MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 2.2 **Math 1001 Worksheet** WINTER 2025

For practice only. Not to be submitted.

1. Express each of the following as a definite integral over the indicated interval $[a, b]$, where x_i^* is the sample point on the ith subinterval.

   (a) $\lim\limits_{n\to\infty} \sum\limits_{i=1}^{n} \dfrac{2}{(x_i^* - 4)^2} \Delta x_i$ over $[6, 8]$

   (b) $\lim\limits_{n\to\infty} \sum\limits_{i=1}^{n} \cos^3(5x_i^*) \Delta x_i$ over $\left[-\dfrac{\pi}{2}, \dfrac{\pi}{2}\right]$

2. Use the limit of a Riemann sum to compute each of the following. (In each case, use a regular partition and let the sample point be the right endpoint of the ith subinterval.) Does the definite integral represent the area under the curve in each case?

   (a) $\displaystyle\int_0^2 \frac{x^3}{4}\, dx$

   (b) $\displaystyle\int_2^3 (2 - 7x)\, dx$