MTH 231 F2015
CTM

THE COLLEGE OF STATEN ISLAND, CUNY
DEPARTMENT OF MATHEMATICS

MATH 231–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 to a one-hour class. Homework problems in **bold** correspond to similar WeBWorK problems, which must be submitted online.

Lesson	Section	Topic	Homework Problems
1	1.2 1.4	Review: Linear and quadratic functions Review: Trigonometric functions	**13**, **14**, **18**, 21, 25, 31, **35**, 39, 41 3, 7, **13**, **15**, 19, 21, 47
2	1.5 1.6	Review: Inverse functions Review: Exponential and log functions	3, 4, 28, 33, 36, 37, 47, 49, 53 1, 7, 9, 22, 28, **29**, 31, 33, 34, 42
3	2.1 2.2	Limits and rates of change Limits: Numerical and graphical	**1**, **3**, 4, 17, **24**, **25**, **30** **1**, **5**, **7**, 17, 19, **21**, 24, **28**, 30, 51, 55
4	2.3	Limit laws	**4**, 5, 9, **16**, **17**, 19, **27**, **29**, 31
5	2.4	Continuity	**1**, **17**, 19, **22**, **25**, 51, **57**, 65, 71, 77
6	2.5	Evaluating limits algebraically	**5**, **7**, 9, **17**, 21, 27, **29**, 39, **47**, 51, 52
7	2.6	Trigonometric limits	**2**, 12, 17, **21**, **25**, **29**, 33, 34, 36, **44**
8	2.7	Limits at infinity	**7**, **8**,**10**,**14**,**19**, 22, 30, **38**
9	2.8	Intermediate Value Theorem	3, 5, 7, 9, 15
10	3.1	Definition of the derivative	6, **9**, 13, **17**, **18**, **22**, 26, 29, 53, 55, 57
11	3.2	Derivative as a function	**9**, **11**, **17**, **23**, 32, 35, **35**, **41**, 43, 52, 53, 66, 68
12	3.3	Product and quotient rules	**6**, **8**, **9**, 19, **21**, **29**, **30**, 31, 35, 41, 43, 53
13	3.3	Product and quotient rules	
14	3.4	Rates of change	**2**, 7, 9, 10, **14**, 16, **25**, **26**, 38, **41**, 43
15		Review	
16		**Exam 1**	
17		**Exam 1**	
18	3.5	Higher derivatives	**5**, **9**, **11**, **19**, **21**, 27, 39, 41
19	3.6	Derivatives of trig functions	**1**, **7**, **10**, **17**, 18, 23, 29, 43
20	3.7	Chain rule	5, **7**, **11**, **13**, **27**, **35**, **36**, 43, 47, 55, 87
21	3.7	Chain rule	
22	3.8	Implicit differentiation	**3**, **5**, **11**, 17, **23**, 28, **33**, 41, 54, 82
23	3.9	Derivatives of exponentials and logs	**1**, **3**, **7**, **9**, 17, 45, 47
24	3.10	Related rates	**3**, **5**, 11, 15, 16, 19, **21**, **25**, **29**

25	3.10	Related rates	
26	4.1	Linear approximation	**5**, **7**, 9, 13, **24**, **25**, 37, 41, 47, 51, 54
27	4.2	Extreme values	**1**, **4**, **9**, **17**, **21**, **41**, 49, 55, 63
28	4.2	Extreme values	
29	4.3	First derivative test	1, 15, 16, 17, 25, **26**, **34**, **38**, 46, **50**, **55**
30	4.3	First derivative test	
31	4.4	Concavity and second derivative	**1**, 2, 7, **9**, 13, **16**, **18**, 23, **37**, 48, 51, 59
32	4.4	Concavity and second derivative	
33	4.5	L'Hopital's Rule	**8**, 12, **16**, **19**, 22, 23, **31**, **40**, 43, 46, 65
34	4.6	Graph sketching and asymptotes	1, 13, **19**, 28, **31**, **34**, 38, 45, **54**, 57
35	4.6	Graph sketching and asymptotes	
36	4.7	Optimization	**1**, 8, 13, 15, **16**, **22**, 26, 27, **30**, **33**, 43, **57**
37	4.7	Optimization	
38		Review	
39		**Exam 2**	
40		**Exam 2**	
41	5.1	Approximating area	**3**, 15, 17, **19**, **21**, 47, 79
42	5.2	Definite integral	**8**, 9, **13**, 19, 23, **29**, 41, **45**, **56**
43	5.2	Definite integral	
44	5.3	Antiderivatives	**3**, **5**, **7**, **14**, **16**, 17, **19**, 22, 24, **27**, 40, 47, 51, 68
45	5.3	Antiderivatives	
46	5.4	Fundamental Theorem of Calculus I	10, **11**, **13**, **25**, 33, **35**, 37, **40**, 45, 47, 53, 55, 62
47	5.5	Fundamental Theorem of Calculus II	**5**, **8**, **9**, **13**, **15**, **16**, **17**,**19**, **21**, **23**, **24**, **29**, **30**, **33**, **35**, 37 ,39, 45
48	5.7	Integration by substitution	**29**, **30**, **35**, **46**, **51**, **61**, **65**, **71**, **72**, **85**, **95**
49	5.7	Integration by substitution	
50	5.8	Integration of transcendental functions	**3**, **9**, 13, 16, **43**, **44**, **46**, 53
51	5.8	Integration of transcendental functions	
52		Review	
53		**Exam 3**	
54		**Exam 3**	
55		Final review	
56		Final review	