Bronx Community College of the City University of New York

Department of Mathematics and Computer Science

SYLLABUS: MTH 33 – Calculus and Analytical Geometry III (5 Credits – 5 Hours per week)

PREREQUISITE: MTH 32 – Calculus and Analytical Geometry II

TEXT: Calculus (Eighth Edition) by James Stewart, Publisher: Brooks/ Cole

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**SECTION TOPIC SUGGESTED EXERCISES**

**Infinite Sequences and Series**

11.1 Sequences 744/ 3 – 55 odd

11.2 Series 755/ 1-10, 15, 17-20, 43 – 47 odd

11.3 The Integral Test 765/ 1 – 25 odd

11.4 The Comparison Tests 771/ 1, 2, 3 – 29 odd, 41, 43

11.5 Alternating Series 776/ 1–19 odd, 35

11.6 Absolute Convergence and the Ratio

 and Root tests 782/ 7 – 37 odd

11.7 Strategy for Testing Series 786/ 1– 37 odd

11.8 Power Series 791/ 1 – 31 odd

11.9 Representation of Functions as Power

 Series 797/ 5 – 19 odd, 25 – 31

11. 10 Taylor and Maclaurin Series 811/ 1 – 33 odd

11.11 Applications of Taylor Polynomials 820/ 1 – 22 odd

 Review 825/ 1 – 43 odd

**Vectors and the Geometry of Space**

12.1 Three- Dimensional Coordinate Systems 836/ 1–13 odd, 17, 19, 21, 25-35 odd

12. 2 Vectors 845/ 1 - 25 odd

12.3 The Dot Product 852/ 1 – 53 odd

12. 4 The Cross Product 861/ 1- 43 odd

12. 5 Equations of Lines and Planes 871/ 1 – 43 odd

 Review 882/ 1 – 20 odd

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**Vector Functions**

13.1 Vector Functions and Space Curves 893/ 1 – 20 odd

13.2 Derivatives and Integrals of Vector

 Functions 900/ 1 – 27 odd

13.3 Arc Length and Curvature 908/ 1 – 33 odd

 Review 922/ 1 – 13 odd

**Partial Derivatives**

14.1 Functions of Several Variables 939/ 3 – 27 odd

14.2 Limits and Continuity 950/ 1 – 37 odd

14.3 Partial Derivatives 964/ 11 – 40 odd, 45 – 70 odd

14.4 Tangent Planes and Linear

Approximations 974/ 1 – 23 odd

14.5 The Chain Rule 983/ 1 – 34 odd

14.6 Directional Derivatives and the Gradient

 Vector 997/ 7 – 33 odd

14.7 Maximum and Minimum Values 1007/ 1 – 20 odd, 27 – 35 odd

 Review 1022/ 1 – 49 odd

**Multiple Integrals**

15.1 Double Integrals over Rectangles 1039/ 1 – 25 odd, 39, 40

15.2 Double Integrals over General Regions 1048/ 1 – 32 odd, 39, 40

15.3 Double Integrals in Polar Coordinates 1054/ 1 – 27 odd

15.6 Triple Integrals 1077/ 1 – 23 odd

 Review 1102/ 3 – 8 odd, 9, 19, 21 – 40 odd

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