

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 (Sixth Edition) by James Stewart, Brooks/Cole, Pub.  
(Students who do not need Math 33 may use  
Single Variable Calculus (Sixth Edition) by James Stewart, Brooks/Cole, Pub.)

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<u>SECTION</u>	<u>TOPIC</u>	<u>SUGGESTED EXERCISES</u>
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Chapter 2: Limits and Rates of Change

2.1	The Tangent and Velocity Problems	65/ 1, 3, 5, 7
2.2	The Limit of a Function	74/ 1-5, 12-14, 17, 23-28
2.3	Calculating Limits Using Limit Laws	84/ 1, 3-23 odd
2.5	Continuity	105/ 3, 7, 9, 11, 15-21 odd, 25, 33, 37, 39, 41, 44, 45, 47
	Review	109/ 1-11 odd, 17, 23, 27, 29

Chapter 3: Derivatives

3.1	Derivatives	119/ 1, 5, 7, 13-19 odd, 25-47 odd
3.2	The Derivative as a Function	131/ 1, 3, 4, 7, 19, 20, 21, 25-45 odd
3.3	Differentiation Formulas	144/ 1-39 odd, 51, 53
3.4	Derivatives of Trigonometric Functions	154/ 1-17 odd, 21, 29, 35-43 odd
3.5	The Chain Rule	161/ 1-41 odd, 51, 55
3.6	Implicit Differentiation	169/ 1-19 odd, 25, 27, 41, 43, 45
3.7	Rates of Change in the Natural and Social Sciences	179/ 1-9 odd, 15, 18
3.8	Related Rates	186/ 1-25 odd
3.9	Linear Approximations and Differentials	193/ 5-35 odd
	Review	196/ 7, 11, 13-35, 45, 51, 59, 71, 75, 77, 82

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Chapter 4: Applications of Differentiation

4.1	Maximum and Minimum Values	211/ 3, 5, 15-23 odd, 31-55 odd
4.2	The Mean Value Theorem	219/ 1, 3, 7, 8, 11-17 odd
4.3	How Derivatives Affect the Shape of a Graph	227/ 1, 5, 7, 11-19 odd, 29-37 odd
4.4	Limits at Infinity; Horizontal Asymptotes	240/ 3, 7-21 odd, 35, 39
4.5	Summary of Curve Sketching	248/ 1-21 odd
4.7	Optimization Problems	262/ 3, 5, 7, 11, 17, 25, 29
4.8	Newton's Method	272/ 5, 7, 11-17 odd, 31
4.9	Antiderivatives	279/ 1-31 odd, 41
	Review	282/ 1-27 odd, 35, 41, 46, 49-55 odd

### Chapter 5: Integrals

5.1	Areas and Distance	298/ 1, 3, 5, 13-21 odd
5.2	The Definite Integral	310/ 3, 5, 9, 11, 17, 21, 35, 37, 43
5.3	The Fundamental Theorem of Calculus	321/ 5-33 odd, 41, 43, 45
5.4	Indefinite Integrals and the Net Change Theorem	329/ 1-11 odd, 17-27 odd, 50, 53, 55
5.5	The Substitution Rule	338/ 1-31 odd, 37-53 odd
	Review	341/ 2, 5, 9-23 odd, 33, 35, 37

8/03 C.O'S.

8/07 MM