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| PROFESSOR                         | <p>Dr. Rebekah B. Johnson Yates</p> <p>OFFICE: Library 131</p> <p>EMAIL: <a href="mailto:rebekah.yates@houghton.edu">rebekah.yates@houghton.edu</a></p> <p>OFFICE HOURS: Tuesday 1–2 PM, Wednesday 1:30–2:25 PM, Thursday 2:15–3:15 PM</p> <p>If you need to make an appointment to see me outside of office hours, please send me an email suggesting several times between 8:30 AM and 4 PM that will work for you.</p> <p><b>In person is the best way to contact me. Email is the next best way.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| LOCATION/TIME                     | Mondays, Wednesdays, and Fridays 12:00–1:05 PM in Paine 212.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| MATERIALS<br>AND<br>COMMUNICATION | <p>All assignments and other course materials beyond the textbook will be posted on our class website <a href="https://facultysites.houghton.edu/rebekahyates/CalculusII.htm">https://facultysites.houghton.edu/rebekahyates/CalculusII.htm</a>. Announcements will be posted there and/or communicated by email, so you should check your Houghton email at least once a day during the semester. If you miss class, it is your responsibility to determine what you have missed by checking the website and asking a classmate.</p> <p>You may find it helpful to have a graphing calculator at times. If you do not already own a graphing calculator (or even if you do), you are welcome to use Desmos.com in class when instructed to do so as long as you are not distracted by other things on the device you're using for Desmos. You will not be permitted to use Desmos on Celebrations of Learning.</p>                                                                                                                                                                                                                    |
| READINGS                          | <p>We will occasionally have readings from some free online textbooks. These two can serve as good reference texts: <i>Apex Calculus</i> ( <a href="http://www.apexcalculus.com/">http://www.apexcalculus.com/</a>) and <i>Calculus: Volume 2</i> by OpenStax (<a href="https://openstax.org/details/calculus-volume-2">https://openstax.org/details/calculus-volume-2</a>)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| DESCRIPTION                       | <p>Catalog Description: “Second semester of single-variable calculus including derivatives of all transcendental functions and L’Hospital’s rule; theory and techniques of integration including substitution, parts, trigonometric substitution, partial fractions, and improper integrals; applications of integrals including area, volume, arc length, and surface areas; and sequences and series. Fulfills General Education Abstract and Quantitative Reasoning requirement. Liberal Arts. Prerequisite: MATH 172 or satisfactory performance on a placement test, offered on demand before the beginning of the fall semester.”</p> <p><b>Note: since this is a four-credit course, you should expect to spend <i>at least eight hours per week outside of class</i> studying and doing homework for this course.</b></p>                                                                                                                                                                                                                                                                                                      |
| COURSE<br>GOALS                   | <p>In this course, we will cover the concepts and methods of calculus and continue developing your mathematical reasoning. The methods of calculus are very important, but obtaining deep understanding of the central concepts will allow you to adapt the methods to many applications beyond this course. In this course, you will</p> <ol style="list-style-type: none"> <li>1. learn the terminology and techniques of calculus and use them for computations involving derivatives, integrals, sequences, and series.</li> <li>2. understand the connections among and between the key concepts of calculus, as shown by applying theorems, solving problems, and communicating about the ideas using mathematical language.</li> <li>3. communicate mathematics clearly in writing and speaking.</li> <li>4. actively investigate and do mathematics individually and cooperatively; this will require you to analyze concepts and critically evaluate solution methods to generalize ideas and solve problems in novel situations.</li> <li>5. appreciate the beauty of mathematics and reasoning as a gift of God.</li> </ol> |

