

# MEMORIAL UNIVERSITY OF NEWFOUNDLAND

## DEPARTMENT OF MATHEMATICS AND STATISTICS

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SECTION 2.2

Math 1001 Worksheet

WINTER 2024

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**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  $i$ th subinterval.

(a)  $\lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{2}{(x_i^* - 4)^2} \Delta x_i$  over  $[6, 8]$

(b)  $\lim_{n \rightarrow \infty} \sum_{i=1}^n \cos^3(5x_i^*) \Delta x_i$  over  $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

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  $i$ th subinterval.) Does the definite integral represent the area under the curve in each case?

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

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