

Topics:

1. Analytic Geometry: A) slopes of lines, B) parallel and perpendicular lines, C) distance formula, D) circles and parabolas.
2. Functions: A) domain and range, B) function composition, C) graphing, including odd, even, and periodic functions, D) Asymptotes.
3. Limits: A) finite and infinite, B) one-sided limits, C) continuity of functions.
4. The derivative: A) slope of a tangent line, B) difference quotient, C) derivative formulas, D) chain rule, E) applications of the derivative, including curve sketching and relative extrema, F) concavity and inflection points, G) implicit differentiation.
5. Applications: A) rectilinear motion, B) optimization, C) related rates, D) differentials, E) Newton's method, F) L'Hopital's rule.
6. The integral: A) sigma notation, B) area bounded by curves, C) Riemann sums, D) the definite integral, E) The Fundamental Theorem of Calculus, F) indefinite integrals, G) substitution, H) the natural log function.

Resources:

1. The mathematics reading room (Frey 341).
2. Student math resource people available Monday through Thursday nights in Frey 341.
3. Messiah College welcomes students with disabilities. **AMERICANS WITH DISABILITIES ACT:** Any student whose disability falls within ADA guidelines should inform the instructor within the first two weeks of any special accommodations or equipment needs necessary to complete the requirements for this course. Students must register documentation with the Office of Disability Services (Hoffman 101). If you have questions, call extension 5382.

During each class, we will discuss material from the text. You should read each section before it is discussed. When this discussion is completed, practice problems will be assigned. One day each week, we will discuss the assigned homework from the previous days. This course will require roughly 2 hours of homework for each class session. Approximately one day each week there will be a quiz. The quiz may be in the form of a take home assignment. We will also make use of a Computer Algebra System as an aid to solve problems and several laboratory assignments will be made that make use of such a system. In addition to requiring basic computational skills, some homework and lab assignments will be motivated by real world problems. Although an emphasis will be placed on scientific applications, applications may also be taken from business and the social sciences. Your attendance is expected at all class sessions. Exams may be made up only with a valid excuse, and quizzes cannot be made up. The lowest quiz grade will be dropped. Work should be handed in at the beginning of class on the date it is due. Every day that the work is late will result in a 10% reduction of your grade.

The placement exam is designed to test the student's knowledge of material that is essential to the course. The required topics along with several sample questions and answers for each topic can be downloaded by visiting the following website:

<http://www.messiah.edu/departments/mathsci/> .

This exam is designed to be taken with pencil and paper alone. The use of a calculator or any computer-based computation is prohibited.

Grading:	Hour Exams (3)	300 points
	Placement Exam	50 points
	Quizzes/Homework	150 points
	Lab Assignments	100 points
	Final Exam	200 points
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	TOTAL POSSIBLE	800 points

Grading scale:	<u>Course %</u>	<u>Course Grade</u>
	90%	A
	80%	B
	70%	C
	60%	D

Exceptions to this table: + and - given at instructor's discretion. You cannot pass this course if you score below 60 on the placement exam.

Final Exam Date – Tuesday December 15th at 10:30 (Frey 110). School policy requires you to take the exam on this date. Make travel plans accordingly. (No Calculators...Comprehensive)

Prov 3:5-6 Trust in the LORD with all your heart and lean not on your own understanding; in all your ways acknowledge him, and he will make your paths straight.

Sept.	1	
	2	Introduction – Placement Exam Problems
	3	
	4	Placement Exam
	7	1.1 1,2,5,6,9
	8	Lab Sections 1 and 2
	9	1.2 1,5,9,15,17,19,21,23,25,27,29,31,33,43,45,47,55,57,64,75,76
	10	Lab Section 3
	11	1.3 9,11,15,17,23,27,31,35,37,41,43,45,49,51,53,57,59,61,65,67,69,73,75,85,89,116,118,123,124
	14	1.4 3,5,7,9,11,15,17,27,29,31,33,35,37,39,41,45,47,49,53,65,67,77,96,97,98,103
	15	Lab Sections 1 and 2
	16	1.5 1,3,7,13,17,21,23,27,29,31,33,35,39,43,45,49,51,61,63,64
	17	Lab Section 3
	18	3.5 1,3,4,5,6,9,13,15,19,21,23,25,27,31,37
	21	2.1 1,3,5,9,13,17,21,23,25,27,33,39,40,41,42,43,47,49,51,57,61,64,75,83,85,87,101
	22	Lab Sections 1 and 2
	23	2.2 3,5,7,9,11,15,19,21,23,29,31,35,37,41,43,45,47,51,53,55,59,63,67,69,71,72,77,87,89,93,97,99,101,103,117

