

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

ASSIGNMENT 4

MATHEMATICS 1001

FALL 2025

Due: Wednesday, October 29th, 2025 at 6:00pm. Show all work. See the Gradescope Handout for submission information.

Note: You should complete Worksheets 2.1 and 2.2 before you work on this assignment.

1. Use the limit of a Riemann sum to determine the area A of each of the following regions. (In each case, use a regular partition and let the sample point $x_i^* = x_i$, that is, the right endpoint of the i th subinterval.)
 - (a) The region under the curve $f(x) = 5 + 8x - 3x^2$ on the interval $[2, 3]$.
 - (b) The region under the curve $f(x) = x^2(x + 2)$ on the interval $[-2, 2]$.
2. Use the limit of a Riemann sum to determine the area A of the region under the curve $f(x) = \sqrt{x}$ on the interval $[0, 4]$. Instead of a regular partition, let the right endpoint of the i th subinterval be given by

$$x_i = \frac{4i^2}{n^2},$$

and use this as the sample point x_i^* .

3. Evaluate $\int_0^2 (4x - x^3) dx$ using the limit of a Riemann sum.