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| DEPARTMENT GOALS            | Course Goals 1 and 2 support the Math Department Content Knowledge goal; Course Goals 2 and 4 support the Math Department Effective Thinking and Communication Goal; Course Goals 2, 3, and 4 support the Math Department Independence, Collaboration, and Persistence Goal; and Course Goal 5 supports the Math Department Liberal Arts goal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| ESSENTIAL LEARNING OUTCOMES | <p>This course fulfills the General Education Mathematics core course requirement and contributes to students' progress on the following Essential Learning Outcomes at Houghton:</p> <ol style="list-style-type: none"> <li>2. Practice scholarship informed by a Christian view of the world with integrity and respect for all.</li> <li>4. Demonstrate intellectual and practical skills including critical reasoning, effective and creative communication, and quantitative thinking through application to progressively more challenging problems and projects.</li> <li>5. Demonstrate depth of knowledge of the content, purposes, methods, and limitations of a specific discipline and apply it to complex projects.</li> <li>6. Practice ethical decision-making, creative problem-solving, and teamwork for service and leadership in the home, workplace, church, and community.</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| TECHNOLOGY IN THE CLASSROOM | Other than using visualization tools as instructed, we will be practicing an electronic-device-free classroom in order to engage deeply with the material and each other. Please turn off your computers, cell phones, and smart watches and store them in your bag upon entering the classroom and leave them there for the duration of the class unless instructed to use a device for visualization.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| DAILY WORK                  | <p>Each class day (almost), you will have three parts of an assignment. These will be posted on the course webpage.</p> <ol style="list-style-type: none"> <li>I. Reading and responding: This is due at the beginning of class. These assignments will be graded on completion with a good faith effort. We will discuss your work for parts (a)–(c), and you will turn it in occasionally, but you will keep your notes for yourself separately as we will not spend class time writing down definitions that are already in our readings. Assessment for this part will be included in the participation category. <ol style="list-style-type: none"> <li>(a) Read and respond: read the assigned material, rereading as needed. Reading mathematics is an active process: have a writing utensil and paper ready to take your own notes and work through parts that seem unclear to you. Write your clear responses to the assigned reading/reflection questions.</li> <li>(b) Ask questions: Write down your own questions from the reading (e.g., new or old concepts you find confusing, connections to other ideas, examples you thought of, misconceptions that were clarified) and be ready to ask the questions in class. Note: many of your questions will come up as you are reading, so if you need to change the order of parts (a) and (b), feel free to do so—just label them clearly.</li> <li>(c) Quantify: record how much time you spent on Part I.</li> </ol> </li> </ol> |

DAILY WORK  
CONTINUED

- II. Exercises. For these introductory/warmup/review exercises, work individually and then consult with me and other class members outside of class time. You will present some of these to the class, and you will respond to your classmates' presentations with questions, comments, suggestions, and further ideas. As such, you need to complete or at least seriously attempt each of the exercises each class day so that you are prepared to engage in the class discussion around the exercises.
- III. Problems: assigned (almost) each class day after we've discussed the relevant material in class. These more complex problems will be due on Wednesdays (so any Part III problems assigned from the previous Wednesday, Friday, and Monday should be turned in together by the beginning of class on Wednesday). Work on these on your own and then, as needed, consult with other class members, Calculus@Night TAs, and me. After your consultations, write up your final solutions entirely by yourself without consulting or comparing with other people's solutions. The solutions you hand in should be entirely your own and should include a sentence stating the names of your collaborators (those with whom you discussed the problem). Note: while you are welcome to use textbooks as resources (but not to copy solutions from them), looking at solutions on the internet and using AI tools in any way is not acceptable and will be reported to the Provost's Office as an academic integrity violation with the accompanying consequences.

The solutions you turn in should be final, polished versions, written in complete sentences where appropriate and explaining your process. See sample solutions at the end of the syllabus for examples. Each problem will receive feedback and one of the following marks:

- E**xcellent: the solution/proof uses correct logic, applies appropriate proof techniques well, has excellent clarity, precision, reasoning, flow, organization, and notation.
- M**eets Expectations: the solution/proof uses correct logic with perhaps one or two details unclear, applies appropriate proof techniques well, is easily understandable with reasonable clarity, precision, reasoning, flow, organization, and notation.
- R**evisable: the solution/proof makes a reasonable attempt to address the problem but has several holes, logical flaws, issues with precision, clarity, organization, or notation that require revision.
- N**ot Assessable: there is no reasonable engagement with the problem or the solution is unreadable.

If you earn an R on a problem, you should revise that problem (and you are welcome to consult with me on your revision) and resubmit it on any Wednesday with your new Part III problems for an opportunity to change the grade to an E or M. **Important limitation: you may resubmit a maximum of 3 Part III problems (individual problems, not assignments) per week.** If you do not have a final, polished solution at the due date, write up what you can and turn it in so that you can earn an R and get feedback toward a revision. Not turning something in will result in an N and you will not be able to revise that problem without spending a token.

