MEMORIAL UNIVERSITY OF NEWFOUNDLAND
DEPARTMENT OF MATHEMATICS AND STATISTICS

ASSIGNMENT 3 **MATHEMATICS 1001** WINTER 2025

Due: Monday, February 10th, 2025 at 11:59pm. See the Gradescope Handout for submission information.

> **Note:** You should complete the WeBWorK problem sets "Inverse Trigonometric Indefinite Integrals" and "Indefinite Integrals by Parts", as well as Worksheets 1.3 and 1.4, before you work on this assignment.

1. Evaluate each of the following integrals which give rise to inverse trigonometric functions.

   (a) $\displaystyle \int \frac{\sec^2(t)}{\sqrt{1 - \tan^2(t)}}\, dt$

   (b) $\displaystyle \int \frac{1}{25x^2 - 20x + 53}\, dx$

2. Use integration by parts to evaluate the following indefinite integrals.

   (a) $\displaystyle \int \sin(x) \cos(7x)\, dx$

   (b) $\displaystyle \int \arccos(x)\, dx$

   (c) $\displaystyle \int x^5 \sin(x^3 + 1)\, dx$