

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**
 - http://stewartcalculus.com/data/CALCULUS%20Concepts%20and%20Contexts/upfiles/3c3-2ndOrderLinearEqns_Stu.pdf -Examples #1, 3,5,7,17,25
 - 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**
http://stewartcalculus.com/data/CALCULUS%20Concepts%20and%20Contexts/upfiles/3c3-NonhomgenLinEqns_Stu.pdf
 -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**
http://stewartcalculus.com/data/CALCULUS%20Concepts%20and%20Contexts/upfiles/3c3-AppsOf2ndOrders_Stu.pdf
 -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