MTH 230 F2015
DF/MT

THE COLLEGE OF STATEN ISLAND, CUNY
DEPARTMENT OF MATHEMATICS

MATH 230–CALCULUS I
COURSE OUTLINE

Text: Rogawski and Adams, Calculus – Early Transcendentals, 3nd Edition.
W. H. Freeman & Co. (2015). ISBN# 978-1-4641-1488-5

Note: The textbook is used also for MTH 232, 233. If you are only taking MTH 230 or 231 you may use Rogawski and Adams, Single Variable Calculus: Early Transcendentals.

Note: Below, each lesson corresponds approximately to a two-hour class. Sections in [brackets] may be omitted by some instructors if time is short. Homework problems in **bold** correspond to similar WeBWorK problems, which must be submitted online.

Lesson	Section	Topic	Homework Problems
1	1.1	Functions and Graphs	**11**, **15**, **37**, 49, 51**, 65, 71**
2	1.2	Linear and Quadratic Functions	**13, 14, 18,** 21, 29,**31, 35,** 39, 41, **47**
3	1.3	Basic Functions: Polynomials, Rational Functions, Composition of Functions	**5, 6,** 7,8,11, **13, 19,** 25, 27, **29, 32**
4	1.4	Trigonometric Functions	3, 7, **9, 13, 15, 16, 19,** 21
5	1.5	Inverse Functions	**3,** 17, **23, 32, 33**, 35, 37
6	1.6	Exponential and Logarithmic Functions	1, 3, **6,** 9, **28, 29, 33**
7	2.1 2.2	Limits and rates of change Limits: Numerical and graphical	**1, 3, 24, 25, 30** **1,** 2, 3, **5, 7,** 8, 17, 19, **21, 30,** 40, 55
8	2.3 2.4	Limit laws Continuity	**4,** 5, 7,9, **16, 17, 27, 29** **1,** 3, 5, 7 **17,** 19, **22, 25, 57,** 71, 77, 79
9	2.5 2.6	Evaluating limits algebraically Trigonometric limits	1, **5, 7,** 9, **17,** 21, 25, **29, 47** **2,** 17, **21, 25, 29,** 31, 33, 34, **44**
10	2.7	Limits at Infinity	**7, 8,** 9, **10,** 13, **14, 19,** 23, 30, **38**
11	2.8 2.9	Intermediate Value Theorem Formal definition of a limit	1, 3, 5
12		Review	
13		**Exam 1**	
14	3.1	Definition of the derivative	6, **9**, 13, **17**, **18**, **22**, 26, 29, 53, 55, 57
15	3.2	Derivative as a function	**9**, **11**, **17**, **23**, 32, 35, **35**, **41**, 43, 52, 53, 66, 68
16	3.3	Product and quotient rules	**6**, **8**, **9**, 19, **21**, **29**, **30**, 31, 35, 41, 43, 53
17	[3.4]	Rates of change	**2**, 7, 9, 10, **14**, 16, **25**, **26**, 38, **41**, 43
18	3.5 3.6	Higher derivatives Trigonometric functions	**5**, **9**, **11**, **19**, **21**, 27, 39, 41 **1**, **7**, **10**, **17**, 18, 23, 29, 43
19	3.7	The Chain rule	5, **7**, **11**, **13**, **27**, **35**, **36**, 43, 47, 55, 87

20	3.8	Implicit differentiation	**3**, **5**, **11**, 17, **23**, 28, **33**, 41, 54, 82
21	3.9	Derivatives of exponentials and logs	**1**, **3**, **7**, **9**, 17, 45, 47
22	3.10	Related rates	**3**, **5**, 11, 15, 16, 19, **21**, **25**, **29**
23		Review	
24		**Exam 2**	
25	[4.1]	Linear approximation	**5**, **7**, 9, 13, **24**, **25**, 37, 41, 47, 51, 54
26	4.2	Extreme Values	**1**, **4**, **9**, **17**, **21**, **41**, 49, 55, 63
27	4.3	First derivative test	1, 15, 16, 17, 25, **26**, **34**, **38**, 46, **50**, **55**
28	4.4	Concavity and the second derivative	**1**, 2, 7, **9**, 13, **16**, **18**, 23, **37**, 48, 51, 59
29	4.5	L'Hopital's Rule	**8**, 12, **16**, **19**, 22, 23, **31**, **40**, 43, 46, 65
30	4.6	Graph sketching and Asymptotes	1, 13, **19**, 28, **31**, **34**, 38, 45, **54**, 57
31	4.7	Optimization	**1**, 8, 13, 15, **16**, **22**, 26, 27, **30**, **33**, 43, **57**
32	4.7 [4.8]	Optimization Newton's method	 (Matlab Project)
33		Review	
34		**Exam 3**	
35	5.1	Approximating area	**3**, 15, 17, **19**, **21**, 47, 79
36	5.2	Definite integral	**8**, 9, **13**, 19, 23, **29**, 41, **45**, **56**
37	5.3	Antiderivatives	3, 5, 7, 14, 16, 19, 22, 24, 27, 47, 51, 68
38	5.4	Fundamental Theorem of Calculus I	10, **11**, **13**, **25**, 33, **35**, 37, **40**, 45, 47, 53, 55, 62
39	5.5 [5.6]	Fundamental Theorem of Calculus II Net change	**5**, **8**, **9**, **13**, **15**, **16**, **17**,**19**, **21**, **23**, **24**, **29**, **30**, **33**, **35**, ,
40	5.7	Integration by substitution	**29**, **30**, **35**, **46**, **51**, **61**, **65**, **71**, **72**, **85**, **95**
41	[5.8] [5.9]	Integration of transcendental functions Exponential growth & decay	**3**, **9**, 13, 16, **43**, **44**, **46**, 53 1, 9, 14, 15, 19
42		Review	