

## **ASSIGNMENT 2**

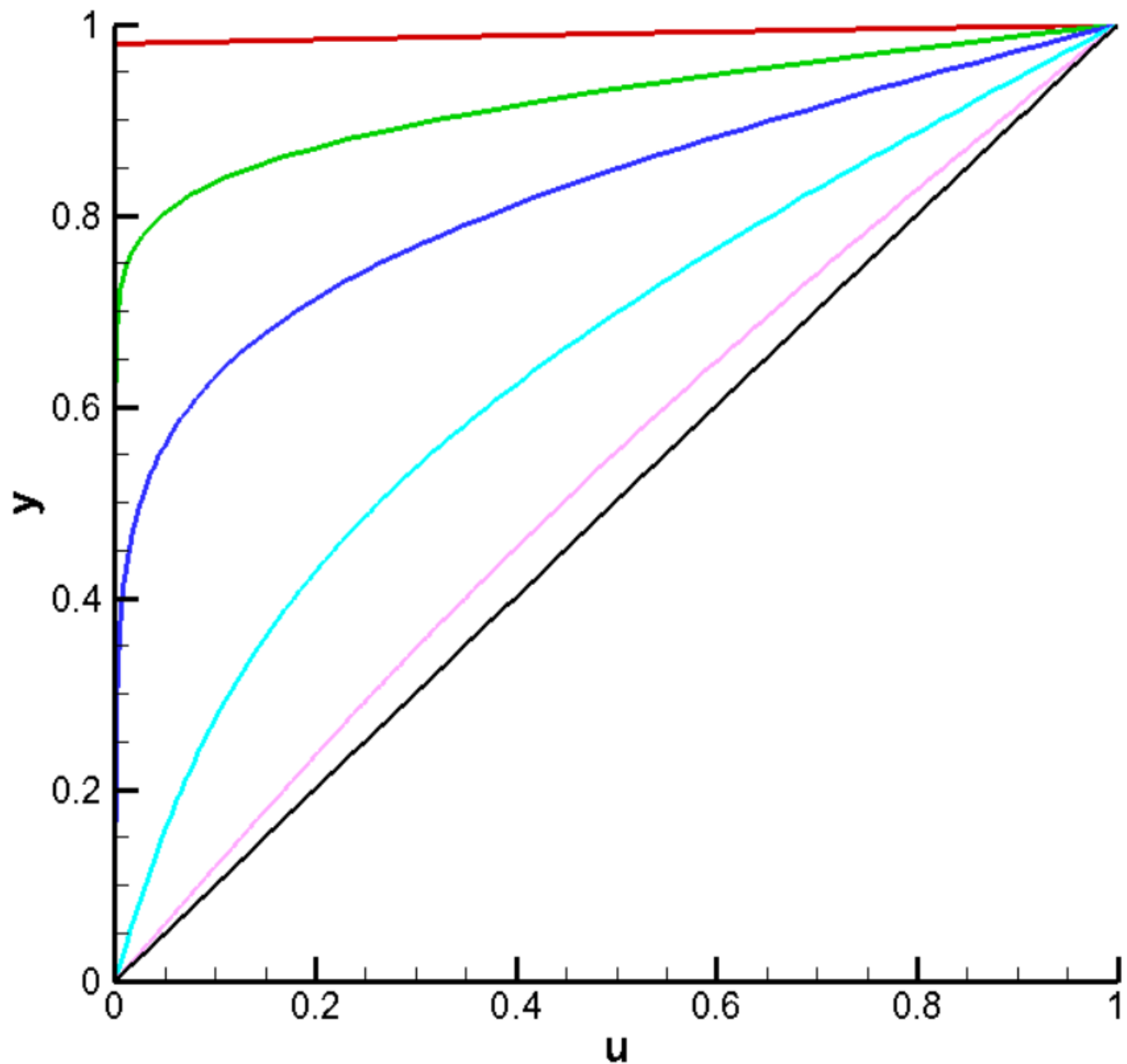
# **COMPUTATIONAL FLUID DYNAMICS**

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**BRANCH - MECHANICAL (Fluid and Thermal Engineering)**

(1) FTCS :



(a)  $t = 0$  (Number of iterations = 0 )

(b)  $t = 0.5$  (Number of iterations = 100)

(c)  $t = 2.5$  (Number of iterations = 500)

