

THE COLLEGE OF STATEN ISLAND, CUNY
DEPARTMENT OF MATHEMATICS

**MATH 231 – CALCULUS I
COURSE OUTLINE**

Text: Rogawski, Adams & Franzosa, Calculus – Early Transcendentals, 4th Edition.
W. H. Freeman & Co. (2019).

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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, 33, 37, 41, 43 3, 7, 13, 15, 19, 21, 47
2	1.5 1.6	Review: Inverse functions Review: Exponential and log functions	3, 4, 28, 30, 35, 38, 39, 49, 51, 55 5, 7, 20, 26, 27, 29, 31, 32, 40
3	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
4	2.3	Basic limit laws	4, 5, 9, 18, 19, 21, 29, 31, 33
5	2.4	Limits and continuity	1, 17, 19, 22, 27, 57, 65, 73, 79, 85
6	2.5	Indeterminate forms	5, 7, 9, 17, 21, 27, 29, 35, 45, 51, 53, 54
7	2.6	The squeeze theorem and trig limits	6, 12, 17, 21, 25, 29, 33, 34, 36, 44, 49
8	2.7	Limits at infinity	7, 8, 10, 14, 19, 22, 34, 42
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, 57, 59, 61
11	3.2	Derivative as a function	9, 11, 17, 23, 32, 35, 37, 43, 45, 56, 57, 65, 70, 72
12	3.3	Product and quotient rules	6, 8, 9, 21, 23, 32, 33, 37, 41, 47, 51, 61
13	3.3	Product and quotient rules	
14	3.4	Rates of change	2, 7, 9, 10, 22, 29, 30, 43
15		Review	

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

MTH 231 F2019

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43	5.2	The definite integral	
44	5.3	The indefinite integral	3, 5, 7, 14, 16, 17, 19, 22, 24, 27, 32, 38, 47, 51, 66
45	5.3	The indefinite integral	
46	5.4	The fundamental Theorem of Calculus I	10, 11, 13, 25, 33, 35, 37, 40, 45, 47, 53, 55, 62
47	5.5	The fundamental Theorem of Calculus II	14, 15, 19, 21, 22, 25, 27, 28, 33, 34, 37, 39, 41, 43, 47
48	5.7	The substitution method	29, 30, 35, 38, 48, 53, 63, 67, 73, 87, 97
49	5.7	The substitution method	
50	5.8	Further integral formulas	3, 9, 17, 20, 47, 48, 50, 57
51	5.8	Further integral formulas	
52		Review	
53		Exam 3	
54		Exam 3	
55		Final review	
56		Final review	