Matrix Addition

We can only add matrices of the **same order**.

Example:

Matrix addition is very simple; we just add the corresponding elements.

$$\begin{pmatrix} 5 & 2 \\ 4 & 9 \\ 10 & -3 \end{pmatrix} + \begin{pmatrix} -11 & 0 \\ 7 & 1 \\ -6 & -8 \end{pmatrix} = \begin{pmatrix} 5+(-11) & 2+0 \\ 4+7 & 9+1 \\ 10+(-6) & -3+(-8) \end{pmatrix}$$

$$= \begin{pmatrix} -6 & 2 \\ 11 & 10 \\ 4 & -11 \end{pmatrix}$$

It is not possible to add matrices that do not have the same order, as shown in the followin example:

$$\begin{pmatrix} 7 & 9 \\ 2 & 7 \\ 5 & 1 \end{pmatrix} + \begin{pmatrix} 2 & 3 & 8 \\ 9 & 0 & 3 \end{pmatrix} =$$

Matrix Subtraction

Similarly, we can only subtract matrices of the same order.

Example:

We subtract the corresponding elements.

$$\begin{pmatrix} 7 & 3 \\ 5 & 9 \\ 11 & -2 \end{pmatrix} - \begin{pmatrix} -3 & 0 \\ 8 & 1 \\ -3 & -4 \end{pmatrix} = \begin{pmatrix} 7-(-3) & 3-0 \\ 5-8 & 9-1 \\ 11-(-3) & -2-(-4) \end{pmatrix}$$

$$= \begin{pmatrix} 10 & 3 \\ -3 & 8 \\ 14 & 2 \end{pmatrix}$$

It is not possible to subtract matrices that do not have the same order as in the following example:

$$\begin{pmatrix} 7 & 9 \\ 2 & 7 \\ 5 & 1 \end{pmatrix} - \begin{pmatrix} 2 & 3 & 8 \\ 9 & 0 & 3 \end{pmatrix} =$$