

Math 1720 Homework 13, due Friday April 27.
Explain all answers and show all calculations.

Note: in any integrals in which the integrand has an asymptote over the interval of integration, you need to compute the integral as a limit, as described in section 8.7.

8.7: 27, 29, 32, 36, 53, 60

Problem A.

9.1: 10, 14, 20, 27, 37, 43, 48, 51, 52

Problem A.

(a) Find

$$\int_{-3}^1 \frac{dx}{\sqrt{9-x^2}}$$

(b) Find

$$\int_0^1 \frac{e^{\sqrt{x}}}{\sqrt{x}} dx.$$

(c) Find

$$\int_{-2}^5 \frac{1}{(x-1)^3} dx.$$

(Warning: it's not 7/288.)

(d) (Had error: $\sqrt[6]{x}$ should have been $\sqrt[6]{|x|}$.) Find

$$\int_{-\infty}^{\infty} f(x) dx$$

where

$$f(x) = \begin{cases} \frac{1}{x^5} & \text{if } |x| > 1 \\ \frac{1}{\sqrt[6]{x}} & \text{if } |x| \leq 1. \end{cases}$$

(Exploiting symmetry will help.)