

Torrey Pines High School Calculus D

San Diego State University Math 252 Calculus III (4 semester units)

Note: Students in Calculus D completed Calculus C or passed the AP Calculus BC exam. They covered all topics for that exam as outlined in the *Advanced Placement Program Course Description: Calculus* published by The College Board.

Text: *Calculus: Early Transcendentals* by James Stewart, Sixth Edition, ©2008

Chapter 12 – Vectors and the Geometry of Space

- 12.1 Three-Dimensional Coordinate Systems
- 12.2 Vectors
- 12.3 The Dot Product
- 12.4 The Cross Product
- 12.5 Equations of Lines and Planes
- 12.6 Cylinders and Quadric Surfaces
- 12.7 (4th ed.) Cylindrical and Spherical Coordinates

Note: Prior to Fall 2008, this course followed the fourth edition (1999) of the Stewart text. The course curriculum was the same as listed here.

Chapter 13 – Vector Functions

- 13.1 Vector Functions and Space Curves
- 13.2 Derivatives and Integrals of Vector Functions
- 13.3 Arc Length and Curvature
- 13.4 Motion in Space: Velocity and Acceleration

Chapter 14 – Partial Derivatives

- 14.1 Functions of Several Variables
- 14.2 Limits and Continuity
- 14.3 Partial Derivatives
- 14.4 Tangent Planes and Linear Approximations*
- 14.5 The Chain Rule
- 14.6 Directional Derivatives and the Gradient Vector
- 14.7 Maximum and Minimum Values
- 14.8 Lagrange Multipliers*

Chapter 15 – Multiple Integrals

- 15.1 Double Integrals over Rectangles
- 15.2 Iterated Integrals
- 15.3 Double Integrals over General Regions
- 15.4 Double Integrals in Polar Coordinates
- 15.5 Applications of Double Integrals*
- 15.6 (4th ed.) Surface Area
- 15.6 Triple Integrals
- 15.7 Triple Integrals in Cylindrical Coordinates
- 15.8 Triple Integrals in Spherical Coordinates
- 15.9 Change of Variables in Multiple Integrals*

Chapter 16 – Vector Calculus

- 16.1 Vector Fields
- 16.2 Line Integrals
- 16.3 The Fundamental Theorem for Line Integrals
- 16.4 Green's Theorem
- 16.5 Curl and Divergence
- 16.6 Parametric Surfaces and Their Areas
- 16.7 Surface Integrals
- 16.8 Stokes' Theorem
- 16.9 The Divergence Theorem
- 16.10 Summary

Formal Definitions of Limits (Part of Chapter 2)

- Finite Limits
- Infinite Limits
- Limits at Infinity
- Infinite Limits at Infinity

*Topic covered briefly.

For more information, please refer to www.abbymath.com.