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MAT NO: 14/ENG02/034

DEPT: CHEMICAL ENGINEERING

LEVEL: 500

PROCESS DYNAMICS AND CONTROL 1 (CHE 531) ASSIGNMENT 1

Given that

Solve

Solution

Inserting Initial Conditions

Collecting like terms

Factorizing the second term in the denominator

Hence,

Separating into partial fractions

Comparing the equations

(1)

(2)

(3)

Solving the above equations simultaneously by Gauss elimination method,

For row 2 we have

For row 3 we have

For row 3 we have

From the matrix above, we have

(4)

(5)

(6)

Hence,

Substituting the value of C in (5)

Substituting the value of B and C in (4)

Taking the Laplace inverse