

An-Najah National University
Engineering Numerical Analysis
Homework (1)– Fall 2023/2024

Use Excel program to solve the following question:

Consider the volume of liquid (V) in a horizontal cylindrical pipe of radius r and length L .

$$V = L \left[\frac{\pi r^2}{2} - r^2 \sin^{-1} \left(\frac{r-h}{r} \right) - (r-h)\sqrt{2rh - h^2} \right]$$

Use **False-position method** to find the exact liquid height (h) when the pipe length (L) is equal to 10 m and the radius (r) = 1 m for a volume (V) of 10 m³. Suggest a valid interval calculate ϵ_a for each.

Note: Your program should indicate if the interval is valid and when the exact root is achieved

The Deadline: Tuesday, 31/10/2023