Using Matrices for Simultaneous Equations

Examples

1. Use matrices to solve the set of linear equations

   1. $2x + 3y + z = 1$

   2. $x + 2y + z = 2$

   3. $3x + y + z = 0$

2. Use an inverse matrix to solve the simultaneous equations:

$$-x + 6y - 2z = 21$$
$$6x - 2y - z = -16$$
$$-2x + 3y + 5z = 24$$

Modelling Example

A colony of 1000 mole-rats is made up of adult males, adult females and youngsters. Originally there were 100 more adult females than adult males.

After one year:

- The number of adult males had increased by 2%

- The number of adult females had increased by 3%

- The number of youngsters had decreased by 4%

- The total number of mole-rats had decreased by 20

Form and solve a matrix equation to find out how many of each type of mole-rat were in the original colony.