

**MATH 282 SPRING 2022**  
**HOMEWORK 1**  
**DUE APRIL 6, 2022.**

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Recall: this homework will not be graded, but I will select approximately two problems from it for the quiz on Friday. (I will change the numbers in the problems slightly, so there's no point trying to memorize the answers.)

**Required problems:**

(Quiz problems drawn from these.)

- Section 15.1: 3, 12, 13, 15, 19, 29, 33, 37, 43, 47.
- Section 15.2: 3, 9, 11, 13, 17, 25, 27, 45, 47, 49.

**Practice matrix:**

| If you got help with these... | try these on your own for more practice. |
|-------------------------------|------------------------------------------|
| 15.1.3                        | 15.1.2, 4–7                              |
| 15.1.12                       | 15.1.9–11, 35, 36                        |
| 15.1.13, 15, 19               | 15.1.14–26                               |
| 15.1.29, 33                   | 15.1.27–34                               |
| 15.1.37, 43                   | 15.1.38–45                               |
| 15.1.47                       | 15.1.48                                  |
| 15.2.3                        | 15.1.1–6                                 |
| 15.2.9                        | 15.2.7–10                                |
| 15.2.11                       | 15.2.12                                  |
| 15.2.13                       | 15.2.14–16                               |
| 15.2.17                       | 15.2.18–22                               |
| 15.2.25, 27                   | 15.2.23–32                               |
| 15.2.45, 47, 49               | 15.2.46, 48, 50, 51–56                   |

**Comments on some of these problems:**

- 15.1.4. The idea of Riemann sums is important: that's what volume means. The book's "midpoint rule" is not; that's just one of many reasonable ways to estimate a Riemann sum.
- 15.1.33. The amount of work is quite different if you do the integral with respect to  $x$  first versus if you do the integral with respect to  $y$  first. Try both.
- 15.1.43. Start by sketching a graph (by hand or by computer) of the function and the planes.

15.2.17. I only assigned one in this group because you'll also have a bunch of similar WeB-WorKs problems; but practice enough to get good at these.

15.2.45–49. These are confusing until you get the hang of it, but then aren't bad, and make nice exam problems. The key is to do what the book says: start by sketching the region, and then exchange the order of integration.

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