

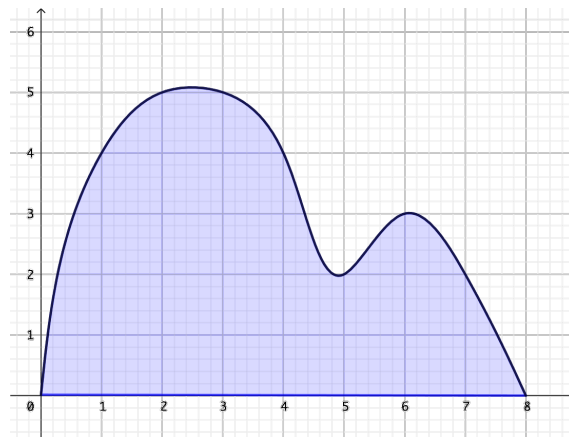
Your winter assignment has a brief wrapup of some topics in Chapter 4, followed by a look at the beginning of Chapter 5. Here are the different parts:

- **Linear Approximations and Newton's Method.** Read through the lecture slides prepared by one of our professors. They aren't just any old lecture slides – they're designed to be interactive! Take notes as you read through them, and at certain points you'll be asked to fill in the blanks; you'll include your answers in Problem 1 below. After working through these slides you'll be ready for problems #1-#5 on the WebWork assignment.
- **Lecture Videos on Sections 5.1 and (part of) 5.2.** These videos cover Section 5.1 and the first part of Section 5.2; you should also look through the corresponding pages (pp332–350) in your textbook. Stop at page 350; we'll cover the subsection called *Properties of the Definite Integral* in January. Together, these pages talk about (a) why we might want to compute the area between a curve and the x -axis, and (b) how we can estimate that area using rectangles. In January we'll learn more about how to compute the area exactly.
- **WebWork** Your WebWork assignment is due at 11pm, two days before your first class in January. You can find it in the `umtym-p-calculus1-f20` course. Problems #1-#5 cover linear approximations and Newton's Method and can be finished as soon as you're done with those lecture slides. Problems #6-#12 give you some practice with the computations in Chapter 5.
- **Written Work** The written problems below are due on Gradescope at 6pm the night before your first class in January.

Remember that you'll also have a new set of lecture videos to watch before your class in January, so don't leave the entire winter assignment until the last minute!

1. Submit a sheet with your answers to WS1 through WS5 (from the linearization and Newton's method slides) for this problem.
2. The graph of a function $f(x)$ is shown below.

- (a) Estimate the area of the shaded region using 4 rectangles and right endpoints.
- (b) Estimate the area of the shaded region using 8 rectangles and left endpoints.
- (c) Which estimate do you think is more accurate? (You don't need to know the correct answer, as long as your answer shows you put some thought into the problem.)



3. Use the limit definition of the definite integral (Theorem 4 on pg. 345 of Stewart CCC) to evaluate the following definite integral:

$$\int_{-1}^4 (1 + 2x) \, dx.$$

(*Hint:* The formulas on pg. 346 of Stewart CCC will come in handy for this problem!)

4. Use the limit definition of the definite integral (Theorem 4 on pg. 345 of Stewart CCC) to evaluate the following definite integral:

$$\int_0^2 (x^2 + 5) \, dx.$$

(*Hint:* The formulas on pg. 346 of Stewart CCC will come in handy for this problem!)

You should have questions! When you do, here's what to do:

1. Post your question on Canvas: <http://canvas.umn.edu/>
The answers you get will help everyone in the class!

2. Email *all* of the instructors with your question.

During the spring semester, Prof. Rogness and Dr. Yadavalli will be teaching UMTYMP Calculus along with Dr. Leifeld. The contact information for the Twin Cities instructors is below:

<i>Instructor</i>	<i>Email</i>
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