2) Scalar multiplication

Let A = be m×n matrix and r is a real number then the scalar multiple of A by r (denoted by rA) defined to the matrix D = , where = r , 1 I m , 1 j n

Example A = , r = 2, 2A =

3) Matrix multiplication

Let A = be m×p matrix , B = be p×n matrix then the product of A and B (denoted by AB) defined to be the m×n matrix C = , where = + + … , 1 i m , 1 j n

Example A = , B = , AB =

Let A = be m×p matrix , B = be p×n matrix1) If n m then BA may not be defined

2) If n = m then BA is p×p, while AB is m×m. Thus if p m . AB and BA are different sizes.

3) AB and BA are both of the same size . But AB BA.

Example A = , B = , AB = , BA is not defined

Example A = , B = , AB = , BA =

AB BA.

Example A = , B = , AB = , BA =

Properties of matrix addition

1) A+B =B + A

2) A+(B+C) = (A+B)+C

3)A+0 = 0+A

4) A+(-A) = (-A)+A = 0

Example A = , B = , C = ,

A+B ==B + A

(A+B)+C = + =

A+(B+C) = + =

-A =

A+(-A) = + =

(-A)+A = + =

A+0 = + =

0+A = +=

A-B = A +(-B)

Example A = , B =

-B =

A-B = A +(-B) =