

# Homework Five

## Calculus I

### College of the Atlantic

Due Friday, October 18, 2024

There is one part to this assignment.

**Part 1: WeBWorK.** Do Homework 05A and 05B on WeBWorK. The WeBWorK page is here: <https://webwork-hosting.runestone.academy/webwork2/coa-feldman-es1024-fall12024/>. I recommend doing the WeBWorK part of the homework first. This will enable you to benefit WeBWorK's instant feedback before you do part two.

**Part 2: Non-WeBWorK problems.** Here are some instructions for how to submit this part of the assignment.

- Do the problems by hand using pencil (or pen) and paper. There is no need to type this assignment.
- Make a pdf scan of your work using genius scan or some similar scanning app. Please make the homework into a single pdf, not multiple pdfs.
- Submit the assignment on google classroom. Please don't email it to me.
- If you want, you can do the non-WeBWorK problems in pairs and submit only one assignment for the two of you.

Here are some non-WeBWorK problems.

1. Let  $g(x) = 1/x$ .
  - (a) Determine the equation of the line tangent to  $g(x)$  at  $x = 1/2$ .
  - (b) Make a plot of  $g(x)$  and the tangent line you just found. (A sketch by hand is fine.)
2. A box of tofu is dropped off a tall building. The height of the tofu, in meters, is given by the function  $h(t) = 100 - 9.8t^2$ , where  $t$  is measured in seconds.
  - (a) What is the position of the tofu when  $t = 2$  seconds?
  - (b) What is the position of the tofu when  $t = 3$  seconds?
  - (c) What is the average speed of the tofu between  $t = 2$  and  $t = 3$  seconds?
  - (d) What is the speed of the tofu when  $t = 2$  seconds?
  - (e) What is the speed of the tofu when  $t = 3$  seconds?

Be sure to include units with your answers.