

THE COLLEGE OF STATEN ISLAND, CUNY
DEPARTMENT OF MATHEMATICS

**MATH 231 – CALCULUS I
COURSE OUTLINE**

Text: Rogawski, Calculus – Early Transcendentals,
W. H. Freeman & Co. (2008)
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Note: The above textbook includes multi-variable calculus. If you do NOT intend to take MTH 233, you may instead purchase Rogawski, 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. (<http://www.math.csi.cuny.edu/webwork2>).

Lesson	Section	Topic	Homework Problems
1	1.1	Functions and graphs	17, 49, 51 , 63, 67 , 70
2	1.2 - 1.3	Linear and quadratic functions	1.2/ 21, 25, 29, 37, 39 1.3/ 23, 29, 31
3	1.4	Trigonometric functions	3, 7, 19, 21, 23 , 41
4	1.5	Inverse functions	3, 17, 31, 33, 39, 43, 49
5	1.6	Exponential and logarithmic functions	1, 7, 9, 25, 27, 29, 35
6	2.1	Limits and rates of change	1, 7, 15, 23, 29
7	2.2	Limits: Numerical and graphical	21, 23, 25, 27, 31, 37 , 39, 45, 47
8	2.3	Limit laws	17, 19, 21, 25, 27, 29
9	2.4	Continuity	1, 5, 19, 23, 25, 27, 55, 67, 73, 77, 79
10	2.5	Evaluating limits algebraically	9, 15, 19, 25, 27, 39, 47, 49, 51
11	2.6	Trigonometric limits	7, 9, 13, 23, 25, 27, 35, 41
12	2.7	Intermediate Value Theorem	3, 5, 7, 9, 15
13	2.8	Formal definition of a limit	1, 3, 5, 13
14		Review	
15		Review	
16		Exam 1	
17	3.1	Definition of the derivative	7, 11, 13 , 21, 23, 53, 55, 57
18	3.2	Derivative as a function	11, 27, 39 , 47, 49, 55, 57, 71
19	3.3	Product and quotient rules	23, 31, 33, 35 , 45, 51, 53
20	3.4	Rates of change	5, 7, 9, 11, 13, 31, 33, 35
21	3.5	Higher derivatives	13, 17, 19, 27, 29 , 39, 41, 53
22	3.6	Trigonometric functions	9, 13, 15, 17, 21 , 37, 43
23	3.7	Chain rule	5, 7, 11, 13, 19, 35, 39 , 51, 77, 79, 93
24	3.8	Implicit differentiation	5, 11, 17, 25, 31, 41, 43
25	3.9	Derivatives of inverse functions	3, 7, 9, 11, 13, 15 , 19, 23
26	3.10	Derivatives of exponentials and logs	1, 7, 9, 15, 17, 27, 35, 43

27	3.11	Related rates	3, 5, 9, 15, 17, 21, 25, 27, 29, 31
28	3.11 cont'd	Related rates	
29		Review	
30		Review	
31		Exam 2	
32	4.1	Linear approximation	9, 13, 15, 19, 31, 33, 41, 45, 49
33	4.2	Extreme values	1, 7, 11, 15, 39, 47, 53, 61
34	4.3	First derivative test	1, 13, 21, 23, 29, 33, 35, 39, 45, 51
35	4.3 cont'd	First derivative test	
36	4.4	Second derivative test	1, 2, 5, 9, 13, 17, 29, 33, 43, 45, 57
37	4.5	Graph sketching and asymptotes	1, 11, 21, 29, 49, 53, 57,
38	4.5 cont'd	Graph sketching and asymptotes	63, 65, 67, 73, 75, 77
39	4.6	Optimization	3, 5, 9, 11, 13, 15, 19, 21, 41, 43, 47
40	4.6 cont'd	Optimization	
41	4.7	L'Hopital's Rule	27, 31, 33, 35, 43, 45, 47, 61
42	4.8	Newton's method	1, 3, 7
43	4.9	Antiderivatives	25, 27, 33, 43, 45, 65, 67, 69, 75
44		Review	
45		Review	
46		Exam 3	
47	5.1	Approximating area	13, 15, 17, 21, 23, 27, 57
48	5.2	Definite integral	9, 13, 17, 29, 37, 57, 83
49	5.3	Fundamental Theorem of Calculus I	9, 17, 23, 27, 37, 43, 45, 51, 55, 57
50	5.4	Fundamental Theorem of Calculus II	5, 15, 21, 23, 25, 31, 33, 37, 39, 43
51	5.5	Net change	1, 3, 5, 7, 11, 13, 17
52	5.6	Integration by substitution	33, 35, 37, 39, 43, 47, 51, 67, 69, 73, 75, 85, 91
53	5.7	Integration of transcendental functions	3, 7, 13, 17, 43, 47, 57
54	5.8	Exponential growth and decay	1, 5, 9, 11, 17, 23, 33, 41
55		Review	
56		Review	