MTH 230 F2019
JeVu

THE COLLEGE OF STATEN ISLAND, CUNY
DEPARTMENT OF MATHEMATICS

MATH 230 – CALCULUS I
COURSE OUTLINE

Text: Rogawski, Adams & Franzosa, Calculus – Early Transcendentals, 4th Edition.
W. H. Freeman & Co. (2019).
ISBN: 9781319411671 (e-book ISBN: 9781319411657)

Note: Below, each lesson corresponds to a one-hour class. Sections in [brackets] may be omitted if the 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	Real numbers, functions and graphs	**15, 19, 41**, 53, 55**, 71, 77**
2	1.2	Linear and quadratic functions	**13**, **14**, **18**, 21**, 25**, 33, **37, 41, 43**
3	1.3	The basic classes 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, 33**
5	1.5	Inverse functions	**3,** 19, **25, 28, 34, 35, 37, 39**
6	1.6	Exponential and log functions	1, **4,** 7, **26, 27, 31**
7	2.1 2.2	Instantaneous velocity and tangent lines Investigating limits	**1**, **4, 18**, **21,** 26**, 29** **1**, 7, **9**, **21, 23**, 25, 30, **34**, **36,** 57, 61
8	2.3 2.4	Basic limit laws Limits and continuity	**4**, 5, 9, 18, **19, 21**, **29**, **31**, 33 1, **17, 19, 22, 27,** 57**, 65,** 73, **79, 85**
9	2.5 2.6	Indeterminate forms The squeeze theorem and trig limits	**5**, **7**, 9, **17**, **21, 27, 29**, **35, 45, 51**, **53**, 54 **6**, **12,** 17**, 21, 25, 29, 33, 34, 36, 44, 49**
10	2.7	Limits at infinity	**7, 8,10,14,19, 22, 34**, **42**
11	2.8 2.9	Intermediate Value Theorem The formal definition of the limit	3, 5, 7, 9, 15
12		Review	
13		**Exam 1**	
14	3.1	Definition of the derivative	6, **9**, **13**, **17, 18, 22, 26**, 29, **57, 59, 61**

15	3.2	Derivative as a function	**9, 11, 17, 23, 32**, **35, 37**, **43,** 45, **56**, **57**, **65**, 70, 72
16	3.3	Product and quotient rules	**6, 8, 9**, **21, 23, 32, 33, 37**, **41, 47, 51**, 61
17	[3.4]	Rates of change	**2,** 7, 9, 10**,** 22**, 29, 30,** 43
18	3.5 3.6	Higher derivatives Derivatives of trig functions	**5, 9, 11, 19, 21, 27**, 39, 41, **42** **1, 7, 10, 17, 18**, 23, 29**, 43**
19	3.7	The chain rule	**5**, **7**, **13**, **15**, **29**, **37**, **38**, **45, 49**, 57, 93
20	3.8	Implicit differentiation	**3**, **5**, **13**, **19**, **25**, **30, 35**, **43, 56**, **87**
21	3.9	Derivatives of exponentials and logs	**1, 3, 7, 9,** 17, **45,** 47
22	3.10	Related rates	**3**, **5**, **9, 13**, 15, **16**, 19, **21**, **25**, **29**
23		Review	
24		**Exam 2**	
25	[4.1]	Linear approximation	**5**, **7**, **9, 13, 15, 17, 19,** 23, **28**, 29, **33**, 45, **48**
26	4.2	Extreme values	**4**, **9**, **17**, **21**, **41**, **49, 57**, 67
27	4.3	Mean Value Theorem / Monotonicity	**1,** 15, **16,** 17**,** 25, **26**, **34**, **38, 39, 46, 55**, **59**
28	4.4	The second derivative and concavity	**1**, 2, 9, **11**, **15**, **20**, **22**, **29**, 43, 54, 57, 65
29	4.5	L'Hôpital's Rule	**8**, **12**, **16**, **19**, **22, 23**, **31**, **40**, **43, 46**, 67
30	4.6	Sketching graphs	**1**, 13, **19**, **28**, **31**, **34**, 38, 45, **54**, 57
31	4.7	Applied optimization	**1**, 8, 13, **15, 16**, **24**, 28, 29, **32**, **35**, **45, 59**
32	4.7 [4.8]	Applied optimization Newton's method	
33		Review	
34		**Exam 2**	
35	5.1	Approximating and computing area	**3**, **19, 21, 26,** 47, 79
36	5.2	The definite integral	**8**, 9, **13**, **18, 22,** 25, **31**, 43, **47**, **58**
37	5.3	The indefinite integral	**3**, **5**, **7**, **14**, **16, 17**, **19**, **22, 24**, **27**, 32, **38, 47**, **51, 66**

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	**14**, **15**, **19**, **21**, **22**, **25**, **27**, **28**, **33**, **34**, **37**, 39, 41, 43, 47
40	5.7	The substitution method	**29, 30, 35, 38, 48, 53, 63, 67, 73,** 87, 97
41	5.8	Further integral formulas	**3, 9,** 17, 20, **47, 48, 50**, 57
42		Review	