

# **COMPUTATIONAL FLUID DYNAMICS**

## **ASSIGNMENT – 2**



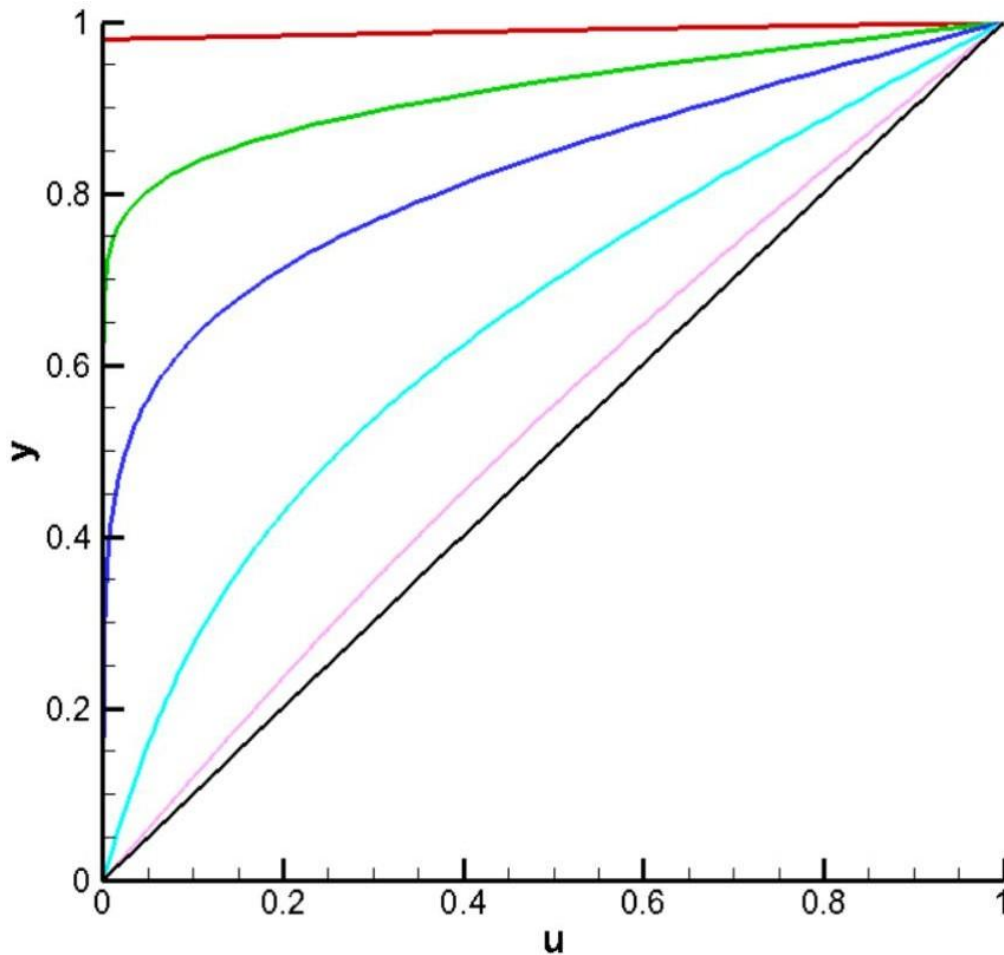
**Submitted by,**

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**Branch – Fluids & Thermal**

## (1). FTCS



1)  $t = 0$  : Number of iterations = 1

2)  $t = 0.5$  : Number of iterations = 101

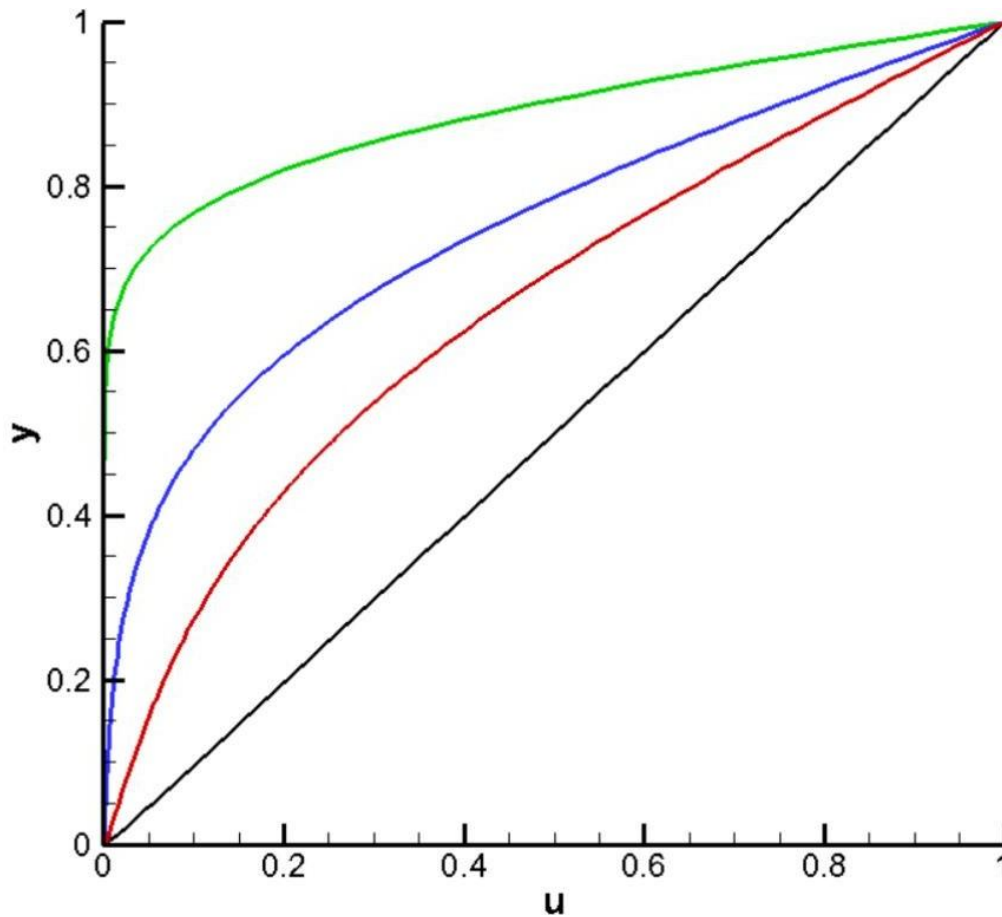
3)  $t = 2.5$  : Number of iterations = 500

