MAT110: Differential Calculus and Coordinate Geometry

Assignment 1

Total Marks: 100

Please write your name, ID and section on the first page of the assignment answer script. The last date of submission is Oct 07, 2022.

Solve all problems.

Q1	A horizontal trough is 16 $meters$ long, and its ends are isosceles trapezoids with an altitude of 4 m , a lower base of 4 m, and an upper base of 6 m. If the water is being poured into the trough at the rate of10 m^3/min. How fast is the water level rising when the water is 2m deep?
Q2	Suppose that $f'(x) = 2x\, f(x)$ and $f(2) = 5$. a) Find $g'\left(\frac{\pi}{3}\right)\ if\ g(x) = f(\sec x)$. b) Find $h'(2)\ if\ h(x) = \left[\frac{f(x)}{x-1}\right]^4$.