

MATH 151 HW #3: SECTIONS 11.1-11.5

SPRING 2004

Write your name (encoded, if you like) and clearly separate sections!

Show work where appropriate, and use “good form and procedure,” as in class!

This is due when you take Quiz 3 on Sections 11.1-11.5.

Graded out of 10 points.

“*” denotes “See Hint below.”

Read some of the Examples in this chapter for additional assistance.

Read this chapter, particularly the Examples, Illustrations, and blue boxes.
Don't worry as much about proofs of theorems.

11.1: 3, 5, 11-29 odd, 31*, 33, 35, 37*, 41*

Hint on 31: Use the Sandwich (or Squeeze) Theorem for Sequences on p.527.

Note on 37: We will use this later!

Hint on 41: Multiply by $\frac{\sqrt{n+1} + \sqrt{n}}{\sqrt{n+1} + \sqrt{n}}$.

Look at 45, 46, 48, 49, 50. (In 49, the sequence is given by Newton's method in Section 4.8.)

See my web site! Look under the Notes for Sections 11.1-11.5. Links include: Patterns in Sequences, the Encyclopedia of Integer Sequences, Properties of the Fibonacci Sequence (and other Discrete Math topics), and Fibonacci Numbers and Nature – very interesting!

11.2: 1-15 odd, 21, 27-39 odd, 43, 53, 54, 55, 59

Read p.532.

Try to understand the neat Solution for Example 3, although you're not required to know this. We'll see an easier justification in 11.3.

THERE'S MORE...

11.3: 1-7 odd*, 11*, 13-23 odd, 29, 35, 37, 41, 45*

On 1-11: Whenever you use the Integral Test, find $f'(x)$ so that you can help show that the hypotheses of the test are satisfied.

Hint on 45: How does $\ln n$ compare to n ?

Look at 48 for a nice "challenge problem"; answer is: all real $k > 1$.

Look at 51 and 52 on extending the Limit Comparison Test (LCT).

Look at 53 and 54 on approximating the sum of a series within a specified error (level of accuracy).

11.4: Part 1: 1, 3, 5, 8*, 9, 11, 13*, 15*, 17, (don't forget Part 2)...

Also do the following Part 2 "review" problems (any method in Chapter 11 is fair); the chart on p.565 may help. Flash cards with problems on the front and solution methods on the back may help.

Part 2: 19, 21, 23, 25*, 27, 29, 31, 37, 39

Hint: When using the Ratio Test, you may use the "dominant term" analysis we discussed in class.

Answer to 8: The test is inconclusive.

Hint on 13, 15: $\lim_{n \rightarrow \infty} n^{1/n} = 1$ (from 10.2 #17 or 11.1 #37; you may use this freely).

Hint on 25: $\frac{n}{n+1} = \frac{1}{\frac{n+1}{n}} = \frac{1}{\left(1 + \frac{1}{n}\right)}$

11.5: 1, 3, 5, 9-21 odd, 25, 27, 29, 31, 33*, 46

Note on 33: Based on the book's convention on p.560, if you want to be accurate to three decimal places, you want to ensure that the error of your approximation is less than 0.0005.

Look at 45.

WARNING: Some of the review exercises on pp.599-600 may be very tricky!