**Matrices 3**

**Solving simultaneous equations using determinants i.e. Cramer’s Rule**

Solve the following equations a1x + b1y = c1

a2x + b2y = c2

Write in matrix form

. =

Let A = coefficient matrix

Ax = Ay =

x = and y =

**Example** 1: Solve the following using Cramer’s Rule

2x + y = 5

3x – 2y = -3

Write in matrix form to give

. =

A = |A| = (2)(-2) – (1)(3) = -7

Ax = |Ax| = (5)(-2) – (1)(-3) = -7

Ay = |Ay| = (2)(-3) – (5)(3) = -21

x = = = 1 and y = = = 3

**Example 2**: Solve the following Cramer’s Rule:

5x – y = 7

3x + 2y = -1

[ans: x= 1; y = -2]

x = = = 1 and y = = = -2

**Example 3**: Solve the following Cramer’s Rule:

3x + 4y + z = 10

2x – 3y + 5z = -9

x + 2y – z = 6

[ans: x = 1; y = 2; z = -1]