Mtl712

Assignment 2

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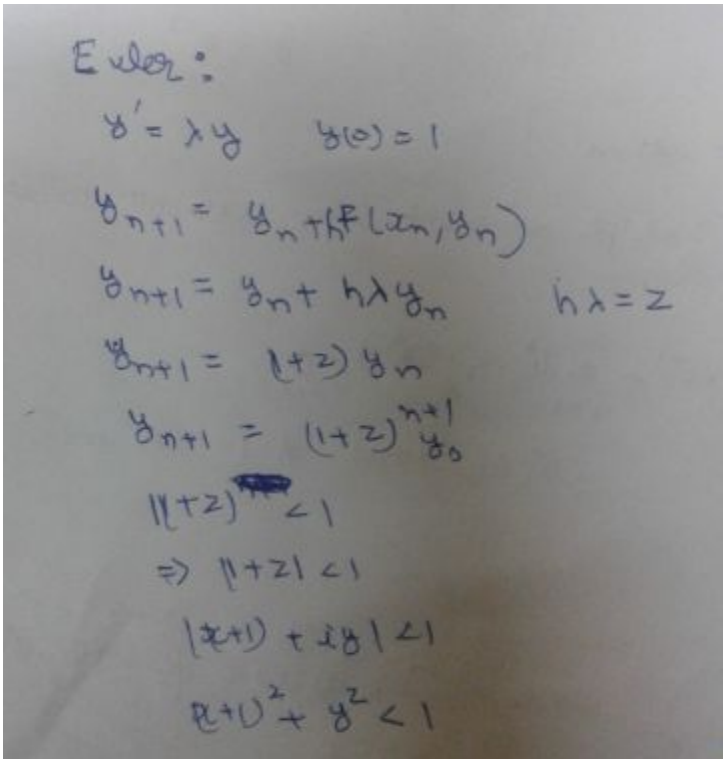
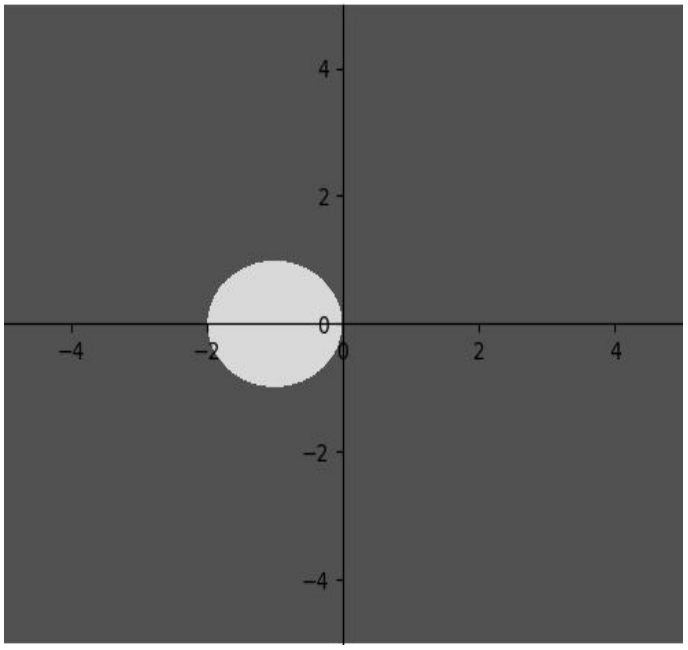
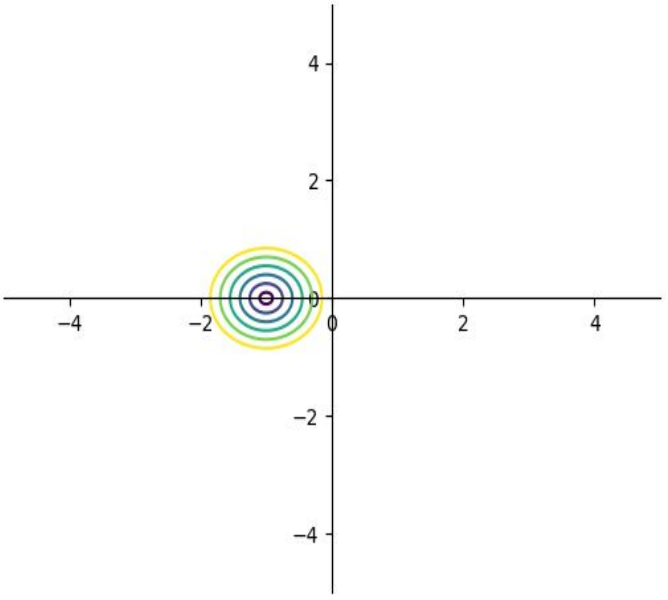
2016MT10630

