BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

Project Proposal

Department: EEE

Section : A1

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Title

Grapher

Objective

To plot any equation

Target

The aim of this project is to plot any mathematical equation. The equation may be 2D or 3D. Besides, users could get relevant information about the equation both graphically and analytically. This information include-

- Differentiation
- Integration
- Arc-length
- Evaluation
- Roots

There will be options for both 2D and 3D graph. Scaling may be linear or logarithmic.
The co-ordinate systems that can be used are -

- Cartesian
- Polar
- Cylindrical
- Spherical

Besides plotting graph, this project will cover a few important tasks. Such as-

- Solution of homogenous systems of equation
- Solution of non-homogenous systems of equation
- interpolation of some given values, that will include linear interpolation, quadratic interpolation, cubic interpolation, exponential interpolation etc.
- Fourier analysis

Implementation

To plot an equation, firstly a large number of input and output value will be calculated first. These points will be used to draw in a Matlab figure. The figure can be zoom in or zoom out for better evaluation. The given equation can be implicit or explicit.

For solving systems of equations, Newton-Raphson method will be used.
For determining differentiation and integration, numerical calculas will be used.
Matlab built-in function along with some calculations will be used to determine Fourier analysis.

There will be options for different co-ordinate systems. The equations given will be corrected for Matlab calculation. There will be also options for auto-suggestion. Some built-in graphs will be given for sample…