

Adding & Subtracting Matrices

Name : _____ Date: _____

You can only add and subtract matrices if they have the same dimensions. Otherwise the elements you are comparing are different.

$$A = \begin{bmatrix} a_{1,1} & a_{1,2} & \cdots & a_{1,n} \\ a_{2,1} & a_{2,2} & \cdots & a_{2,n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m,1} & a_{m,2} & \cdots & a_{m,n} \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} b_{1,1} & b_{1,2} & \cdots & b_{1,n} \\ b_{2,1} & b_{2,2} & \cdots & b_{2,n} \\ \vdots & \vdots & \ddots & \vdots \\ b_{m,1} & b_{m,2} & \cdots & b_{m,n} \end{bmatrix}$$

Then,

$$S = A \pm B = \begin{bmatrix} a_{1,1} \pm b_{1,1} & a_{1,2} \pm b_{1,2} & \cdots & a_{1,n} \pm b_{1,n} \\ a_{2,1} \pm b_{2,1} & a_{2,2} \pm b_{2,2} & \cdots & a_{2,n} \pm b_{2,n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m,1} \pm b_{m,1} & a_{m,2} \pm b_{m,2} & \cdots & a_{m,n} \pm b_{m,n} \end{bmatrix}$$



So the process is: add or subtract the entries of matrix A with the corresponding entries of matrix B.

$$s_{i,j} = a_{i,j} + b_{i,j}$$

Example:

$$A = \begin{bmatrix} 4 & -5 \\ 3 & 0 \end{bmatrix} \quad \text{and} \quad B = \begin{bmatrix} 9 & 8 \\ 1 & -6 \end{bmatrix} \quad \text{and} \quad C = \begin{bmatrix} -5 & 2 \\ 0 & 0 \end{bmatrix}$$

Calculate: $D = A + B - C$

Adding & Subtracting Matrices	Matrix Equations – Addition & Subtraction
	
Question/Solution	Question/Solution