Discussion Week - 8

As it can be seen in the graph ***solution_plot.pdf.*** Centeral difference graph is more in-tuned with that of the *Analytical* results.

This is because of the amount of error each approximation holds, As it is known that truncation error comes in propotional to the step size.

$$R_n(\zeta) = \frac{f^{n+1}(\zeta)}{n+1} h^{n+1}$$

Here, one thing is to kept in mind that value of *h* is $1 < h < 0$. Therefore, when the power of *h* increases it makes the term even more smaller.

In case of **Centeral difference** formula error is of the order of $O(h^2)$. Whereas, for the case of the **Backward** and **Forward** difference $O(h)$. Hence, for $1 < h < 0$ value of *h* would further decrease if power is increased.

Although, there is also some difference in **forward** and **backward** difference formula. **Forward difference** formula would be great for application when diffrentiated value is required near origin, Whereas opposite is true for the **backward difference** formula.

Different files for each plot has been created to make ease while plotting in GNUplot

Report by:

Apoorav Singh Deo
v19036
Course: PH621