

The following is a summary of the things you should be able to do for Exam 2 (on Tuesday, May 9th). All of these have been addressed at least once in the homework. Take the word *series* to always mean a numerical series if not specified to be a power series.

1. Use the integral test to determine whether a series converges or diverges.
2. Determine the convergence or divergence of a series and what test (or recognition of a geometric or p -series) could be used to prove it.
3. Prove the convergence or divergence of a series using any of the following: comparison test, limit comparison test, root test, ratio test, absolute convergence. (You need to be able to do any of these if told to. You also need to be able to select one of your choice and use it if given a choice.)
4. Determine whether an alternating series is divergent, conditionally convergent, or absolutely convergent.
5. Write out some terms of a numerical or power series.
6. Determine the radius and interval of convergence for a power series.
7. For a power series with interval of convergence (a, b) , determine convergence at each endpoint a and b .
8. Differentiate or integrate a power series.

In addition to the APEX Calculus text, you might find these resources useful:

- Dartmouth Math Notes. These are nice and clean, have some good examples and a few exercises with solutions.
- Paul's Online Notes. Not as visually appealing as the above, but include examples and practice problems with solutions.
- Khan Academy. Video notes and practice quizzes. The quizzes are multiple choice, so not great for reviewing, but they do a good job of reinforcing the basic ideas.
- Mathispower4u. Don't be put off by the corny name, this guy makes great videos. You'll have to scroll way down to find the series stuff. A good way to practice is to start one of his videos and watch until the problem is shown, then pause and try it on your own. You can then skip ahead to the solution, or watch the video.
- PatrickJMT. Similar to the above but with less slick production. You'll again have to scroll down a ways to find the series videos. This video is a nice summary of the convergence tests.