

UNIVERSITY OF REGINA
DEPARTMENT OF MATHEMATICS AND STATISTICS
MATH 110 200730 Quiz 7 (Section 003)

Time: 20 minutes

Instructor: Dr. Edward Doolittle

Name: _____

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. Find $f(x)$ given that $f''(x) = 8 - 12x + 60x^3$, $f(0) = -1$, $f'(0) = 5$.

- (10) 2. (a) Apply Newton's method to the equation $\frac{1}{x} - 9 = 0$ to derive the following algorithm for calculating $\frac{1}{9}$.

$$x_{n+1} = 2x_n - 9x_n^2$$

(b) Starting with the initial approximation $x_1 = 0.1$, find x_2 .

(c) Bonus: what is the pattern for x_n in the above case?