Chapter 9. Vectors and the geometry of spaces

9.1 Three-dimensional coordinates systems

9.2 Vectors

9.3 The dot product

9.4 The cross product

9.5 Equations of lines and planes

9.6 Functions and surfaces

9.7 Cylindrical and spherical coordinates

Chapter 10. Vector functions

10.1 Vector functions and space curves

10.2 Derivatives and integrals of vector functions

10.3 Arc length and curvature

10.4 Motion in space; velocity and acceleration

10.5 Parametric surfaces

Chapter 11. Partial derivatives

11.1 Functions of several variables

11.2 Limits and continuity

11.3 Partial derivatives

11.4 Tangent planes and linear approximations

11.5 The chain rule

11.6 Directional derivatives and the gradient vector

11.7 Maximum and Minimum values

11.8 Lagrange multipliers

Chapter 12. Multiple Integrals

12.1 Double integrals over a rectangle

12.2 Iterated integrals

12.3 Double integral over a general region

12.4 Double integrals in polar coordinates

12.5 Application of double integrals: Skip

12.6 Surface Integrals

12.7 Triple integrals

12.8 Triple integrals in cylindrical and spherical coordinates

12.9 Change of variables in multiple integrals

Chapter 13. Vector calculus

13.1 Vector fields

13.2 Line integrals

13.3 The fundamental theorem for line integral

13.4 Green's theorem

13.5 Curl and divergence

13.6 Surface integrals

13.7 Stokes theorem

13.8 The divergence theorem

Comprehensive final exam

Study tip to prepare well for the final exam

1. Review your past hour exams carefully.

2. Review all problems in review for final thoroughly.

3. Make a sample final and try it!

4. Remember that your final exam score can change your final grade significantly.

(positively or negatively)

Final exam: Tuesday, Dec 10, 1:30-3:30 pm