



Student Name	Student ID

Question Number	I	II	III	Total
Mark				

Instructions: Use any trusted source of information with proper citation and no plagiarism

[I] (1) Use MATLAB to define and plot the function $f(x, y) = \sin^2(x) + \cos(y + 3x)$.

(2) Draw the function $z = 4e^{x-y^2}$ using MATLAB mesh, surf and contour3 functions on $x = 0:0.1:3, y = 0:0.1:3$. Explain the difference between the figures.

[II] (a) Write a MATLAB function for Newton's Algorithm (Algorithm 2.3 in [1]).

(b) Use the function in (a) to find the root of $\sqrt{x} - 2\sin x + e^{-x}$ on $[0,2]$ with accuracy 10^{-5} .

[III] (i) Use any Built-in MATLAB function to find the roots of $x^4 + 3x^2 - x + 5$.

(ii) What are the numerical techniques behind the function you used in (i)?

[1] Numerical Analysis, 9th Edition, Burden and Faires.

Good Luck 😊