's Rule	4.5		Pg 229 # 1, 3, 9, 11, 13, 19, 21, 25, 27, 39
Putting it all Together		17-C	Pg 438 # 5
Graph Sketching	4.6		Pg 237 # 13, 19, 25, 31, 53, 55, 57, 59
Equations for EV Problems		16-B	Pg 414 # 1, 2, 4, 6(for 1, 2, 4)
Applied Optimizations	4.7		Pg 244 # 1, 3, 5, 9, 11, 19, 33, 39
Areas	5.1		Pg 268 # 7, 13, 17, 21, 23, 27
The Definite Integral	5.2		Pg 278 # 1-9 odd, 13, 15, 23, 25, 27, 33, 35, 37, 43, 45, 55, 57
Area Under a Curve		20-A	Pg 491 # 3, 4, 5
TEST 3			(Tentatively April 13)
The Indefinite Integral	5.3		Pg 286 # 1-29 odd, 47-53 odd, 63-69 odd, 75
The FTC, Part 1	5.4		Pg 293 # 1-25 odd, 33, 37, 39
The FTC, Part 2	5.5		Pg 298 # 7-23 odd, 29, 31
Net Change as Integral	5.6		Pg 304 #9-15 odd, 25, 31, 33, 35, 471-15 odd
FINAL EXAM:			166A: Wednesday, May 4, 8-10am 166B: Monday, May 2, 11:30am-1:30pm 166C: Wednesday, May 4, 11:30am-1:30pm