

Example 1

$$\begin{pmatrix} 0 & -1 & 2 \\ 4 & 11 & 2 \end{pmatrix} \begin{pmatrix} 3 & -1 \\ 1 & 2 \\ 6 & 1 \end{pmatrix}$$

Example 2

$$\begin{pmatrix} 8 & 9 \\ 5 & -1 \end{pmatrix} \begin{pmatrix} -2 & 3 \\ 4 & 0 \end{pmatrix}$$

Example 3

Given that

$$A = \begin{pmatrix} -3 & 1 & 6 \\ 3 & -1 & 0 \\ 4 & 2 & 5 \end{pmatrix}$$

find A^{-1} .

Example 4

If possible, find BA and AB .

$$A = \begin{pmatrix} -2 & 1 & 7 \\ 6 & -1 & 0 \\ 0 & 2 & -1 \end{pmatrix}$$

$$B = \begin{pmatrix} 4 & -1 & 5 \end{pmatrix}$$

Example 5

Does $AB = BA$?

IF

$$A = \begin{pmatrix} 0 & -1 & 2 \\ 4 & 11 & 2 \end{pmatrix}$$

And

$$B = \begin{pmatrix} 3 & -1 \\ 1 & 2 \\ 6 & 1 \end{pmatrix}$$

Find AB and BA

Answer 1

$$\begin{pmatrix} 11 & 0 \\ 35 & 20 \end{pmatrix}$$

Answer 2

$$\begin{pmatrix} 20 & 24 \\ -14 & 15 \end{pmatrix}$$

Answer 3

$$AI = \begin{pmatrix} -3 & 1 & 6 \\ 3 & -1 & 0 \\ 4 & 2 & 5 \end{pmatrix} \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} = A$$

We see that multiplying by the identity matrix does not change the value of the original matrix.

$$AI = A$$

Answer 4

$$BA = \begin{pmatrix} -11 & 15 & 23 \end{pmatrix}$$

AB is not possible $(3 \times 3)(1 \times 3)$

Answer 5

$$AB = \begin{pmatrix} 11 & 0 \\ 35 & 20 \end{pmatrix}$$

$$BA = \begin{pmatrix} -4 & -14 & 4 \\ 8 & 21 & 6 \\ 4 & 5 & 14 \end{pmatrix}$$

AB and BA are not the same