EXAMINATION COVERSHEET

Autumn 2022 Quiz 1

UNIVERSITY OF WOLLONGONG IN DUBAI

THIS EXAMINATION CONTENT IS STRICTLY CONFIDENTIAL
Students must comply with requirements stated in the Online Examination Policy & Procedures

Student Number:	
First Name:	
Family Name:	
Date of Examination: (DD/MM/YY)	**07-11-22**
Subject Code:	**Math 141**
Subject Title:	**Foundation of Engineering Mathematics**
Time Permitted to Write Exam:	60 minutes
Total Number of Questions:	**5 written questions**
Total Number of Pages *(including this page):*	**6**

INSTRUCTIONS TO STUDENTS FOR THE EXAM

1. Answers must be written (and drawn) in black or blue ink
2. Any mistakes must be crossed out. Whitener and ink erasers must not be used.
3. All questions are written and you must show your detailed work.
4. All questions are compulsory.
5. Total marks: 40. This Exam is worth 10% of your final marks for MATH 141.

EXAMINATION MATERIALS/AIDS ALLOWED
NONE or Please specify here (Note to faculty, dictionaries are not allowed)

Exam Unauthorised Items - Students bringing these items to the examination room must follow the instructions of the invigilators with regards to these items.

6. Bags, including carrier bags, backpacks, shoulder bags and briefcases
7. Any form of electronic device including but not limited to mobile phones, smart watches, MP3 players, handheld computers and unauthorised calculators;
8. Calculator cases and covers, opaque pencil cases
9. Blank paper
10. Any written material

NOTE: The University does not guarantee the safe-keeping of students' personal items during examinations. Students concerned about the safety of their valuable items should make alternative arrangements for their care.

(8*pts*) **Problem 1**
Evaluate the following limits

$$(a)\quad \lim_{x\to 0}\frac{\tan x - x}{x^2} \qquad\qquad (b)\quad \lim_{x\to -\infty}\frac{-3x^2\,|x| + 5x + 1}{5x^3 + 2x^2 - 9}$$

(8*pts*)**Problem 2**

Find $\dfrac{dy}{dx}$ for

$$(a) \quad y = \ln\left[\frac{\sqrt[3]{2x+1}}{(2x-1)(x+3)}\right] \qquad (b) \quad e^x y^2 + y^5 = 5$$

(8*pts*) **Problem 3**
Find the absolute extrema of the function $f(x) = 4x^3 - 6x^2 - 9x$, on the interval $[-1,\ 2]$.

(8*pts*)**Problem 4**
Use definite integrals to evaluate

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

(8*pts*)**Problem 5**
Find the critical numbers and the local extrema of the function

$$F(x) = \int_0^{x^2} \left(1 - t^2\right) dt$$