**Math 280 Final Exam Study Guide**

**1. Integration by parts (7.1):** 

**2. Trigonometric Integrals (7.2)**

**If**, use u=sinx if n odd, u=cosx if m odd. If both have even powers, use half angle formula

**If** , use u=tanx if n even, u=secx if m odd

**4.**  **Partial Fractions (7.4)**

1. Distinct Linear Factors: 
2. Repeated Linear factors: 
3. Distinct Quadratic Factors: 
4. Repeated Quadratic factors: 

**3. Trigonometric Substitution (7.3)**

|  |  |
| --- | --- |
| *Expression in the integrand* | *Substitution* |
|  |  |
|  |  |
|  |  |

**5. Integration Using Tables (7.6)**

**6. Improper Integrals (7.8)**

**7. Sequences and Series!! (Ch11)**

a. What does it take for a **sequence** to converge? How is a **series** different from a **sequence**?

b. **p-series** (p > 1 to converge)and **geometric series** (r < 1 to converge)

c. **Integral Test:** Whatever integral does (converge/diverge), series does. Need continuous, positive, decreasing function.

d. **Direct comparison test:** Need smaller series to show divergence **(floor),** larger to show convergence **(ceiling).**

e. **Alternating Series**: Two conditions!

1. Limit is 0

2. Decreasing function (find derivative, show < 0)

f. **Ratio and Root Tests:**

If **L < 1, converges**. If **L > 1, diverges**. If **L=1, inconclusive**, use another test. (**L** is like **r** from geometric series.)

g. **Radius of convergence:** A type of domain for series defined functions, don’t forget to check endpoints!

h. **Taylor and MacLaurin Series, Approximating Polynomials**



**8.** **Parametric and Polar Equations (Ch10)**

Arc length parametric curve 





Area under parametric curve 

