

# Math 3B Course Topics

*Calculus of a Single Variable, Early Transcendental Functions (4th ed.)*  
by Larson, Hostetler & Edwards (Houghton Mifflin, 2007)

- Categories:
1. Must be covered in detail.
  2. Must be covered at least briefly.
  3. Do not cover unless you have extra time after adequately doing 1 & 2.

| <u>Category</u> | <u>Section</u> | <u>Topic</u>   |
|-----------------|----------------|--|
| 1               | 5.8            | Inverse Trigonometric Functions and Integration        |
| 1               | 5.9            | Hyperbolic Functions                                   |
| 1               | 6.1            | Slope Fields and Euler's Method                        |
| 1               | 6.2            | Differential Equations: Growth and Decay               |
| 2               | 6.3            | Differential Equations: Separation of Variables        |
| 2               | 6.4            | The Logistic Equation                                  |
| 3               | 6.5            | First-Order Linear Differential Equations              |
| 3               | 6.6            | Predator-Prey Differential Equations                   |
| 1               | 7.1            | Area of a Region Between two Curves                    |
| 1               | 7.2            | Volume: The Disc Method                                |
| 1               | 7.3            | Volume: The Shell Method                               |
| 1               | 7.4            | Arc Length and Surfaces of Revolution                  |
| 1               | 7.5            | Work   |
| 1               | 7.6            | Moments, Centers of Mass, and Centroids                |
| 1               | 7.7            | Fluid Pressure and Fluid Force                         |
| 1               | 8.1            | Basic Integration Rules                                |
| 1               | 8.2            | Integration by Parts                                   |
| 1               | 8.3            | Trigonometric Integrals                                |
| 1               | 8.4            | Trigonometric Substitution                             |
| 1               | 8.5            | Partial Fractions                                      |
| 1               | 8.6            | Integration by Tables and Other Integration Techniques |
| 1               | 8.7            | Indeterminate Forms and L'Hopital Rule                 |
| 1               | 8.8            | Improper Integrals                                     |
| 1               | 9.1            | Sequences  |
| 1               | 9.2            | Series and Convergence                                 |
| 1               | 9.3            | The Integral Test and the $p$ -Series                  |
| 1               | 9.4            | Comparison of Series                                   |
| 1               | 9.5            | Alternating Series                                     |
| 1               | 9.6            | The Ratio and Root Tests                               |
| 1               | 9.7            | Taylor Polynomials and Approximations                  |
| 1               | 9.8            | Power Series   |
| 1               | 9.9            | Representation of Functions by Power Series            |
| 1               | 9.10           | Taylor and Maclaurin Series                            |
| 1               | 10.1           | Conics and Calculus                                    |
| 1               | Append. E      | Rotation and the General Second-Degree Equation        |
| 1               | 10.2           | Plane Curves and Parametric Equations                  |
| 1               | 10.3           | Parametric Equations and Calculus                      |
| 1               | 10.4           | Polar Coordinates and Polar Graphs                     |
| 1               | 10.5           | Area and Arc length in Polar Coordinates               |
| 3               | 10.6           | Polar Equations of Conics and Kepler's Laws            |