Part III problems and revisions must be turned in on paper at the beginning of class on the posted due date (generally Wednesdays). Each submission should be labeled with the corresponding Daily Work number. Multiple pages must be stapled in order. Solutions that are typed with L<sup>A</sup>T<sub>E</sub>X (a typesetting system used by the mathematical community and others) may receive a modicum of extra credit.

Late work: Assignments that are not submitted on time will earn an N and cannot be revised without using a token.

## IN-CLASS PARTICIPATION

You are expected to attend class, be prepared for class, and actively participate in all class activities. At the end of the semester, you will submit a proposed participation grade using the guidelines below. Note: I reserve the right to assign a different grade than you give yourself if I judge that you have graded yourself incorrectly.

- **To earn an A**, you should complete all assigned reading and exercises and be ready to present each day for all but at most 2 days, you should regularly comment usefully on others' presentations and ask questions that highlight key ideas, and you should contribute ideas and listen carefully to others during group work.
- **To earn a B**, you should complete all assigned reading and exercises and be ready to present each day for all but at most 5 days, you should regularly comment usefully on others' presentations and ask questions that move the class discussion forward, and you should contribute ideas and listen carefully to others during group work.
- **To earn a C**, you should complete all assigned reading and exercises and be ready to present each day for all but at most 7 days, you should listen carefully to and occasionally comment usefully on others' presentations and ask questions and offer insights during class discussions, and you should contribute some ideas and listen carefully to others during group work.
- There is no description for a **D or F** because these grades represent a fundamental breakdown of expectations. A D represents a meaningful but unsuccessful attempt at earning a C or above. An F represents such a severe lack of engagement, effort, or understanding that there is no evidence of meaningful progress (credit to David Clark and Robert Talbert for this paragraph).

## CELEBRATIONS OF LEARNING

There will be four full-length in-class celebrations of learning during the semester and one final celebration. The full-length celebrations during the semester will occur on Friday, September 25; Friday, October 30; Friday, November 20; and Monday, December 7. If any of these dates need to be changed, we will discuss that as a class with prior notice. The cumulative final celebration will occur on Friday, December 11 from 10:30 AM–12:30 PM in our classroom.

On Fridays of weeks without a full-length celebration, we will have a mini-celebration of learning during the last 10–15 minutes of class.

Each celebration will be an opportunity to demonstrate your understanding of a subset of the learning targets listed later in this syllabus, with the final celebration being an opportunity to earn one M on any learning targets on which you have not yet earned two Ms. If you have already met or exceeded expectations on a particular learning target a sufficient number of times (on at least two distinct assessments—either on Celebrations of Learning or in appointments), you may skip that particular question on a celebration and focus on the questions that address the learning targets for which you have not yet met expectations twice. As you must demonstrate continued understanding of concepts, you cannot earn two Ms on the same learning target in a single assessment.

## TARGET APPOINTMENTS

In addition to earning M's on learning targets on Celebrations of Learning, you may also earn M's on learning targets by making an appointment to come to my office (during office hours or otherwise) to complete a problem you are given on the spot for a learning target for which you have not yet earned 2 M's. These appointments must be confirmed with me at least 24 hours in advance, and you may make at most one such appointment in any given week.

**SELF EVALUATIONS** Each student will write a self evaluation midway through the course and at the end of the semester. More details on each assignment will be given at least a week before the assignment is due. These assignments will be one of the means of assessment for Mathematical Practices Targets.

**ASSESSMENT** Your final course grade will be assigned based on the following table and the guidelines below it. (CS = Calculus Skills; MP = Mathematical Practices; Core LTs = Core Learning Targets, Supp. LTs = Supplemental Learning Targets; Part. grade = Participation grade;  $M_{\geq 2}$  = earned at least two M's on Celebrations of Learning or in a target appointment;  $M_1$  = earned 1 M). To earn a particular base grade, you must meet the requirements in every category in that row.

