MEMORIAL UNIVERSITY OF NEWFOUNDLAND
DEPARTMENT OF MATHEMATICS AND STATISTICS

ASSIGNMENT 7 **MATHEMATICS 1001** WINTER 2024

Due: Monday, March 18th at 11:59pm. See the Gradescope Handout for submission information.

> **Note:** You should complete the WebAssign problem sets "Integrals by Partial Fractions' and "Trigonometric Integrals", as well as Worksheet 3.1 and 3.2, before you work on this assignment.

1. Use a partial fraction decomposition to evaluate each of the following.

   (a) $\displaystyle \int \frac{2x^2 - 4x - 1}{3x^3 + x^2 + 3x + 1}\, dx$

   (b) $\displaystyle \int \frac{2x^6 - 3x^4 + 9x^2}{x^4 - 1}\, dx$

2. Evaluate each of the following trigonometric integrals.

   (a) $\displaystyle \int \frac{\cos^5(3x)}{\sin^4(3x)}\, dx$

   (b) $\displaystyle \int \sin^2(x)\cos^2(x)\, dx$