MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

Assignment 2

MATHEMATICS 1001

Fall 2025

Due: Wednesday, October 1st, 2025 at 6:00pm. See the Gradescope Handout for submission information.

Note: You should complete the WeBWorK problem set "Indefinite Integrals by u-Substitution", as well as Worksheet 1.2, before you work on this assignment.

1. Use *u*-substitution to evaluate the following indefinite integrals.

(a)
$$\int \frac{\tan\left(\sqrt{t}\right)}{\sqrt{t}} dt$$

(b)
$$\int \left(\frac{x}{\sin(x^3)}\right)^2 dx$$

(c)
$$\int x^8 (x^3 - 2)^7 dx$$

2. Use an appropriate method to integrate each of the following rational functions.

(a)
$$\int \frac{3x^3 - 12x}{x^4 - 8x^2} dx$$

(b)
$$\int \frac{x^3 - 2x^2 + 1}{x - 2} \, dx$$