

# MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

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ASSIGNMENT 8

MATHEMATICS 1001

WINTER 2024

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**Due: Monday, March 25th at 11:59pm.** See the Gradescope Handout for submission information.

**Note:** You should complete the WebAssign problem sets “Integrals by Trigonometric Substitution” and “Integration Strategies”, as well as Worksheet 3.3 and 3.4, before you work on this assignment.

1. Use the method of trigonometric substitution to evaluate each of the following.

(a)  $\int \frac{\sqrt{x^2 - 25}}{x^3} dx$

(b)  $\int_0^{2\sqrt{2}} \frac{x}{\sqrt{16 - x^2}} dx$

2. Evaluate each of the following improper integrals, or show that it is divergent.

(a)  $\int_0^2 \frac{1}{x^2 - 4} dx$

(b)  $\int_{-\infty}^0 x^2 e^{4x} dx$