


Inverse of 2x2 Matrix

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix}^{-1} = \frac{1}{ad-bc} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$



determinant

If the determinant is 0, the inverse does not exist.

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} 11 & -5 \\ 2 & -1 \end{bmatrix} \quad -11 + 10 = -1$$

$$\frac{1}{-1} \begin{bmatrix} -1 & 5 \\ -2 & 11 \end{bmatrix}$$

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} 4 & -5 \\ -9 & 6 \end{bmatrix} \quad 24 - 45 = -21$$

$$\frac{1}{-21} \begin{bmatrix} 6 & 5 \\ 9 & 4 \end{bmatrix}$$

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} -9 & -9 \\ -2 & -2 \end{bmatrix} \quad 18 - 18 = 0$$

DNE

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} -2 & 1 \\ -6 & 1 \end{bmatrix} \quad -2 + 6 = 4$$

$$\frac{1}{4} \begin{bmatrix} 1 & -1 \\ 6 & -2 \end{bmatrix}$$

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} 0 & -2 \\ -1 & -9 \end{bmatrix} \quad 0 - 2 = -2$$

$$\frac{1}{-2} \begin{bmatrix} -9 & 2 \\ 1 & 0 \end{bmatrix}$$

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} 0 & 0 \\ -6 & 4 \end{bmatrix} \quad 0 - 0 = 0$$

DNE

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} 1 & -1 \\ -6 & -3 \end{bmatrix} \quad -3 - 6 = -9$$

$$\frac{1}{-9} \begin{bmatrix} -3 & 1 \\ 6 & 1 \end{bmatrix}$$

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} -6 & 11 \\ -4 & 7 \end{bmatrix} \quad -42 + 44 = 2$$

$$\frac{1}{2} \begin{bmatrix} 7 & -11 \\ 4 & -6 \end{bmatrix}$$

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} 5 & -8 \\ 6 & -9 \end{bmatrix} \quad -45 + 48 = 3$$

$$\frac{1}{3} \begin{bmatrix} -9 & 8 \\ -6 & 5 \end{bmatrix}$$

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} -2 & -2 \\ 6 & 8 \end{bmatrix} \quad -16 + 12 = -4$$

$$\frac{1}{-4} \begin{bmatrix} 8 & 2 \\ -6 & -2 \end{bmatrix}$$

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} -3 & 3 \\ 8 & 7 \end{bmatrix} \quad -21 - 24 = -45$$

$$\frac{1}{-45} \begin{bmatrix} 7 & -3 \\ -8 & -3 \end{bmatrix}$$

Example: Find the inverse of each matrix, if it exists.

$$\begin{bmatrix} 2 & -10 \\ -11 & 8 \end{bmatrix}$$

$$16 - 110 = -94$$

$$\frac{1}{-94} \begin{bmatrix} 8 & 10 \\ 11 & 2 \end{bmatrix}$$