

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

ASSIGNMENT 3

MATHEMATICS 1001

WINTER 2024

Due: Monday, February 5th, 2024 at 11:59pm. See the Gradescope Handout for submission information.

Note: You should complete the WebAssign problem set “Indefinite Integrals by Parts”, as well as Worksheet 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) $\int \frac{1}{\sqrt{16 - 6t - t^2}} dt$

(b) $\int \frac{\cos(x)}{\sin^2(x) + 6} dx$

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

(a) $\int x^2 \sin(2x) dx$

(b) $\int x^{-3} e^{\frac{1}{x}} dx$

(c) $\int x \operatorname{arcsec}(x) dx$