# Hibernia College Section 10 Linear Algebra

**5.1 Systems of Linear Equations**

**5.2 Algebra of Matrices**

1. Addition and Subtraction of matrices
2. Multiplication of a matrix by a constant
3. Multiplication of two matrices
4. Powers of Square matrices
5. Rules of the arithmetic of matrices
6. Identity matrices

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| A = matrix(c(2,1,4,3),nrow=2,byrow=T)  B = matrix(c(2,1,5,1),nrow=2,byrow=T)  C = matrix(c(3,4,1,5,5,3),nrow=3,byrow=T)  D = matrix(c(1,3,4-1,-1,0),nrow=2,byrow=T) |

**5.3 Gaussian Elimination**

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| B=matrix(c(2,-3,7,1,0,2),byrow=T,nrow=2)  C=matrix(c(1,-2,4,3,0,5),byrow=T,nrow=3)  A=matrix(c(1,3,-2,4),byrow=T,nrow=2)  BC = B%\*%C  CB = C%\*%B  A+BC | > A+BC  [,1] [,2]  [1,] -9 25  [2,] -1 12  > |
| > BC  [,1] [,2]  [1,] -10 22  [2,] 1 8  > | > CB  [,1] [,2] [,3]  [1,] 0 -3 3  [2,] 11 -12 34  [3,] 5 0 10  > |

**Question 10**

Say what information the first row of the matrix contains. Find the number of edges of G.

Write down the augmented matrix for the following system of equations.

x+y+2z=7

2x+y+3z =11

x-27+5z=4

Use Gaussian elimination to solve the system.

Question

Write down the augmented matrix for the following system of equations

x + y + 2x = 2

2x + y + 3z = 5

x - 2y + 5z = 11

Use Gaussian elimination to solve the system.