1. Euler:



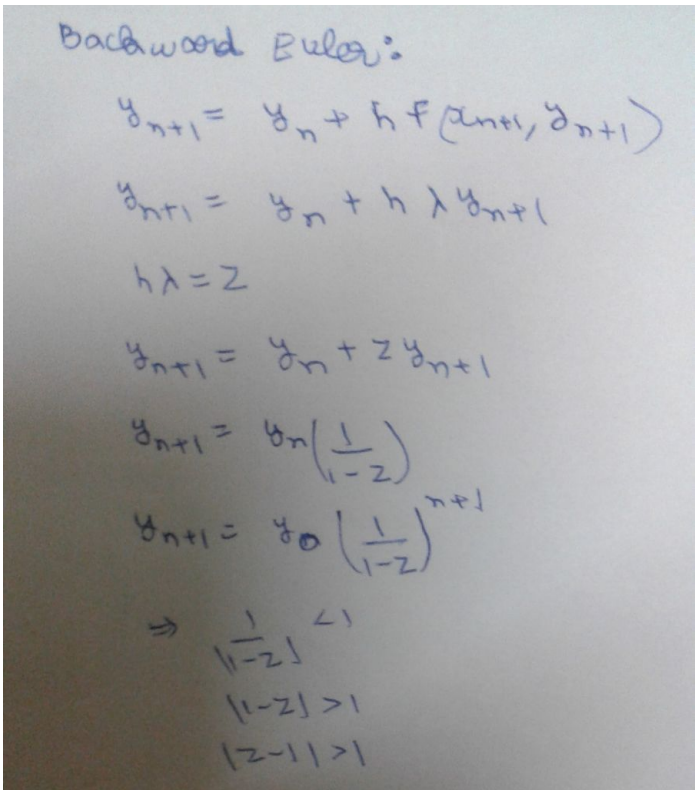



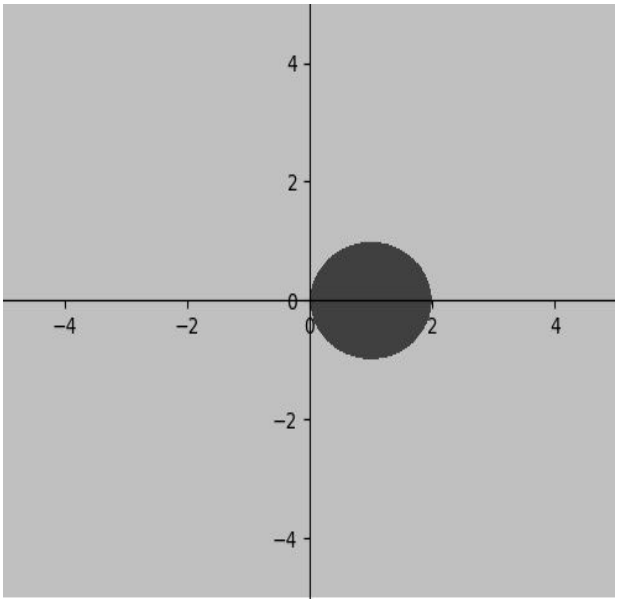

Surface plot



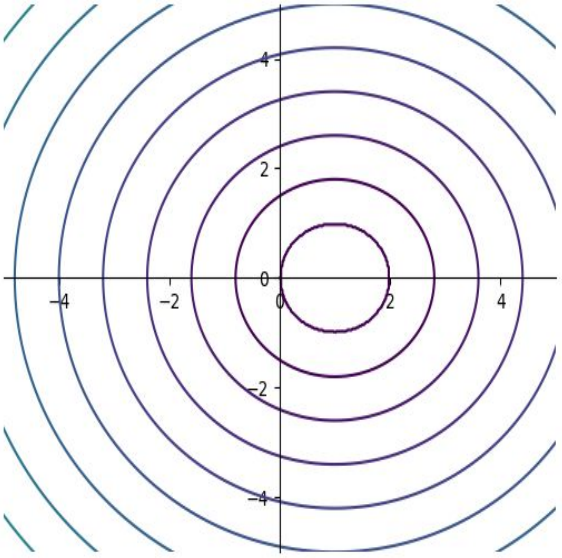

Contour