| Base Grade | # of CS Core LTs         | # of CS Supp. LTs        | # of MP LTs              | Part. grade | Part III |           |
|------------|--------------------------|--------------------------|--------------------------|-------------|----------|-----------|
|            |                          |                          |                          |             | % E's    | % E's/M's |
| A          | 15 $M_{\geq 2}$          | 5 $M_{\geq 2}$ , 4 $M_1$ | 4 $M_{\geq 2}$ , 1 $M_1$ | A           | 20       | 85        |
| B          | 14 $M_{\geq 2}$          | 3 $M_{\geq 2}$ , 4 $M_1$ | 3 $M_{\geq 2}$ , 2 $M_1$ | B           | 10       | 70        |
| C          | 8 $M_{\geq 2}$ , 6 $M_1$ | 7 $M_1$                  | 3 $M_{\geq 2}$ , 1 $M_1$ | C           | 0        | 55        |
| D          | 7 $M_1$                  | 6 $M_1$                  | 2 $M_{\geq 2}$ , 1 $M_1$ | D           | 0        | 40        |

- The guidelines in the table above are the minimum requirements for earning that particular grade; exceeding requirements (e.g., earning an E/M on 100% of your Part III problems) also meets the requirements for that grade. Note: I reserve the right to change the minimums, but I will never increase them; i.e., any change I make will only maintain or benefit the grade this table and the notes below would assign.
- If you do not meet all the requirements for a D, you will earn an F for the course.
- **Plus/minus grades:** If you meet all the minimum requirements for a base grade *and* at least two of the categories meet the minimum requirements for the next higher grade, you will earn a plus on your grade (unless you already have an A as Houghton does not give A+'s).

If you meet all the minimum requirements for a base grade (e.g., B) except one, and that one is in the next lower category, you will earn a minus on your grade (e.g., B-).

If you meet all the minimum requirements for a base grade *and* your in-class participation has been inconsistent or has negatively impacted the class environment on more than one occasion, your final grade will be one letter grade lower than your base grade.

**TOKENS** You will begin the semester with two tokens that you can use to buy a 24-hour extension on a problem set or an additional target appointment in a given week. You can earn extra tokens by taking advantage of opportunities announced in class throughout the semester, such as attending a Math and Science Colloquium presentation on a math topic and then writing a few paragraphs about what you learned.

**ATTENDANCE** If you are unable to come to class, please let me know as soon as possible. Since class time involves your active participation, missing class without a valid excuse will adversely affect your grade.

ACADEMIC  
INTEGRITY

Honesty is the foundation on which all intellectual endeavors rest. To use the ideas of others without acknowledging the authors of those ideas belies the nature and purpose of academic life. At Houghton, where we strive to live out Christian calling and commitment, personal integrity, including academic honesty, should be the hallmark of all our work and relationships. Houghton's full Academic Integrity Policy, including procedures for addressing violations, can be found in the Academic Catalog: <https://www.houghton.edu/undergraduate/majors/academics/catalog/>

Any work or writing you turn in should be your own, and you are responsible for ensuring that you do not copy anyone else's work or writing (this includes not copying things from the internet or using AI). See III. Problems for further information about completing assignments.

## ACCOMMODATIONS

If you have an academic or physical disability that requires accommodations please contact the Academic Support and Accessibility Services in the Center for Student Success located on the first floor of the Chamberlain Center (585-567-9622). With appropriate documentation, you will be afforded the necessary accommodations. For more information about Academic Support and Accessibility Services go to <https://www.houghton.edu/undergraduate/student-life/student-success/>.

TEA TIME

Every Monday at 4 PM, the math faculty and any students who want to come will gather in the  $\epsilon$  Neighborhood outside the faculty offices for hot beverages, goodies, a fun math problem, and conversation (both mathematical and non-mathematical). Please join us! Note: TEA Time is not intended for homework help.

TENTATIVE  
SCHEDULE

This schedule is subject to modification throughout the semester.

