

Math 190 Homework 9: Due Monday November 21

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. If we know that

- $\int_{-1}^3 f(x)dx = 6$
- $\int_{-1}^3 g(x)dx = -3$

then compute

(a) $\int_{-1}^3 (2f(x) - g(x))dx$

(b) $\int_{-1}^3 (4f(x) + 5g(x))dx$

2. Find a function $F(x)$ such that $F'(x) = 5 \cos x - \sqrt{3} \sin x$ and $F(\pi/6) = 4$.

3. Compute the following indefinite integrals

(a) $\int 2dx$

(b) $\int \sin(3x)dx$

(c) $\int e^{x+1}dx$

4. Compute the following indefinite integral

$$\int \frac{\sqrt{x} - 2x^4}{\sqrt{x^3}} dx.$$

5. (a) Suppose that

$$\int_{-1}^1 f(x)dx = -2 \quad \text{and} \quad \int_1^4 f(x)dx = -3.$$

Find

$$\int_{-1}^4 f(x)dx.$$

Explain how you know using a picture.

(b) What is

$$\int_2^2 f(x)dx?$$

Explain how you know using a picture.