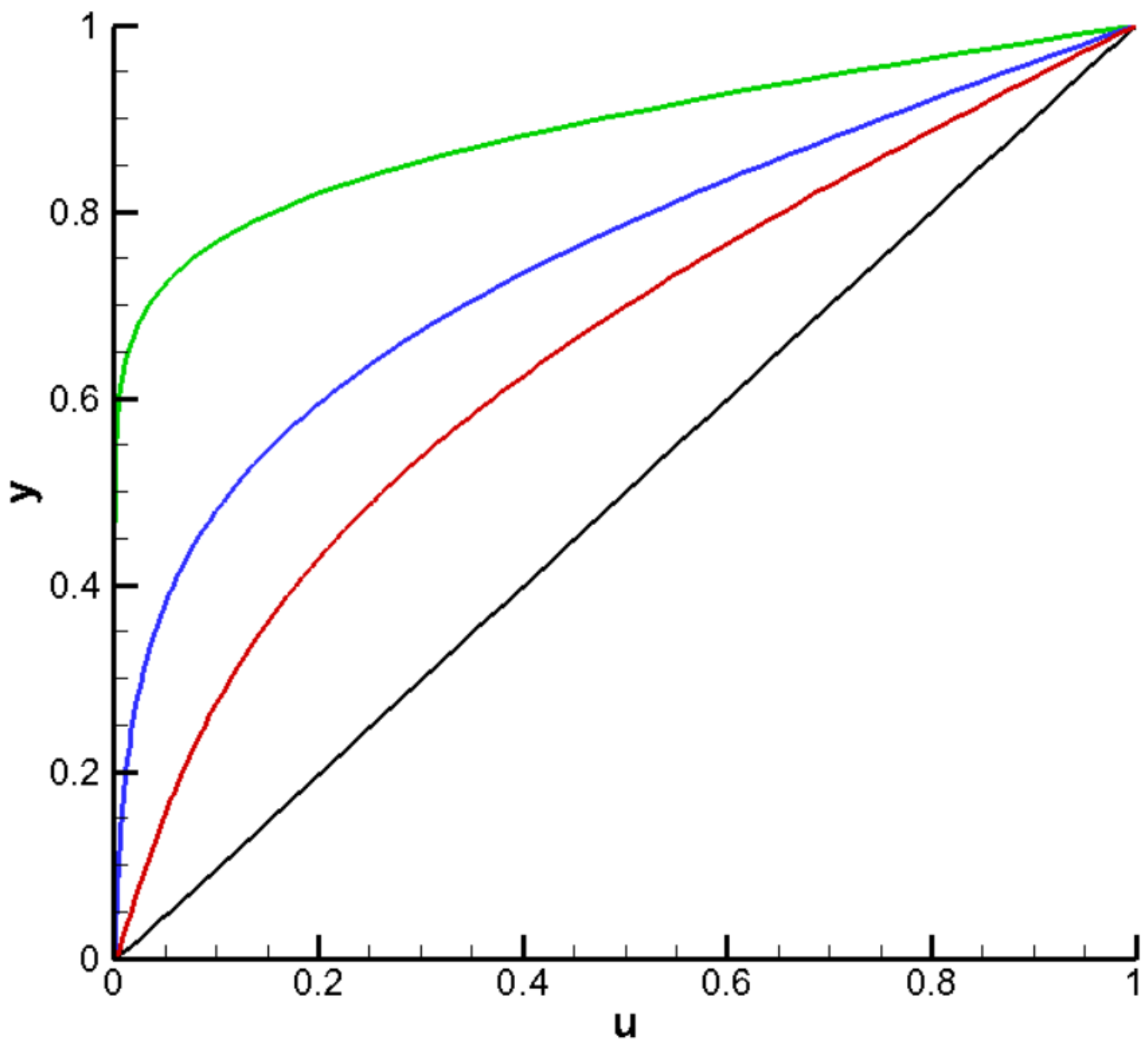
(d)  $t = 10$  (Number of iterations = 2000)

(e)  $t = 25$  (Number of iterations = 5000)

(f) Steady state (error is order of 0.000001) (Number of iterations = **11641**)

( $t = 58.2$  seconds)

(2) (A) BTCS TDMA :



