

Math 190 Homework 9: Due Monday November 23

The assignment is due at the beginning of class on the due date. You are expected to provide full solutions, which are laid out in a linear coherent manner. Your work must be your own and must be self-contained. Your assignment must be stapled with your name and student number at the top of the first page.

Questions:

1. Recall the following integral rules where k is a constant

- $\int_a^b (f(x) \pm g(x)) dx = \int_a^b f(x) dx \pm \int_a^b g(x) dx$
- $\int_a^b kf(x) dx = k \int_a^b f(x) dx.$

Note that these rule works for indefinite integrals as well.

If we know that

- $\int_{-2}^2 f(x) dx = 5$
- $\int_{-2}^2 g(x) dx = -1$

then compute

(a) $\int_{-2}^2 (3f(x) - 2g(x)) dx$

(b) $\int_{-2}^2 (5f(x) + 7g(x)) dx$

(c) $\int_{-2}^2 4dx$

2. Compute the following definite integral

$$\int_1^2 \left(2x^3 - 3\sqrt{x} - \frac{5}{x^2} \right) dx.$$

3. Compute the following definite integral

$$\int_2^3 \left(4e^x - \frac{4}{x} \right) dx.$$

4. Suppose

$$\int_2^5 f(x) dx = 7.$$

Find

$$\int_5^2 f(x) dx.$$

5. Compute the following indefinite integral

$$\int \frac{2x + x^3}{\sqrt{x}} dx.$$