	24	Lab	Section 3
	25	2.3	3,11,15,21,25,29,33,35,39,41,43,47,49,51,59,63,69,73,95, 101,103,105,107,111,113,115,120,121,131
	28	2.4	3,7,11,15,19,21,23,25,29,31,33,43,45,47,49,51,53,55,57,61,65,69, 71,75,79,91,107,108,111,121
	29	Review	Sections 1 and 2
	30	2.5	5,7,11,13,17,21,23,27,29,33,37,41a,43,47,53,57,74,76,77
Oct.	1	Review	Section 3
	2	TEST 2	Begins at 7:30 a.m.
	5	2.6	3,9,11,17,19,21,23,25,27,29,31,33,35,38,43,45
	6	Lab	Sections 1 and 2
	7	3.1	1,3,5,7,11,13,15,17,19,23,25,27,29,33,35,39,41,54,55,57,65,67
	8	Lab	Section 3
	9	3.2	1,5,7,9,11,15,17,19,29,31,33,37,39,43,45,47,55,57,59,64,71,77,79
	12	3.3	1,5,9,11,15,19,21,27,29,33,35,39,43,49,59,65,69,69,71,73,77,78
	13	Lab	Sections 1 and 2
	14	3.4	1,5,9,11,15,17,19,21,25,27,31,35,37,41,45,47,49,51,59,65,70,73,91
	15	Lab	Section 3
	16	3.6	1,2,3,4,5,11,15,17,21,23,25,29,31,37,41,45,47,67,72
		3.5	1,2,3,4,5,6,58,61,65,69
	19	3.7	3,7,9,11,13,17,21,22,25,27,29,33,35,38,41,45,49
	20	Lab	Sections 1 and 2
	21	3.8	1,5,9,13,17,19,21,23,25,33,41
	26	3.8/3.9	
	27	Review	Sections 1 and 2
	28	3.9	5,9,11,13,15,17,21,27,29,33,43,45,52,53
	29	Review	Section 3
	30	Test 2	Begins at 7:30 a.m.
Nov.	2	4.1	1,7,11,17,19,21,23,25,27,29,31,33,35,37,41,43,47,51,57,61,67,70, 71,73,75,77,81,85
	3	Lab	Sections 1 and 2
	4	4.1/4.2	
	5	Lab	Section 3
	6	4.2	3,7,11,15,19,21,23,27,29,31,35,39,41,47,49,57,61,81,86
	9	4.3	5,9,11,15,17,19,23,27,31,35,39,43,45,47,52,53,55,57,65,69,73,77, 79
	10	Lab	Sections 1 and 2
	11	4.4	1,7,11,15,19,23,25,27,29,31,33,37,39,45,49,51,54,55,57,59,66,67, 71,75,77,79,83,85,87,91
	12	Lab	Sections 3
	13	4.4/4.5	
	16	4.5	3,9,11,13,17,19,23,25,29,31,37,47,49,51,53,55,59,65,67,71,75,77, 79,91,103,109,111,114
	17	Lab	Sections 1 and 2
	18	4.6	3,5,9,13,17,21,39,46
	19	Lab	Section 3

	20	5.1	7,9,15,19,23,27,29,31,33,39,43,47,49,53,55,57,61,65,71,75,77,83,87,91,101,103,109,110
	23	5.2	5,7,11,13,15,17,19,23,25,29,33,35,37,53,59,67,73,77,86,87,90,99
	24	Lab	Section 3 (Today follows a Thursday schedule)
	30	5.3	3,5,7,9,10,11,12,13,17,23,29,35,37,43,47,53,65,71,77,81,97,100
Dec.	1	Review	Sections 1 and 2
	2	5.4	3,5,13,19,23,29,37,41,45,47,49,51,53,57,59,61,69,71,73,101,103,105, 109,113,115,119,123,125
	3	Review	Section 3
	4	Test 3	Begins at 7:30 a.m.
	7	5.6	5,7,9,11,17,21,29,31,37,43,47,49,51,55,57,59,61,63,73,75,77,83,90
	8	Lab	Sections 1 and 2
	9	5.7	3,5,7,9,13,15,17,19,21,25,29,31,33,37,41,43,47,49,51,55,59,71
	10	Lab	Section 3
	11	5.5 /Reviw	1,7,9,15,19,23,27,31,41,43,47,51,53,57,59,61,65,67,69,75,79,81
	15	Final Exam	10:30