

UNIVERSITY OF REGINA
DEPARTMENT OF MATHEMATICS AND STATISTICS
MATH 110 200730 Quiz 8 (Section 003)

Time: 20 minutes

Name: _____

Instructor: Dr. Edward Doolittle

Student #: _____

(marks) Please do questions 1 and 2. You have 10 minutes to do each question, for a total of 20 minutes for the quiz. A non-programmable calculator of the type mentioned in the course outline is allowed. If you finish early, I suggest you check your work thoroughly. **Please do not disturb your colleagues by climbing over them while they are trying to write the quiz.**

- (10) 1. Express the limit $\lim_{n \rightarrow \infty} \sum_{i=1}^n (2 - 5(x_i^*)^2 + \cos(x_i^*)) \Delta x$ as a definite integral on the interval $[0, \pi]$.
Do not attempt to evaluate the integral.

- (10) 2. Evaluate the definite integral $\int_0^1 (x^2 + 3)dx$ from first principles, i.e., from the definition of a definite integral. You may find some of the following formulas helpful.

$$\sum_{i=1}^n i = \frac{n(n+1)}{2} \quad \sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6} \quad \sum_{i=1}^n i^3 = \left(\frac{n(n+1)}{2}\right)^2$$