CALCULUS 2 HONORS: FINAL REVIEW SHEET

Be able to take all previous tests without error

- **Section 5.6 Integration by Parts**
  - Choose u by LIATE!
  - Examples p. 387 #3,7,10,17, 45
- **Section 5.7 Additional Techniques of Integration**
  - Trig Integrals Exercises 1,2,4,5,6 from [here](#)
  - Trig Substitution Exercises 1,2,3,17,23 from [here](#)
- **Appendix G- Integration with Partial Fractions**
  - Look at the Appendix G worksheet, ex p. A54 # 5,7,9,11,16,21,23,25
- **Section 5.9 Approximate Integration**
  - Know both the Trapezoidal Rule and Simpson’s Rule
  - Example p. 411 #15,28
- **Section 5.10 Improper Integrals**
  - Be able to determine whether an improper interval is convergent or divergent
  - Examples p. 431 #5,7, 23,33
- **Section 6.1 More About Areas**
  - Be able to graph the region enclosed by the given curves & find its area
  - Examples p. 436 # 7,11,13,39,41,43
- **Section 6.2 Volumes**
  - Be able to find volumes using washers or disks
  - Examples p. 447 # 5,7,13,17,31 p. 488 #9
  - See Volumes Worksheet
- **Section 6.6 Applications to Physics and Engineering**
  - Spring Problems (Know Hooke’s Law and how to find Work) p.472 #5,6,7 & Spring Worksheet
  - Work to Pump Fluid from a Tank p. 473 #17,19,20,21 & Work Emptying Tank Worksheet
  - Hydrostatic Force p. 474 #31, 32, 33, 35, 37 Hydrostatic Worksheet 1 & Hydrostatic Worksheet 2
- **Section 7.3 Separable Equations**
  - Separable equations p. 514 # 1,3,11, 13,33,35
  - Orthogonal Trajectories p. 514 #29,31 p. 548 # 9, 10
  - Mixing Problems p. 515 #45, 48
  - Draining Problems (Look at examples we’ve done in class)
- **Section 7.4 Exponential Growth**
  - Know the equation that represents exponential growth/decay in box 2 on p. 520.
  - Examples p. 527 #1, 5, 9
- **7.7 Second Order Linear Differential Equations**
  - Know how to find solutions to the auxiliary equation of ax”+bx’+cx=0 for all 3 cases.
  - Be able to solve initial and boundary value problems.
7.8 Nonhomogeneous Linear Equations
- Be able to find the complementary solution
- Find the particular solution using the Method of Undetermined Coefficients
- Use the complementary and particular to find the general solution
- Examples #1-17 odd (Note: #13, 15, 17 don’t require you to find the values of the coefficients) Look at 7.7/7.8 Worksheet

7.9 Applications of Second-Order Differential Equations
- Be able to use the techniques from 7.7 and 7.8 to solve problems involving springs.
- Examples 1, 3, 5, 7 Notice: These are easier than some of the problems we’ve worked in class

8.1 Sequences
- Be able to find the limit of a sequence and justify your result
- Examples p. 562 #1, 3, 5, 13, 15, 19, 25, 33, 45

8.2 Series
- Be able to determine if a given series is convergent
- Know when a geometric series is convergent and what it converges to p. 567
- Know about the Harmonic Series
- Know the Test for Divergence
- Know how to deal with Telescoping series
- Examples p. 573 #1, 7, 9, 13, 15, 19, 25, 60, 61, 62

Sequences and Series Worksheet

8.3 The Integral and Comparison Tests; Estimating Sums
- Know when the Integral test, Comparison Test, and Limit Comparison Tests can be applied.
- Know when a p-series converges and when it diverges
- Examples: p. 583 # 3, 5, 13, 17, 19, 21, 27, 29

Comparison Test Worksheet

8.4 Series Other Convergence Tests
- Know the Alternating Series Test, the Ratio Test
- Examples: p. 591 # 3, 5, 21, 27, 29, 35, 36
- Know the Test for Divergence

8.5 Power Series
- Be able to find the radius and interval of convergence for a given Power Series & be able to justify your work
- Examples: p. 597 # 3, 5, 7, 13, 16, 19, 26

8.6 Representations of Functions as Power Series
- Understand how to use the Geometric series to represent a Power series
- Examples: p. 604 # 5, 9, 36

8.7 Taylor and Maclaurin Series
- Know the difference between a Taylor and Maclaurin series.
- Be able to use a Taylor polynomial to approximate different values
Examples: p. 616 # 7, 9, 13, 43, 45
-Be able to find the Binomial Series and radius of convergence Examples: p. 617 #24, 31, 41

- 8.8 Applications of Taylor Polynomials
-Examples p. 626 # 11, 13, 15