

BARUCH COLLEGE (CUNY)
Department of Mathematics
MATH 2207 SYLLABUS

Textbooks:

(1) Larson, Brief Calculus, an Applied Approach, Tenth Edition, Cengage Learning, 2015. This is available as a hardcopy or an ebook.

AND

(2) **EITHER** Gordon and Shane, Matrices and Systems of Linear Equations, Pearson, 2005, **OR** Collison, Systems of Equations and Matrices with the TI-89, Wiley Custom, 2000. The Collison book is only available on line and is free. Your instructor will let you know which one of these texts is being used in your section.

Students should obtain the “Manual for the Uniform Final Examination.” This is available on the course’s MTH_2207_ALL Blackboard site. Hard copies of this manual are available from SACC (Student Academic Consulting Center), located on the second floor of the Vertical Campus. It also appears on SACC’s web site, www.baruch.cuny.edu/sacc. Faculty schedules, offices and office hours are posted outside the math department office, Room 6-230, and on their office doors.

One of the following calculators **is required**: TI-89, TI-89 Titanium or TI-92 Plus. The TI 83 or TI 84 is **NOT** acceptable.

All students registered in MTH 2207 are automatically included in two Blackboard sites: (1) their MTH 2207 section site, managed by their instructor and (2) the MTH_2207_ALL site managed by the department. The “ALL” site contains the final exam manual as well as the links to various course and final exam videos. (The departmental website address is: www.baruch.cuny.edu/math/)

All Sections are required to use Webassign. The Webassign homework for lessons 1 – 20 will correlate with the section number and topic in the textbook. The Webassign homework for lessons 21-24 will appear under the headings Matrices.

Note: Any Practice Final Exam Exercise numbered 26 or higher may be worked out using your calculator.

The following assignments are from the Larson text			
	Topic	Text	Practice Final Exams
1	Review of Functions Sections 1.3 and 1.4	P.31: 3,9,33,45,47,55,61,79, 89, 91 P.44: 9-16 (all), 25,26,29, 30,71,72,75	
2	Limits and Continuity Section 1.5 and 1.6	P.57: 1,3,5,7,9,25,27,29,31,33, 37,39,43,53,57,59,61, 63,77 P.67: 1-21 (odd), 27,28,41,44, 45, D28,F25	B12, B29, A1, C23, D7, E16, F4
3	Asymptotes – Section 3.6	P. 223: 1-15 (odd), 19,20,21, 23,25,29,33,37,39 problems 49,51,55 graph using intercepts and asymptotes	A2, A3, B13, C24, C25, D8, E17, E18, F3, F5, D28, F25,B14
4	Derivative and Slope of a Curve Section 2.1	P.88: 7,9,11,19, 21, 22,23,27, 29,35,42,44,53,55,56,58 C34	A10, A11, B21, B22, C7, D15, D16, E25, C34, E33
5	Rules for Differentiation, Section 2.2	P.100: 7-27 (odd), 31,33,45, 47, 51,53,55, 57,59,65, 81,82. F26	A9, B20, C6, D14, E24, F1, F6,F26
6	Rates of Change, Velocity and Marginals Product and Quotient Rules Sections 2.3 and 2.4	P.113: 3-33(odd), 38,39 A30,D34 P.124: 3,7,9,11,13,15,21,23, 25,31,35,42,49,51,55, 57	A21, B8, C15, F26, A30, D33, E26, E27, A6, A7, B17, B18, C3, C4, D11, D12, E21, E22, F29
7	Chain Rule and Higher Order Derivatives, Sections 2.5 and 2.6	P.135: 19-27(odd),39,43, 47, 49,51,53,61,62,67,68 P.142: 1,3,5,7,9,19,31,39	A8, B19, C5, D13, E23, F7, F27
8	Implicit Differentiation, Section 2.7	P.149: 1,3,7,8,13,15, 18,21,27, 33,39,47	A16, B2, B4, C10, D20, E5

