

## **Waiver Exams**

- Waiver exams must be taken within the first year of starting GSM classes
- The waiver exam may be taken only once per subject
- The cost of the waiver exam is \$100 payable at least two weeks prior to the exam date.
- Arrangements are made with the faculty proctor for the subject area.
- Please forward the check to Ms. Cheryl Nelson in the Graduate School of Management (GSM).
- Upon receipt of the fee, the GSM will notify the faculty member and provide written documentation authorizing the waiver exam.

## Mathematics Foundations Waiver Examination Information

### The exam:

The examination consists of 60 questions. There are no multiple-choice questions. Please show your work on all questions. The exam is not timed. While the exam is not timed, most who have taken the exam have needed 3.5 to 4 hours to complete the exam. There is no need for a text or any notes. Since you may not use a text or notes, there are no questions needing the quadratic formula, the product rule, or the quotient rule.

A grade of 75 or above is needed to be waived from BUAD 203 (Mathematics Foundations).

Scrap paper will be provided.

### Topics Covered and Points per Topic:

Topic:	Points:
Algebraic Concepts	10
Equations and Functions	15
Linear Inequalities and Linear Programming	11
Exponential and Logarithmic Functions	6
The Derivative and Rates of Change	37
Integration	21

For a further breakdown of the topics, please see the next page.

### Calculator:

You will need a calculator for the examination. Your calculator should be able to do (at least) exponential and logarithmic functions. Graphing calculators and PDAs are not allowed. If you have a question about your calculator, please ask Bob Collins (office: DS 228, phone: 414-288-3412, e-mail: [robert.collins@marquette.edu](mailto:robert.collins@marquette.edu)).

### Review:

To review the topics covered on the exam, see the next page. If you have any questions, please contact Bob Collins (office: DS 228, phone: 414-288-3412, e-mail: [robert.collins@marquette.edu](mailto:robert.collins@marquette.edu)).

Topic	Including	Possible Applications
Algebraic Concepts		
	Integral Exponents	
	Radicals and Rational Exponents	
	Operations with Algebraic Expressions	
	Factoring	
	Algebraic Fractions	
Equations and Functions		
	Solutions of Linear Equations in One Variable	
	Functions	
	Linear Functions	cost, revenue, profit
	Solutions of Systems of Linear Equations	point of equilibrium, break-even analysis
	Quadratic Equations and Functions	
	Piecewise Defined Functions	
Linear Inequalities and Linear Programming		
	Exponential and Logarithmic Functions	graphically maximize/minimize on feasible region sales decay, compound interest, doubling time
The Derivative and Rates of Change		
		marginal revenue/cost/profit
		maximization and minimization
		curve sketching
		concavity and points of inflection
		minimum average cost
Integration		
	Indefinite Integrals	total revenue/cost/profit
	Definite Integrals	area

Text suggestion:

Study for the exam using a text that you are familiar with.

The text that is currently used in the BUAD 203 class is :

Mathematical Applications for the Management, Life, and Social Sciences  
(Eighth Edition). Harshbarger and Reynolds, Houghton Mifflin, 2007.

If you use this text, I would expect you to be comfortable with

Chapter 0      Chapter 1      Sections 2.1-2.4      Sections 4.1-4.2      Chapter 5

Chapter 9      Chapter 10      Sections 11.1-11.2      Sections 12.1-12.4

Sections 13.2-13.3

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