Math 225– Fall 1996– J. Derwent

Text: Calculus, by Finney and Thomas, Addison-Wesley, 1990, Chapters 11-15.

1. Vectors and analytic geometry in space. The dot and cross product. Lines, planes and central quadrics. Cylindtrical and spherical coordinates.

2. Vectors valued functions and motion in space. Derivatives and integrals. Projectile motion. Arclength. The unit tangent, the unit normal, and the curvature.

3. Double and triple integrals, change of order of integration, and calculation. Moments and centers of mass. Triple integrals in cylindrical and spherical coordinates.

4. Vector fields. Various kinds of line integrals. Flux integrals. Green's theorem. Surface integrals. Stokes's Theorem and the Divergence Theorem.

   There were also fourteen Mathematica demonstrations and eleven Mathematica assignments.

11. Vectors and, Analytic Geometry, ,in Space

$4\frac{1}{2}$ classes

12. Vector-Valued Functions

$5\frac{1}{2}$ classes

Test 1 – one class

13. Partial Derivatives

3 classes

14.   Multiple Integrals

15.   Integration in Vector Fields