9	Related Rates, Section 2.8	P.156: 1,3,5,9,11,13,15,20, 21,24	A17, C11, D21, E7, F8
	Topic	Text	Practice Final Exams
10	Increasing and Decreasing Functions, Section 3.1	P.175: 1,3,17,19,21,22,23, 29,30,31,37	A12, A22, D4, E1, E12, F9, B26
11	Extrema and First derivative Test, Section 3.2	P.184: 1,3,5,9,11,13,17,19,21, 23,25,29,35,47,49 A26,A32,C30,E32	A14, B11, B24, C8, C21, C22, D6, D18, E3, A26, C30, E32
12	Concavity and the Second Derivative Test, Section 3.3	P.193: 1-4(all),5,7,13,18,20, 21,24,25,35,39,43, 51-56 (all), A27,F27	A15, B3, B25, D19, E4, E6, A27, D30
13	Curve Sketching, Summary, Section 3.7	P.233: 5,7,9,10,15,16,23,27,29	A32
14	Optimization, Section 3.4	P.201: 1,3,5,6,13,14,15,17,29	A20, B7, B10, C14, D5, D24, E10
15	Business and Economic Applications, Section 3.5	P.212: 1,5,9,10,13,15,17,21	C17, D25, E11, E13, A33, C31
16	Differentials and Derivatives of Exponentials, Sections 3.8 and 4.3	P.240: 1,3,13,17,21,23,25, 27,33,35,41,42, P.273: 3,5,7,9, 15,17,18, 21, 25,27,29,45,47 B31,C26,D29,D35,E33	A13, B9, B23, C15, D17, E2, C35, A5, B16, C2, D10, E20, F2, F10, A31, B31, C26, D29, D35,
17	Derivatives of Logarithmic Functions, Section 4.5	P.291: 1-19(odd),47,48,49,53, 77 F28	A4, B15, C1, D9, E19, D34, F28
18*	Antiderivatives and Integrals, Section 5.1 Integration by Substitution Sections 5.2 and 5.3	P. 319: 3,5,9,13,15,17,19,21 23,27,31,33,37,41,45, 47,48,52,53,55,57, 61,66,67,69 P. 329: 1,3,15,17,19,28,51,53 P. 336 : 7,21,25,27,31,35,37, 47,53	A18, B6, E8, A29, D32
19	Areas and the Fundamental Theorem Section 5.4	P. 348: 1,3,9,11,13,17,19,23, 25, 27, 31,33,43,45, 55,57,59	A19, C12, C13, D22, E3, B28, C28, E34
20	Area of a Region, Consumer Surplus and Producer Surplus, Section 5.5	P. 357: 1,3,7,17,21,37,39, 43,45,47	B5, D23, A28, B27, C27, D31, E35

* In Sections 5.2 and 5.3, students are expected to do *basic* substitutions both with and without the calculator.

The following are from the Gordon Shane text			
	Topic	Text	Practice Final Exams
21	Basic Matrix Operations and Multiplication	P.6: 1, 3, 4, 5, 7, 8, 9, 11, 12 P.21: 1, 3, 5, 7, 9, 10, 12, 14	A25, F21
22	Matrix Multiplication and Inverse	P.22: 18, 19, 21, 22, 24, 25, 26, 27, 28	A24, B1, C20, D2, E31, F20, F23
23	Gauss Jordan and Matrix Inversion	P.39: 1,2,3,5,7,9,11,13 ,15, 19, 20 P. 41: 22,24,27,28,31,34, 35, 37,39,43	C19, E14, E15, B32, A35, B34, B35, C32, C33, D26, D27, E29, E30
24	Non Unique Systems	P.54: 1,5,7,12,17 – 20	A23, A34, C18, D1, F22, F24
The following are from the Collison text			
	Topic	Text	Practice Final Exams
21	Systems of Equations and Row Operations	P.31: 1,2,3	
22	Gauss-Jordan Row Reduction	P.31: 4,5,6,7,8,9,10	A23,C18,19,D1,E14,15
23	TI-89 Usage for rref and Matrix Operations	P.31: 11 to 34 (all, both odd and even)	A24,34,B1,B32, B33, C20, D2,E31
24	Inverse Matrices and Matrix Equations	P.33: 35,36,37,38,39	A25,35,B34,35,C32,C33, D2,D26, D27,E29,30, F20,21,22,23,24

LEARNING GOALS OF COURSE: Upon completion of this course, students will be able to:

- Compute limits of functions, and use limits to determine the derivative of a function.
- Use appropriate theorems to determine derivatives of algebraic, exponential, and logarithmic functions.
- Interpret the derivative as a rate of change, and apply this interpretation to other disciplines.
- Perform algebraic manipulations with matrices. Apply matrix operations to analyze systems of linear equations and determine solutions when they exist.
- Apply the first and second derivatives to determine the slope and concavity of a graph and locate its extreme points.
- Solve optimization problems in geometry, business, and economics.
- Approximate functions locally using differentials.
- Perform algebraic operations on, and differentiate, exponential and logarithmic functions as needed in problems, with and without a calculator.
- Antidifferentiate functions directly and by change of variable.
- Express the definite integral as the limit of a sum of products; evaluate definite integrals; and find solutions to problems that require definite integrals.
- Determine the area of planar regions by using the definite integral. Apply this skill to compute consumer and producer surplus.