Math1220 Midterm 3 (9.1-9.7) Fall, 2017 Instructor: Kelly MacArthur

Seat #: _____ Special number: _____

Instructions:

- Please show all of your work as partial credit will be given where appropriate, **and** there may be no credit given for problems where there is no work shown.
- All answers should be completely simplified, unless otherwise stated.
- There are no calculators or any sort of electronics allowed on this exam. Make sure all cell phones are put away and out of sight. If you have a cell phone out at any point, for any reason, you will receive a zero on this exam.
- You will be given an opportunity to ask clarifying questions about the instructions about five or ten minutes after the exam has started (for a couple minutes). The questions will be answered for the entire class. After that, no further questions will be allowed, for any reason.
- You may be asked to show us your U of U student ID card when finished with the exam.
- The exam key will be posted on Canvas by this afternoon.
- You may ask for scratch paper. You may use NO other scratch paper. Please transfer all finished work onto the proper page in the test for us to grade there. We will not grade the work on the scratch page.
- You are allowed to use one 8.5x11 inch piece of paper with notes for your reference during the exam.

(This exam has nine problems, each worth 12 points, for a total of 108 points. I'll take that score out of 100 to build in a cushion of extra credit points.)

STUDENT—PLEASE DO NOT WRITE BELOW THIS LINE. THIS TABLE IS TO BE USED FOR GRADING.

Problem	Score	Problem	Score	Problem	Score	Problem	Score	Problem	Score
1		3		5		7		9	
2		4		6		8			

Total:	

Here are some questions to help prompt yourself while deciding if a series of numbers converges or diverges.

1. Is this a negative series? If so, then factor (outside the summation sign) the negative sign, and it's now the opposite of a positive series.

2. Is this now a positive series?
   If so, then try one of the positive series tests:
   - nth term test for divergence
   - p-series
   - geometric series
   - RT
   - LCT
   - IT
   - OCT
   - argument by partial sums (for a collapsing sum)

3. If it's not a positive series, then is it an alternating series?
   If so, then do a positive series test on the corresponding positive series.
   - If you get divergence for that positive series, then try the AST to see if you get conditional convergence.
   - If you get convergence for that positive series, then your series converges absolutely.

Additional Notes:

A. Remember the difference between a series of numbers and a sequence of numbers.

B. If you are asked to find the sum of a series, the only possible types of series you can have are either a collapsing sum (where you need the partial sums argument) or a geometric series.

C. If you need to find the convergence set for a power series, you must start with ART to get the x-interval. Then you need to check the endpoints of that interval.

D. If you need to create your own power series for a function, consider the series that you already know, along with their radius of convergence.