

Review Sheet for Exam 2 (Sections 7.5–9.7)
Math 1220–7

Section 7.5

- Be able to carry out partial fraction decomposition in order to integrate rational functions.
- **Practice Problems:** 7.5 #1–15 odds

Section 7.6

- This section was primarily intended for review.
- **Practice Problems:** 7.6 #7, 15

Section 8.1

- Know how to use l'Hôpital's Rule for indeterminate forms of the type $0/0$.
- **Practice Problems:** 8.1 #1–21 odds

Section 8.2

- Know how to use l'Hôpital's Rule for indeterminate forms of the type ∞/∞ .
- Be able to transform indeterminate forms of the type $0 \cdot \infty$, $\infty - \infty$, 0^0 , ∞^0 , and 1^∞ into a fraction where l'Hôpital's Rule will apply.
- **Practice Problems:** 8.2 #1–39 odds

Section 8.3

- Be able to evaluate definite integrals with one or two infinite limits of integration if they converge, and recognize when the integral diverges.
- **Practice Problems:** 8.3 #1–19 odds

Section 8.4

- Know how to evaluate definite integrals with infinite integrands if they converge, and recognize when the integral diverges.
- **Practice Problems:** 8.4 #1–31 odds

Section 9.1

- Recognize sequence notation and be able to write the first few terms of a sequence when a formula is given.
- Be able to write an explicit formula for the terms in a sequence when the terms are given.
- Know how to determine whether a sequence converges or diverges. If it converges, be able to find the limit of the sequence.
- **Practice Problems:** 9.1 #1–35 odds

Section 9.2

- Be able to recognize a series.
- Know how to tell when a geometric series converges or diverges. In the convergent case, be able to use the formula to find the sum of the series.
- Know how to use the n^{th} -Term Test for Divergence.
- Be able to recognize the harmonic series and know that it diverges.
- Be able to use the linearity of convergent series properties found on page 459 of the book.
- **Practice Problems:** 9.2 #1–13 odds, 21, 23 (Note: On the exam, you can use any appropriate method to determine whether a series converges or diverges, so you can choose to approach these problems with a test from a future section.)

Section 9.3

- For positive series, be able to use the integral test.
- Know how to recognize when a p -series test is useful (It can save time over the integral test, but you can use the integral test if you prefer.).
- **Practice Problems:** 9.3 #1–21 odds

Section 9.4

- Know how to use the Ordinary Comparison Test and Limit Comparison Test for positive series.
- For positive series, know the Ratio Test.
- **Practice Problems:** 9.4 #1–33 odds

Section 9.5

- Be able to recognize an alternating series, and know when the Alternating Series Test says that it converges.
- Know the definitions of and differences between absolute convergence, conditional convergence, and divergence.
- Know how to use the Absolute Ratio Test.
- **Practice Problems:** 9.5 #7–29 odds

Section 9.6

- Be able to recognize a power series in either x or $x - a$.
- Know how to find the convergence set and radius of convergence for a power series.
- **Practice Problems:** 9.6 #1–27 odds

Section 9.7

- Be able to differentiate and integrate a power series term-by-term.
- Know how to add, subtract, multiply, and divide power series.
- **Practice Problems:** 9.7 #1–9 odds, 13–23 odds