

Bronx Community College of the City University of New York
Department of Mathematics and Computer Science

SYLLABUS: MATH 31 - Calculus and Analytic Geometry I (4 credits/6 hours per week)

PREREQUISITE: Math 30 or equivalent

TEXT: Calculus (Seventh Edition) by James Stewart, Brooks/Cole, Pub.
ISBN 978-0-53849781-7

(Students who do not need MTH 33 may use
Single Variable Calculus (Seventh Edition) by James Stewart, Brooks/Cole, Pub.
ISBN 978-0-538-49783-1)

<u>SECTION</u>	<u>TOPIC</u>	<u>SUGGESTED EXERCISES</u>
<u>Chapter 1: Functions and Limits</u>		
1.4	The Tangent and Velocity Problems	49/ 1, 3, 5, 7
1.5	The Limit of a Function	59/ 1-5, 12-14, 17, 23-28
1.6	Calculating Limits Using Limit Laws	69/ 1, 3-23 odd
1.8	Continuity	90/ 3, 7, 9, 11, 15-21 odd, 25, 33, 37, 39, 41, 44, 45, 47, 51, 53, 55
	Review	95/ 1-11 odd, 17, 23, 27, 29
<u>Chapter 2: Derivatives</u>		
2.1	Derivatives	110/ 1, 3, 7, 19-29 odd, 35-43 odd, 47, 51, 53
2.2	The Derivative as a Function	122/ 1, 3, 4, 7, 19, 20, 21, 25-45 odd
2.3	Differentiation Formulas	136/ 1-43 odd, 51, 53, 67, 75
2.4	Derivatives of Trigonometric Functions	146/ 1-17 odd, 25, 29, 39-47 odd
2.5	The Chain Rule	154/ 1-45 odd, 47, 51, 55, 69, 71
2.6	Implicit Differentiation	161/ 1-19 odd, 25, 27, 35, 43, 45
2.7	Rates of Change in the Natural and Social Sciences	173/ 1-9 odd, 15, 18
2.8	Related Rates	180/ 1, 3, 7, 8, 9, 11-31 odd
2.9	Linear Approximations and Differentials	187/ 1, 3, 5, 7-25 odd, 31
	Review	191/ 3, 5, 11, 13-37, 45, 51, 59, 61, 75, 77, 79, 82

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Chapter 3: Applications of Differentiation

3.1	Maximum and Minimum Values	204/ 3, 5, 15-27 odd, 29-55 odd
3.2	The Mean Value Theorem	212/ 1, 3, 7, 9, 11, 15,19
3.3	How Derivatives Affect the Shape of a Graph	220/ 1, 5, 7, 8, 9-17 odd, 29-37 odd
3.4	Limits at Infinity; Horizontal Asymptotes	234/ 3, 9-27 odd, 35, 39
3.5	Summary of Curve Sketching	242/ 1-35 odd
3.7	Optimization Problems	256/ 3, 5, 7, 11, 17, 19, 25, 29
3.8	Newton's Method	267/ 5, 7, 13-19 odd, 29
3.9	Antiderivatives	273/ 1-39 odd, 41, 43, 45
	Review	276/ 1-27 odd, 38, 41, 46, 49, 3-57 odd

Chapter 4: Integrals

4.1	Areas and Distance	293/ 1, 3, 5, 13, 15, 19, 23
4.2	The Definite Integral	306/ 3, 5, 9, 17, 21-25 odd, 31, 33, 37
4.3	The Fundamental Theorem of Calculus	318/ 3, 7-35 odd, 41, 45, 49
4.4	Indefinite Integrals and the Net Change Theorem	326/ 1-11 odd, 19-41 odd, 55, 57
4.5	The Substitution Rule	335/ 1-29 odd, 35-51 odd
	Review	338/ 2, 5, 9-27 odd, 33, 35, 37

8/03 C.O'S.

8/07 MM

7/11 MM, 9/11 AM

6/12 EA