Computational Physics 3

HW 4

Christopher Morris

***Problem 1***

1a)

The numeric and analytic solutions match almost entirely except for at the boundary.

Chart, line chart

Description automatically generated

The analytic solution was found to be:

Chart, shape, rectangle

Description automatically generated

1b)

The numeric solution and analytic solution do not match. The numeric solution travels at a much slower pace.

Chart, line chart

Description automatically generated

Shape, rectangle

Description automatically generated

***Problem 2***

2a)

The Lax scheme was found in the textbook as:

2b)

Chart, histogram

Description automatically generated

The analytic solution for u and r were found to be:

***Problem 3***

3a)

Chart, diagram, histogram

Description automatically generated

3b)

Increasing dt = dx results in the numeric solution becoming unstable and rapidly oscillating.

Chart, diagram, histogram

Description automatically generated