Matrices

An m×n matrix A is a rectangular array of mn numbers arranged in m rows and n columns.

A=

ij th componets of A (denoted) is the number appearing in the i th row and j th column of A.

Example A = , B = , C=

An m×n matrix will all componets equal zero is called the m×n zero matrix

Example A =

If A is m×n matrix with m = n then A is called square matrix.

A =

,,,…,,…, form the main diagonal of A.

Example A = , B =

A square matrix is called diagonal matrix if all terms off the main diagonal are zero.

Example A = , B =

A square matrix is called scalar matrix if all terms on the main diagonal are equal.

Example A = , B=

A scalar matrix is called identity matrix if every terms in the main diagonal equal one.

Example A = , B=

A square matrix is called upper triangular if = 0 I j.

A square matrix is called lower triangular if = 0 I j.

Example A= lower, B = upper

Equality of matrices

Let A = , B = be m×n matrices . A is equal to B(denoted by A =B) if = , 1 i m , 1 j n

Example A= , B =

A = B iff x=2 , y = 5 , z = 0 , w = 2

Operation on matrices

1) Addition matrices

Let A = , B = be m×n matrices. The sum of A and B(denoted by A +B) defined to the

matrix C = ,where = + ,1i m ,1j nExample A = , B = , A+B =