

Matrix Subtraction

Matrices can be subtracted in the same way that they can be added. We first have to make sure the matrices being subtracted are the same size. Then, we align corresponding entries and subtract them:

$$\begin{aligned} & \begin{bmatrix} 1 & 7 & 4 \\ 6 & -2 & 0 \end{bmatrix} - \begin{bmatrix} 2 & -1 & -5 \\ 4 & 6 & 6 \end{bmatrix} \\ &= \begin{bmatrix} 1-2 & 7-(-1) & 4-(-5) \\ 6-4 & -2-6 & 0-6 \end{bmatrix} \\ &= \begin{bmatrix} -1 & 8 & 9 \\ 2 & -8 & -6 \end{bmatrix} \end{aligned}$$

Now try these questions on your own.

1. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} - \begin{bmatrix} 2 & 3 \\ 0 & -1 \end{bmatrix}$

2. $\begin{bmatrix} 2 & -1 \end{bmatrix} - \begin{bmatrix} -1 & 4 \end{bmatrix}$

3. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} - \begin{bmatrix} 2 & 0 \\ -1 & 1 \end{bmatrix}$

$$4. \begin{bmatrix} 1 & 0 & 1 \\ -1 & -3 & 2 \end{bmatrix} - \begin{bmatrix} 2 & 2 & 0 \\ 1 & 3 & 5 \end{bmatrix}$$

$$5. \begin{bmatrix} 0 & 9 & -2 \end{bmatrix} - \begin{bmatrix} 4 & 4 & 2 \end{bmatrix}$$

$$6. \begin{bmatrix} 1 & 7 \\ -2 & 2 \\ 0 & 1 \\ 0 & 4 \end{bmatrix} - \begin{bmatrix} 3 & -1 \\ 1 & 1 \\ 4 & 3 \\ -9 & 0 \end{bmatrix}$$

$$7. \begin{bmatrix} 3 \\ -4 \end{bmatrix} - \begin{bmatrix} 1 \\ 1 \end{bmatrix} - \begin{bmatrix} 3 \\ -2 \end{bmatrix}$$

$$8. \begin{bmatrix} 1 & 8 \\ 8 & -2 \\ 5 & -9 \end{bmatrix} - \begin{bmatrix} -2 & -1 \\ 0 & 0 \\ 8 & 1 \end{bmatrix}$$

$$9. \begin{bmatrix} 1 & -4 \\ 3 & 3 \end{bmatrix} - \begin{bmatrix} 2 & -2 \\ 7 & 0 \end{bmatrix} - \begin{bmatrix} 2 & 4 \\ -1 & -4 \end{bmatrix}$$

10.

$$\begin{bmatrix} 5 & 8 & -2 & 0 \\ 0 & 1 & 1 & -2 \\ 3 & 8 & -1 & 2 \end{bmatrix} - \begin{bmatrix} 4 & 4 & -4 & 2 \\ 3 & 7 & 1 & -1 \\ -1 & -1 & 2 & 4 \end{bmatrix}$$

<http://math.about.com>