2. Backward Euler:



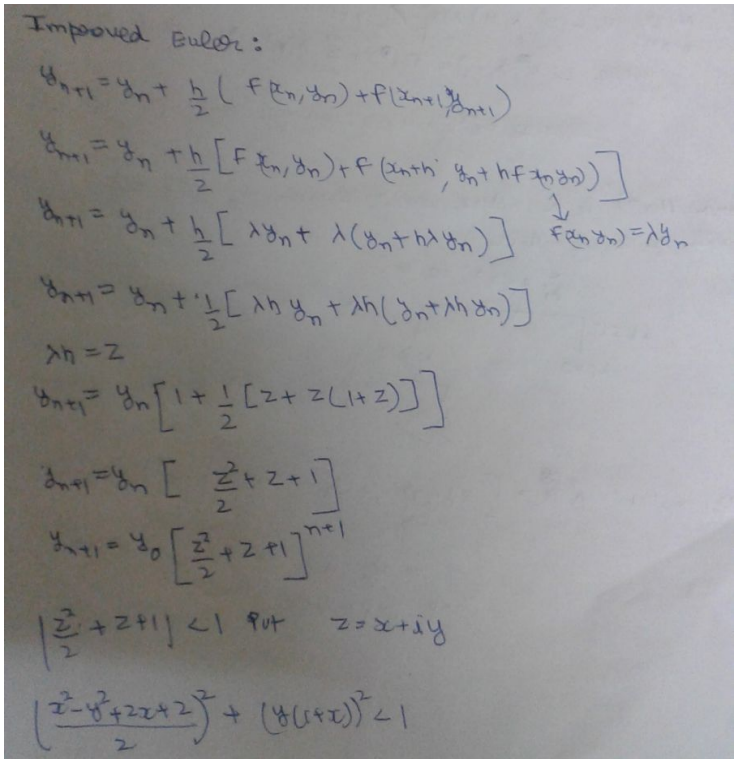



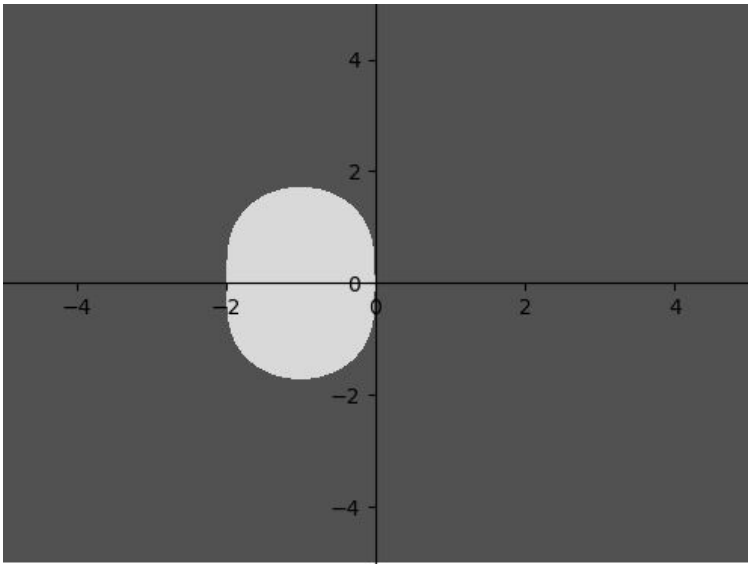

Surface plot( All area except circular region)