4)  $t = 10$  : Number of iterations = 2000

5)  $t = 25$  : Number of iterations = 5001

6) Steady state : error is order of 0.000001, Number of iterations = 11635

## 2 (b). BTCS (Tridiagonal Matrix Algorithm)



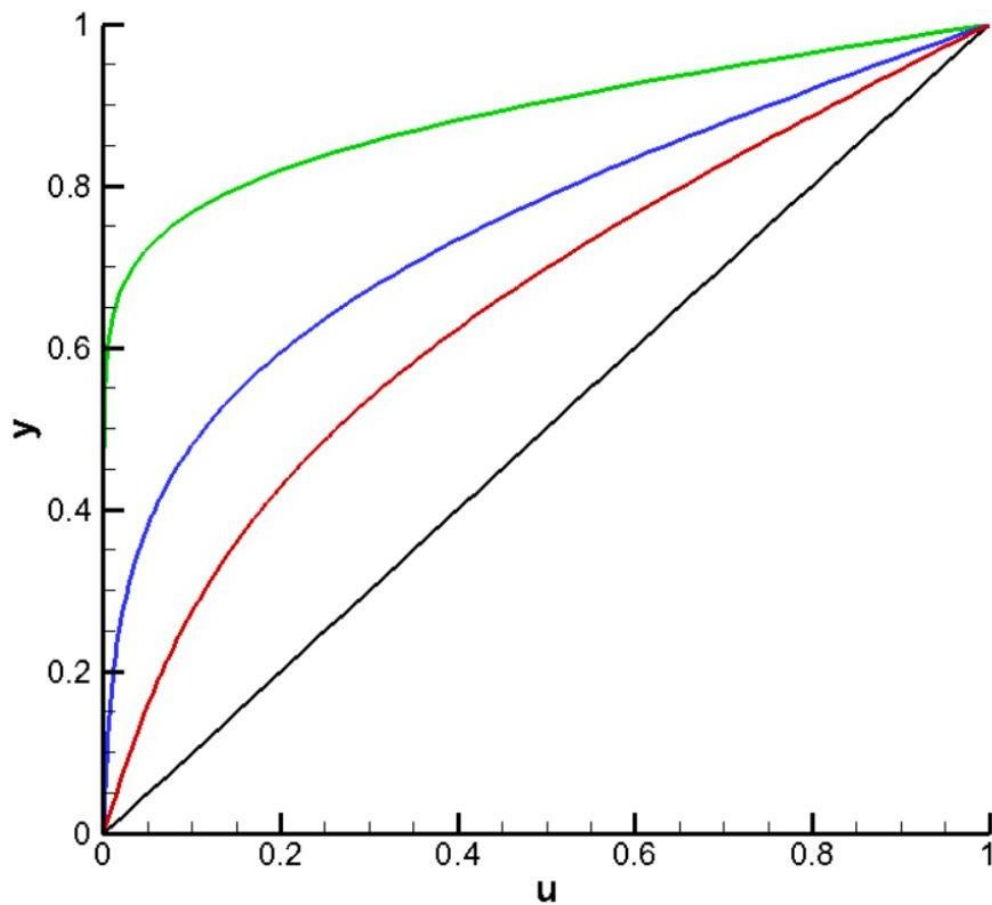
1)  $t = 1$  : Number of iterations = 101

2)  $t = 5$  : Number of iterations = 501

3)  $t = 10$  : Number of iterations = 1001

4) Steady state : Error is order of 0.000001 , Number of iterations = 6226

## 2 (c). Crank Nicolson



1)  $t = 1$  : Number of iterations = 101

2)  $t = 5$  : Number of iterations = 501

3)  $t = 10$  : Number of iterations = 1001

4) Steady state : Error is order of 0.000001 , Number of iterations = 6187