

Math 5C Overview and Prerequisite knowledge

Chapter 12: Introduction to \mathbb{R}^3 and review of vectors.

Pre-requisite knowledge: vectors (PreCalculus or Trig.), finding determinants of 3X3 matrices (PreCalc or Algebra II), graphing basic conic sections (Algebra, PreCalc or Math 5B section10.5).

Chapter 13: Vector-Valued functions $\mathbf{r}(t) = \langle x(t), y(t) \rangle$, $\mathbf{r}(t) = \langle x(t), y(t), z(t) \rangle$

Graphs, limits, derivatives, integrals and applications.

Pre-requisite knowledge: Parametric equations(Math 5B section 10.1), Arc Length (10.2), and of course limits, continuity, differentiation and integration, especially u-substitution, integration by parts (7.1) and trig. Substitution (7.3).

Chapter 14 & 15: Functions of Several Variables $z = f(x,y)$, $w=f(x, y, z)$

Chapter 14: Graphs, limits, derivatives, and applications.

Pre-requisite knowledge: Review the formal (δ - ϵ) definition of limit (1.7), the definition of derivatives (2.1, 2.2), differentials and linear approximation (2.9) and applications of differentiation especially the Closed Interval Method , local extrema (3.3) and optimization problems (3.7).

Chapter 15: Integrals and applications.

Pre-requisite knowledge: Review the Riemann Sum definition of the integral (4.2), we will be using the process described in that section often. Also review finding area between curves both dx and dy (5.1) and finding volume by slicing(5.2). Also , review polar coordinates(10.3).

Chapter 16: Vector Fields. $\mathbf{F}(x, y) = \langle P(x, y), Q(x, y) \rangle$, $\mathbf{F}(x, y, z) = \langle P(x, y, z), Q(x, y, z), R(x, y, z) \rangle$

Line Integrals, Surface Integrals, Important Theorems.