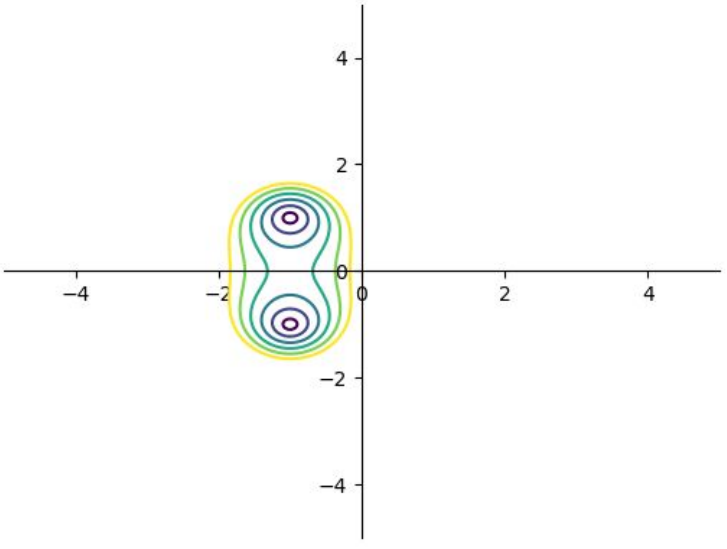

Contour plot

3. Modified Euler:



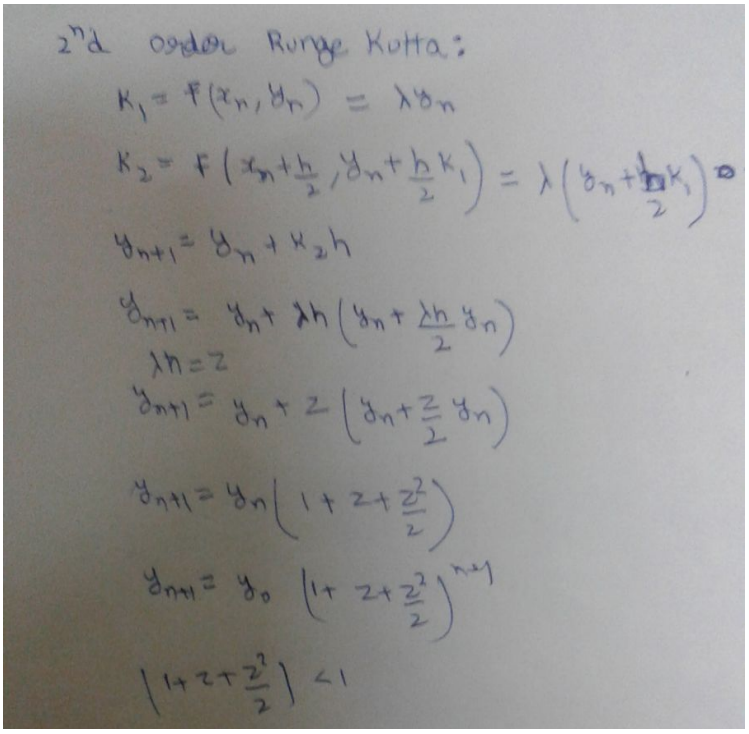



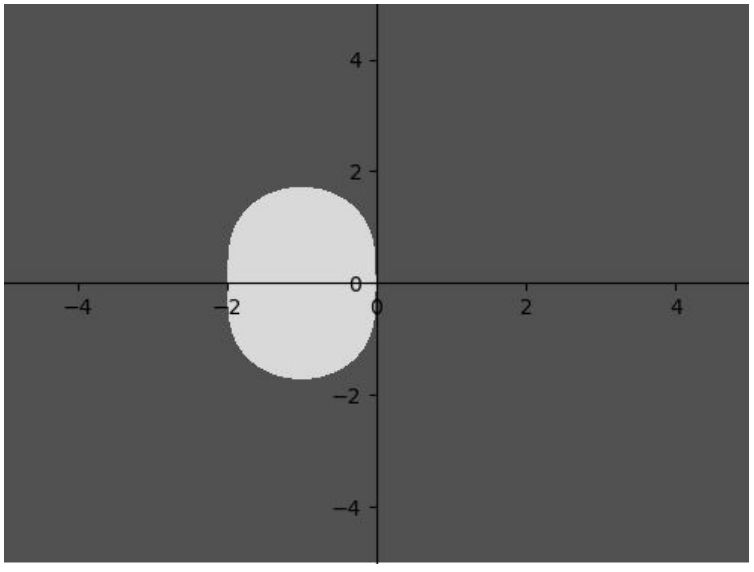

Surface plot



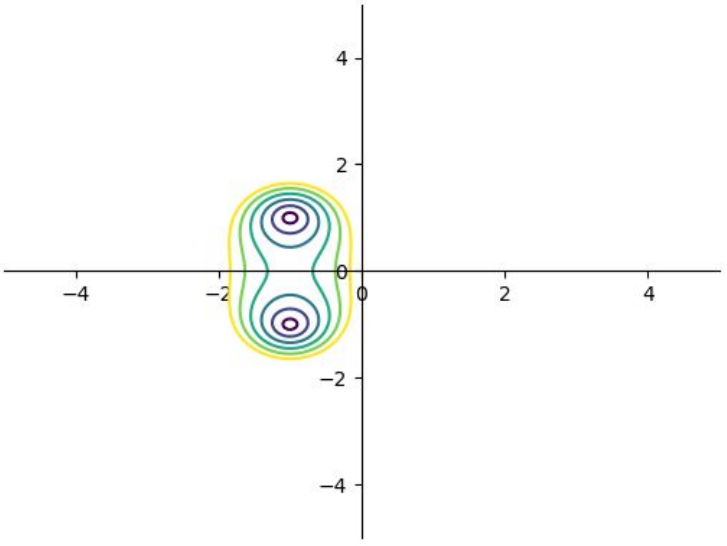

Contour plot

4. 2nd Order Runge Kutta:




Surface plot




Contour plot

Discussion:

1. Stability region of Euler is a circle centered at (-1,0)
2. Stability region of backward Euler is a region except for a circle whose center is (1,0)
3. Stability region of Modified Euler and 2nd order Runge Kutta is ellipse.