|             |                                                                                                            |
|-------------|------------------------------------------------------------------------------------------------------------|
| 8/25–8/28   | Calculus I Review via Hyperbolic Functions, Area                                                           |
| 8/31–9/4    | Area, Volume                                                                                               |
| 9/7–9/11    | Volume, Arc Length, Surface Area                                                                           |
| 9/14–9/18   | Techniques of Integration                                                                                  |
| 9/21–9/25   | Techniques of Integration, Celebration of Learning #1 (Sept. 25)                                           |
| 9/28–10/2   | Techniques of Integration                                                                                  |
| 10/5–10/9   | Approximate Integration, Indeterminate Forms, l'Hôpital's Rule                                             |
| 10/12–10/16 | Improper Integrals                                                                                         |
| 10/19–10/23 | October Break, Sequences, Series                                                                           |
| 10/26–10/30 | Series, Integral Test, Celebration of Learning #2 (Oct. 30)                                                |
| 11/2–11/6   | Comparison Tests, Absolute and Conditional Convergence                                                     |
| 11/9–11/13  | Absolute and Conditional Convergence, Alternating Series                                                   |
| 11/16–11/20 | Ratio and Root Tests, Celebration of Learning #3 (Nov. 20)                                                 |
| 11/23–11/27 | Taylor Polynomials, Thanksgiving Break                                                                     |
| 11/30–12/4  | Taylor Polynomials, Taylor and Maclaurin Series                                                            |
| 12/7–12/11  | Celebration of Learning #4 (Dec. 7),<br>Final Celebration of Learning (Friday, Dec. 11, 10:30 AM–12:30 PM) |

## RESOURCES

Some possible places to find assistance:

- **Office Hours:** You are welcome to stop by during these hours to ask questions, AND you are also welcome to stop by whenever my office door is open. If you want to be assured that I will be there outside of my office hours, please make an appointment by emailing me with several times that would work for you or by setting it up with me in person. You should make a serious attempt at any assigned problems about which you wish to ask before you come to see me.
- **Fellow Students:** You are welcome to work with each other to understand the material at any time, although the work you turn in should always be what you have written yourself and should acknowledge your collaborators.
- **Calculus@Night:** Tuesdays, 7–8 PM in Library 140. These sessions are a place where you can work on your homework or other practice problems in small groups with a TA available to offer guidance in the form of hints and suggestions. TAs will neither check your answers nor tell you how to do a problem; instead, they will guide you through the process of thinking about a problem and help you arrive at a solution on your own, often by helping you solve a similar problem.
- **The internet:** there are several good websites with calculus help that you are welcome to use for additional explanations, but you may not use the internet for solutions. Some options are Paul's Notes (<http://tutorial.math.lamar.edu/>), Interactive Mathematics (<http://www.intmath.com/help/sitemap.php>), and Khan Academy (<http://www.khanacademy.org>).
- **Tutoring:** as a last resort, having tried all the other options above regularly and having faithfully followed the suggestions on the Suggestions for Learning Mathematics handout posted on the course webpage, you can request a tutor from the office of Academic Support and Accessibility Services, located in the Center for Student Success on the first floor of Chamberlain.

## Sample Homework

Here are some sample questions and answers. Your style should be similar (using complete sentences and explaining your process). If you use your calculator/computer for a problem, you must describe what you did on your calculator/computer to get your answer. Make sure you write neatly, work down the page (as opposed to from left to right), and organize your work so that it is easy for others to follow. **Your solutions should be explained in such a way that your classmates would understand them.**

1. Evaluate the definite integral  $\int_1^2 x \ln x \, dx$ .

**Solution:** We will integrate by parts. Let  $u = \ln x$  and  $dv = x$ . Then we have  $du = \frac{1}{x}$  and  $v = \frac{1}{2}x^2$ , and

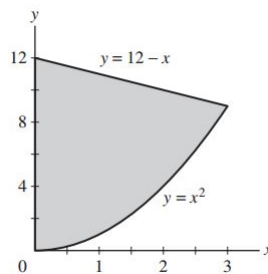
$$\int x \ln x \, dx = \frac{1}{2}x^2 \ln x - \int \frac{1}{2}x \, dx = \frac{1}{2} \left( x^2 \ln x - \frac{1}{2}x^2 \right).$$

Evaluating this expression from 1 to 2 gives us

$$\frac{1}{2} \left( x^2 \ln x - \frac{1}{2}x^2 \right) \Big|_1^2 = \frac{1}{2} \left( 4 \ln 2 - 2 + \frac{1}{2} \right) = \boxed{2 \ln 2 - \frac{3}{4}}.$$

2. Find the volume of the solid obtained by rotating the region enclosed by the graphs of  $y = x^2$ ,  $y = 12 - x$ , and  $x = 0$  about the line  $y = -2$ .

