

4.2 Mathematical operations between matrices

When a mathematical operation is carried out between two matrices the number of their elements must be identical. If the two matrices are two dimensional the number of rows and columns of the first matrix must equal their counterparts in the second. However, any operation can be performed between a single number (scalar) and any matrix whether it is one or two dimensional. To ensure element by element operation between identical matrices the dot operator (.) must be added before (*) (/) (^) signs:

Ex. (4.2): Write Matlab program to display a matrix of five rows and four columns where the rows represent the output values of the addition, subtraction, product, division and raising to power. All of the five operations are carried out between a matrix containing four identical numbers (2 for instance) and a matrix having four arbitrary numbers.

```
clear , clc
x = 2 * ones( 1 , 4 );
y = [ 3 , 5 , 6 , 8 ];
z = x + y ;
w = y - x ;
a = x . * y ;
b = x . / y ;
c = y . ^ x ;
R = [ z ; w ; a ; b ; c ];
disp( R )
```

Run:

5.0000	7.0000	8.0000	10.0000
1.0000	3.0000	4.0000	6.0000
6.0000	10.0000	12.0000	16.0000
0.6667	0.4000	0.3333	0.2500
9.0000	25.0000	36.0000	64.0000