

**Math 106**  
**Analytic Geometry and Calculus with Review-Part I**  
**Fall 2010**

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**Course Goals:**

The students will

- review mathematical concepts and techniques needed to successfully study calculus.
- be introduced to the concept of a function.
- work with functions algebraically, numerically and graphically.
- be introduced to the concepts of limits and continuity of functions.
- develop the concept of a derivative as both a rate of change and as the slope of a tangent to a curve.
- learn techniques for finding derivatives of algebraic and exponential functions
- relate all concepts studied to real world problems
- use the graphing calculator as a tool for visualizing calculus concepts

**Course Materials:**

Texts: Calculus, 6E ( Single Variable, Early Transcendentals) by Stewart  
A Companion to Calculus, 2nd ed. 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.

**Attendance:**

- Regular attendance is necessary in order to be most successful. Poor attendance will affect a student's class work grade.
- There will be no make-up for missed quizzes due to absences
- Make-ups for tests due to absences will be given only in pre-approved cases. It is the student's responsibility to contact me **before** the test is administered unless an emergency situation can be verified.

## Academic Honesty:

Please refer to Moravian's "Policy on Academic Honesty" that is outlined in the current Student Handbook.

Specifically, for this class

- you may use any notes, books or library sources for homework assignments (graded or non-graded). You may also work with other students on these assignments, but, you must indicate those with whom you conferred as well as be responsible to explain all solutions by yourself.
- all tests and quizzes are to be completed by you alone, without the aid of books, notes or formula sheets unless specifically permitted by the instructor.
- graphing calculators will be required as indicated by the instructor for answering questions on assignments, tests and quizzes. However, a complete discussion as to how they were used may be required.

## Special Considerations:

Accommodations can be made for those students who have disabilities or special needs. These conditions must be verified by the appropriate college office.

## Evaluation and Grading:

Practice is vital for developing the required Calculus skills. It is **necessary** that the student does all homework problems assigned. Some will be graded while the rest could be checked for completion.

The student will be evaluated on the basis of three exams, best four (out of five) quizzes, seven graded homework assignments, class participation, and a cumulative final exam. **Late assignments will be graded with a 20% penalty for each day that they are late.**

The percent breakdown of the Final Grade is as follows.

Tests	45%
Quizzes	15%
Graded Homeworks and Class Participation	15%
Final Exam	25%

The Final Grade will be computed according to the following guideline.

AVERAGE	GRADE	AVERAGE	GRADE
92-100%	A	72-77%	C
90-91%	A-	70-71%	C-
88-89%	B+	68-69%	D+
82-87%	B	62-67%	D
80-81%	B-	60-61%	D-
78-79%	C+	0-59%	F

## Math 106 Course Outline--Fall 2010

	Stewart	CTC	Daily Assignments (Tentative)
Symbols and Notation		0-A	
Modes of Communication		0-B	Pg 6 # 1,3
The Cartesian Coordinate Plane		1-A	Pg 13 # 4,5
Graphs		1-B	Pg 18 #3
Lines and Their Equations		1-C	Pg 25 # 1,3
Parallel and Intersecting Lines		1-D	Pg 29 # 1,3,4
Distance Between Two Points		1-E	Pg 32 # 1,2
The Circle		1-F	Pg 34-35 # 1,3,4,5
Review and Extension		Exercises	Pg 35 bottom-37 # 1,3,7,13
Function Notation		2-A	Pg 44 # 2,4
Domain and Range of a Function		2-B	Pg 48-49 # 2,3,4
Four Ways to Represent Functions	1.1		Pg 20-22 # 1,5,7,27,29,31
The Graph of a Function		2-D	Pg 59-61 # 1,4,5
Special Classes of Functions		2-E	Pg 72 # 1,3,5
Graphing Calculators and Computers	1.4		Pg 51# 1,3,5,17,19
Transformations of Graphs	2-F		Pg 82 # 3,4
Combinations of Functions		3-A	Pg 96-97 # 1-6
New Functions from Old Functions	1.3		Pg 43 #1,3,9,11, 29,35,39,51
Negative and Rational Exponents		7-A	Pg 219-220 # 1,5a-d
Rules of Exponents		13-A	Pg 343-345 #1,3,5,8ab.11.12
The Natural Exponential Function		13-B	Pg 349--350 # 1,2,4,5
Exponential Functions	1.5		Pg 58 # 3,13,19,25

## TEST 1 (Tentatively September 29)

The Tangent and Velocity Problem	2.1	Pg 87 # 3,5
The Limit of a Function	2.2	Pg 97-98 # 5,7,9,13.15,19,21,25,27
Algebraic Simplification of Functions		3-B Pg 110-111 # 1, 5,7,8
Calculating Limits Using the Limit Laws	2.3	Pg 106 -107 # 3,11-25 odds, 35, 39
Inequalities		3-C Pg 116 # 1 Pg 122-123 # 2a-c,5
The Precise Definition of Limits	2.4	Pg 117-118 # 1,3,7,15,19
Continuity	2.5	Pg 128-129 # 3,5,7,17,35,37,41,43,47
Polynomials		4-A Pg 141-42 # 3,4

	<b>Stewart CTC</b>	<b>Assignment (Tentative)</b>
Domains of Functions	4-C	Pg 156 # 1,2,3
Graphical Interpretation	5-A	Page 171-172 # 3-7
Algebraic Manipulations	5-B	Pg 179 # 1-4 ; Pg 183 # 3,4
Limits at Infinity: Horizontal Asymptotes	2.6	Pg 140-142 # 1,3,7,9,15,19,23,25,39,41,43

## **TEST 2 (Tentatively October 29)**

Applications		6B	Page 205-206 #4,6,8a,b
Derivatives and Rates of Change	2.7		Pg 150-151 # 3,7,9,13,25
The Derivative as a Function	2.8		Pg 162-164 # 23,27,29,35,37
Derivatives of Polynomials and Exponential Functions 3.1			Pg 180-181 # 3-10,11-35odd, 39,41,45,49
The Product and Quotient Rules	3.2		Pg 187-188 # 3-19 odd,27-33 odd
The Chain Rule	3.4		Pg 203-204 # 3-11odd,25,47,51
Simplifying Derivatives		7-C	Page 227 # 3,4 Page 229 #6,7

## **TEST 3 (Tentatively November 22)**

Implicitly Defined Functions		9-A	Pg 288 # 2 a-d,3a-d
Solving Equations that Contain $dy/dx$		9-B	Page 292 # 2a-c,3a-c
Implicit Differentiation	3.5		Pg 213 # 1,5,7,25,33,35

## **FINAL EXAM ( December 10)**