Question 1. *(5 marks)* Apply the Mean Value Theorem for $f(x) = 4x + \frac{1}{4x}$ over the interval $[1/4, 2]$.

Question 2. *(5 marks)* Let $f(x) = (x-3)^{-2}$. Show that there is no value c in $(1, 4)$ such that $f(4) - f(1) = f'(c)(4-1)$. Why does this not contradict the Mean Value Theorem?

Dawson College: **Calculus I** (SCIENCE): 201-SN2-RE-S14: Fall 2024: **Quiz 7**   name: _____

Books, watches, notes or cell phones are **not** allowed. The **only** calculators allowed are the Sharp EL-531**. You **must** show all your work, the correct answer is worth 1 mark the remaining marks are given for the work.

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Question 3. *(5 marks)* Find the points on the ellipse $4x^2 + y^2 = 4$ that are the farthest away from the point $(1, 0)$.

Question 4. *(5 marks)* Canadian postal regulation requires that the sum of the three dimensions (length+width+height) of a rectangular package to be 3 meters. If the lenght of a package is twice the width, find the dimension of the package of maximum volume that can be mailed.