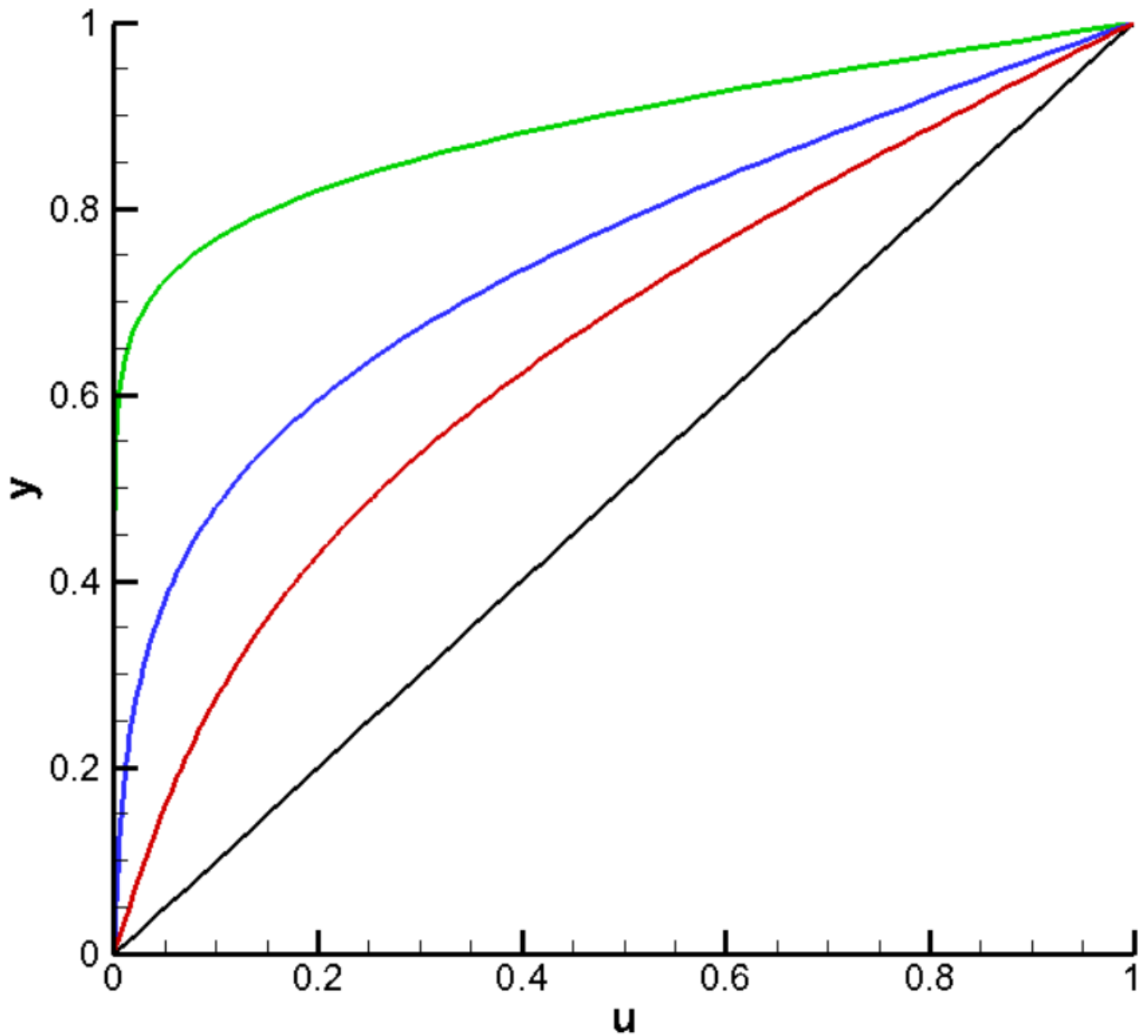
(a)  $t = 1$  (Number of iterations = 100 )

(b)  $t = 5$  (Number of iterations = 500)

(c)  $t = 10$  (Number of iterations = 1000)

(d) Steady state (error is order of 0.000001) (Number of iterations = **6230** )  
( $t = 62.3$  seconds)

(2) (B) CRANK NICOLSON :



(a)  $t = 1$  (Number of iterations = 100 )

(b)  $t = 5$  (Number of iterations = 500)

(c)  $t = 10$  (Number of iterations = 1000)

(d) Steady state (error is order of 0.000001) (Number of iterations = **6189**)

( $t = 61.9$  seconds)