MATH 2414 Calculus 2 Overview

I. Methods and Applications of Integration 1
   1. Review of Calculus 1
   2. The Method of Substitution
   3. A Survey of Integration Techniques
   4. Applications of Integration 1
      a. Disintegrate, Approximate, Integrate
         1. Area of regions in the plane by slices
         2. Volume of a solid of revolution by cross-sectional slices
         3. Volume of a solid of revolution by cylindrical shells
      b. Geometric Principles
         1. Arc length.
         2. Area of a surface of revolution
         3. Area as the integral of lengths
         4. Volume as the integral of areas

II. Methods and Applications of Integration 2
   5. Integration by Parts
   6. The Method of Partial Fractions
   7. Improper Integrals
   8. Numerical Integration
   9. Applications of Integration 2
      a. Previous Applications Revisited
      b. Moment Functionals
      c. Moments
      d. Fourier Coefficients

III. Infinite Sequences and Series
   10. Sequences
   11. Series
   12. Convergence and Divergence for Sequences and Series
   13. Properties of Convergent Sequences and Series

IV. Power Series
   14. Power Series
   15. Calculus of Power Series
   16. Taylor Series