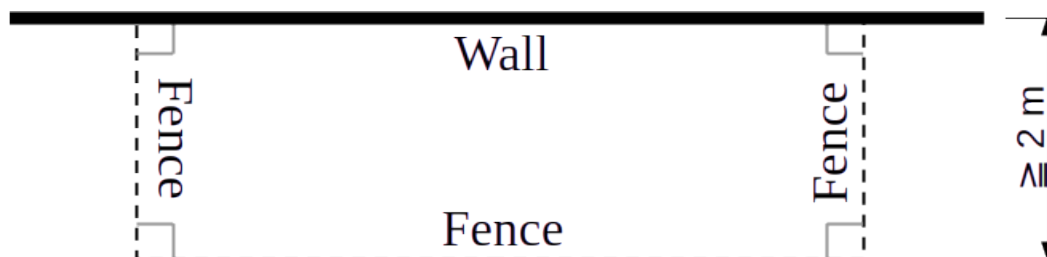


Mathematics 1110H (Section A) – Calculus I: Limits, Derivatives, and Integrals  
TRENT UNIVERSITY, Fall 2024

Quiz #6  
Max and Min meet Words and Formulas  
Wednesday, 16 October.\*



1. A rectangular enclosure is to be made using a long existing wall as one side of the enclosure and fencing off the other three sides, with the requirement that the side opposite the wall be at least  $2\text{ m}$  from the wall. What is the maximum area of such an enclosure if the total amount of fencing available is  $60\text{ m}$ ? [3]
2. Between  $0^\circ\text{C}$  and  $30^\circ\text{C}$  the volume  $V$ , in cubic centimetres, of  $1\text{ kg}$  of water at temperature  $T$  is approximately given by the formula

$$V = 999.87 - 0.06426T + 0.0085043T^2 - 0.0000679T^3.$$

Find the temperature in the given range at which water has its maximum density. [2]

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\* Please submit your solutions, preferably as a single pdf, via Blackboard's Assignments module before midnight. If that fails, please submit them to the instructor on paper or via email to [sbilaniuk@trentu.ca](mailto:sbilaniuk@trentu.ca) as soon as you can.