

Math 102, Fall 2021 — Homework 9

Tim Chumley

Due November 10 at 5:00 pm

Instructions. This homework, like most others this semester, has two parts. One part is on Webwork, and the other part is some problems that you will write solutions to by hand and submit on Gradescope.

Webwork

No webwork this week.

Written problems

Write up solutions to the following problems, making sure to show your work, write neatly, scan clearly, and generally follow the [guidelines for writing good homework solutions](#). You should submit solutions on [Gradescope](#).

Problem 1. For each of the following improper integrals, give the value it converges to or show that it diverges.

1. $\int_1^{\infty} \frac{1}{(x+2)^2} dx$

2. $\int_1^{\infty} e^{-3x} dx$

3. $\int_0^5 \frac{1}{x^{4/5}} dx$

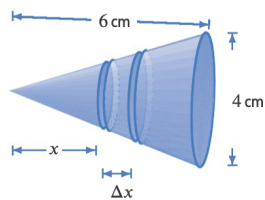
Problem 2. For each of the following improper integrals, give the value it converges to or show that it diverges.

1. $\int_3^5 \frac{1}{(4-x)^2} dx$

2. $\int_0^{\infty} \frac{1}{(x-1)^4} dx$

3. $\int_0^{\infty} \frac{x}{3+x^2} dx$

Problem 3. Find the volumes of each of the following solids using integration.



1.

