

UNIVERSITY OF MANITOBA

MATH 1700 D01

Assignment 1

This assignment is based on units 1 and 2.

1.

Use the form of the integral given in Theorem 4 section 5.2 to evaluate

$$\int_0^3 (6x^2 + 2x + 4) dx.$$

2.

Let

$$f(x) = \begin{cases} 2 & \text{for } -1 \leq x \leq 1 \\ 3 - x & \text{for } 1 < x < 4 \\ 2x - 9 & \text{for } 4 \leq x \leq 5. \end{cases}$$

Sketch the graph of f on the interval $[-1, 5]$ and evaluate $\int_{-1}^5 f(x) dx$.

3.

Find the derivative $\frac{d}{dx} \int_{3x}^{x^3} (t^3 + 1)^{10} dt$.

4.

Evaluate

(a) $\int x^3(x^2 + 4)^{1/2} dx$

(b) $\int \frac{dx}{x^{2/3}(\sqrt[3]{x} + 1)}$

(c) $\int_1^2 \frac{e^{1/x}}{x^2} dx$

(d) $\int_0^2 x\sqrt{2x+1} dx.$