



BITS Pilani
Pilani | Dubai | Goa | Hyderabad

Work Integrated Learning Programmes Division

M.Tech (Data Science and Engineering)

SS ZC416 - Mathematical Foundations for Data Science

ASSIGNMENT-2

INSTRUCTIONS

1. Assignment has to be handwritten, images to be captured in a doc file. Convert the doc file to a pdf file and name it as your BITSID.pdf and upload the file
2. Assignment sent via email would not be accepted
3. Submissions beyond **3rd of November, 17.00 hrs** would not be graded.

ANSWER ALL QUESTIONS

EACH QUESTION CARRIES 5 MARKS

1. Write a code to minimize $f(x, y) = (x - y)^2 + 1 - x$ using the Gradient descent method. Take a suitable initial value and do the iterations till the tolerance is 0.01. Please attach the code along with the final output.
2. Find the least natural number that divides $11^{n+1} + 12^{2n-1}$ by examining the values of this expression for small values of $n \in \mathbb{N}$, and prove the formula you conjectured.