**Solution:** First we draw the region being described:



Rotating this region around the horizontal line  $y = -2$  will create a solid with cross sections that are washers. The inner radius of each washer will be  $r = x^2 - (-2) = x^2 + 2$  and the outer radius will be  $12 - x - (-2) = 14 - x$ . The solid starts at  $x = 0$  and ends where the curves  $12 - x$  and  $x^2$  intersect, which occurs when  $x^2 = 12 - x$ . To solve this equation, we solve  $x^2 + x - 12 = (x + 4)(x - 3) = 0$ , which has  $x = 3$  and  $x = -4$  as solutions. Since we can see from our picture that we want the positive solution, we choose  $x = 3$  as our upper bound for the integral.

Now we can find the volume of the solid as follows:

$$\begin{aligned}
 V &= \pi \int_0^3 (R_{\text{outer}}^2 - R_{\text{inner}}^2) dx \\
 &= \pi \int_0^3 ((14 - x)^2 - (x^2 + 2)^2) dx \\
 &= \pi \int_0^3 (196 - 28x + x^2 - x^4 - 4x^2 - 4) dx \\
 &= \pi \int_0^3 (192 - 28x - x^4 - 3x^2) dx \\
 &= \pi \left( 192x - 14x^2 - \frac{1}{5}x^5 - x^3 \right) \Big|_0^3 \\
 &= \boxed{\frac{1872\pi}{5}}.
 \end{aligned}$$

## Learning Targets

The calculus skills targets (CSTs) in this list form an outline of the calculus concepts in this course; these targets will be practiced in class and on Part II and III problems, and progress on these targets will be assessed directly through Celebrations of Learning and Target Appointments. Fifteen CSTs are designated core skills while the rest are supplemental. The mathematical practices targets are attitudes and actions in which successful mathematics students participate; these will be assessed through a midterm and final self-reflection on your progress.

## Calculus Skills Targets

- G1: (CORE) I can find the area of a region between curves using integrals.
- G2: (CORE) I can find the volume of a solid using cross sections or shells.
- G3: I can find arc length and surface area using integrals.

- I1: (CORE) I can find integrals using integration by parts.
- I2: I can find integrals of products and powers of trigonometric functions using appropriate identities and substitutions.
- I3: I can find integrals using trigonometric substitution.
- I4: I can perform partial fraction decompositions and use the results to find integrals.
- I5: (CORE) I can choose appropriate techniques of integration and explain my choices.
- I6: I can use numerical integration to approximate definite integrals.
- I7: I can use error bound theorems to find error bounds for a numerical estimate of an integral and to determine the number of intervals needed to ensure an estimate is within a given error.
- N1: (CORE) I can identify indeterminate forms and use l'Hôpital's Rule to find their limits.
- N2: (CORE) I can find the value of a convergent improper integral.
- N3: (CORE) I can determine whether an improper integral converges or diverges and explain why.
- S1: (CORE) I can determine if a sequence converges or diverges, and if it converges, find its limit.
- S2: (CORE) I can identify a geometric series, determine whether it converges or diverges, and, if it converges, find its sum.
- S3: I can find the sum of a telescoping series.
- S4: I can reason about a series using its sequence of partial sums.
- S5: (CORE) I can use the  $n$ -th term test to determine that a series diverges.
- S6: (CORE) I can use the Integral Test to determine if a series converges.
- S7: (CORE) I can use a comparison test (direct or limit) to determine if a series converges.
- S8: I can determine whether a series with at least some negative terms converges absolutely or conditionally.
- S9: I can use the Ratio and Root Tests to determine if a series converges.
- S10: (CORE) I can choose appropriate convergence tests and explain my choices.
- T1: (CORE) I can find a Taylor polynomial for a function.
- T2: (CORE) I can use Taylor/Maclaurin series for basic functions to write Taylor/Maclaurin series for related functions.
- T3: I can use a Taylor/Maclaurin series to simplify calculus for a function (limits, derivatives, integrals).

### Mathematical Practices Targets

- MP1: I can write clear solutions to mathematical problems.
- MP2: I can work effectively with others, listening to their ideas and giving and accepting constructive feedback.
- MP3: I can reflect on my own learning and identify strengths and weaknesses in my understanding.
- MP4: I can persevere in solving problems.
- MP5: I can make connections among mathematical thinking in calculus, Christian faith, and problems in the world.